

# APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

→ PLEASE TYPE OR PRINT IN **BLACK INK ONLY**

<b>1. Name of Applicant:</b>		State of Maine Bureau of General Services		<b>5 Name of Agent: (if applicable)</b>		NEWSME Landfill Operations, LLC			
<b>2. Applicant's Mailing Address:</b>		77 State House Station Augusta, Maine 04333		<b>6 Agent's Mailing Address:</b>		(NEWSME) 2828 Bennoch Road Old Town, Maine 04446			
<b>3. Applicant's Daytime Phone #:</b>		207.624.7360		<b>7 Agent's Daytime Phone #:</b>		207.862.4200 ext. 230			
<b>4 Applicant's Email Address Required from either applicant or agent:</b>				<b>8. Agent's Email Address:</b>		Don.Meagher@casella.com			
<b>9. Location of Activity: (Nearest Road, Street, Rt.#)</b>		Juniper Ridge Landfill 2828 Bennoch Road/Route 16		<b>10. Town:</b>		Old Town			
				<b>11. County:</b>		Penobscot			
<b>12A. Significant Groundwater well?</b>				<input type="checkbox"/> Yes OR <input checked="" type="checkbox"/> No					
<b>12. Type of Resource: (Check all that apply)</b>		<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		<b>13. Name of Resource:</b>		Unnamed Forested Wetlands			
				<b>14. Amount of Impact: (Sq.Ft.)</b>		Fill: 88862.4 square feet Dredging/Veg Removal/Other:			
<b>15. Type of Wetland: (Check all that apply)</b>		<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 _____		<b>FOR FRESHWATER WETLANDS</b>					
				<i>Tier 1</i>		<i>Tier 2</i>		<i>Tier 3</i>	
				<input type="checkbox"/> 0 - 4,999 sq ft. <input type="checkbox"/> 5,000-9,999 sq ft. <input type="checkbox"/> 10,000-14,999 sq ft.		<input type="checkbox"/> 15,000 – 43,560 sq. ft.		<input checked="" type="checkbox"/> > 43,560 sq. ft. or <input type="checkbox"/> smaller than 43,560 sq ft., not eligible for Tier 1	
<b>16. Brief Activity Description</b>		Filling approximately 2.04 acres of freshwater wetland in connection with the proposal to expand the landfill and 0.10 acres of clearing impact from associated perimeter fence and relocated power line.							
<b>17. Size of Lot or Parcel:</b>		<input type="checkbox"/> _____ square feet, or <input checked="" type="checkbox"/> 780 acres		UTM Northing:4981477N		UTM Easting:190521412E			
<b>18. Title, Right or Interest:</b>		<input checked="" type="checkbox"/> own <input type="checkbox"/> lease <input type="checkbox"/> purchase option <input type="checkbox"/> written agreement							
<b>19. Deed Reference Numbers:</b>		Book#: 9188 Page: 152		<b>20. Map and Lot Numbers:</b>		Map #:003		Lot #:1&1A	
<b>21. DEP Staff Previously Contacted:</b>		Lynn Caron		<b>22. Part of a larger project:</b>		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>After-the-Fact:</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>23. Resubmission of Application?</b>		<input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No		<b>If yes, previous application #</b>		<b>Previous project manager:</b>			
<b>24. Written Notice of Violation?</b>		<input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No		<b>If yes, name of DEP enforcement staff involved:</b>		<b>25. Previous Wetland Alteration:</b>		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>26. Detailed Directions to the Project Site:</b>		0.1 mile west of Interstate 95 Exit 199 off Route 16.							
<b>27. TIER 1</b>				<b>TIER 2/3 AND INDIVIDUAL PERMITS</b>					
<input type="checkbox"/> Title, right or interest documentation <input type="checkbox"/> Topographic Map <input type="checkbox"/> Narrative Project Description <input 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 checked="" type="checkbox"/> Title, right or interest documentation * <input checked="" type="checkbox"/> Topographic Map <input checked="" type="checkbox"/> Copy of Public Notice/Public Information Meeting Documentation <input checked="" type="checkbox"/> Wetlands Delineation Report (Attachment 1) that contains the Information listed under Site Conditions <input checked="" type="checkbox"/> Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized				<input checked="" type="checkbox"/> Erosion Control/Construction Plan <input checked="" type="checkbox"/> Functional Assessment (Attachment 3), if required <input checked="" type="checkbox"/> Compensation Plan (Attachment 4), if required <input checked="" type="checkbox"/> Appendix A and others, if required <input checked="" type="checkbox"/> Statement/Copy of cover letter to MHPC <input type="checkbox"/> Description of Previously Mined Peatland, if required	
<b>28. FEES, Amount Enclosed:</b>									

**CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2**

\* See Volume 1, Appendix B, incorporated here by reference

**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.

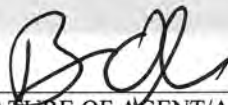
**CORPS SIGNATORY REQUIREMENT**

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.

Further, 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 #8 for the agent)."



SIGNATURE OF AGENT/APPLICANT

Date:

7/20/15

**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.**



**JUNIPER RIDGE LANDFILL EXPANSION  
APPLICATION  
VOLUME V  
NATURAL RESOURCES PROTECTION ACT  
AND  
SECTION 404 – CLEAN WATER ACT**

**Submitted by:**

**STATE OF MAINE BUREAU OF GENERAL  
SERVICES,  
as Owner  
and  
NEWSME LANDFILL OPERATIONS, LLC,  
as Operator**

**July 2015**

**SME**

Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE



## TABLE OF CONTENTS

Section No.	Title
-------------	-------

---

### **EXECUTIVE SUMMARY**

<b>ATTACHMENT 1</b>	<b>PROJECT DESCRIPTION</b>
<b>ATTACHMENT 2</b>	<b>ALTERNATIVES ANALYSIS</b>
<b>ATTACHMENT 3</b>	<b>USGS MAP</b>
<b>ATTACHMENT 4</b>	<b>COLOR PHOTOS</b>
<b>ATTACHMENT 5</b>	<b>OVERHEAD AND SITE VIEW DRAWINGS</b>
<b>ATTACHMENT 6</b>	<b>ADDITIONAL PLANS</b>
<b>ATTACHMENT 7</b>	<b>CONSTRUCTION PLANS</b>
<b>ATTACHMENT 8</b>	<b>EROSION SEDIMENTATION CONTROL PLAN</b>
<b>ATTACHMENT 9</b>	<b>SITE CONDITIONS (WETLAND DELINEATION REPORT)</b>
<b>ATTACHMENT 10</b>	<b>NOTICE OF INTENT TO FILE AND CERTIFICATE OF GOOD CORPORATE STANDING</b>
<b>ATTACHMENT 11</b>	<b>MAINE HISTORIC PRESERVATION COMMISSION CORRESPONDENCE</b>
<b>ATTACHMENT 12</b>	<b>FUNCTIONS AND VALUES ASSESSMENT</b>
<b>ATTACHMENT 13</b>	<b>WETLAND COMPENSATION PLAN</b>

### **LIST OF APPENDICES**

<b>APPENDIX A</b>	<b>VISUAL EVALUATION FIELD SURVEY CHECKLIST AND VISUAL ASSESSMENT</b>
<b>APPENDIX B</b>	<b>NRPA PERMIT BY RULE NOTIFICATION FORM</b>



## LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	<u>Page No.</u>
1-1	SITE LOCATION MAP.....	1-5
1-2	SITE DEVELOPMENT PLAN .....	1-6
2-1	DEVELOPMENT CONCEPT ALTERNATIVE 1.....	2-11
2-2	DEVELOPMENT CONCEPT ALTERNATIVE 2.....	2-12

## LIST OF TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page No.</u>
2-1	REMAINING CAPACITY AND LIFE AT STATE SOLID WASTE LANDFILLS AS OF 2013 .....	2-8

## **EXECUTIVE SUMMARY**

The Maine Bureau of General Services (BGS) and NEWSME Landfill Operations, LLC (NEWSME) have prepared this Application pursuant to both the Natural Resources Protection Act (NRPA), 38 M.R.S. §§ 480-A to 480-FF, and Section 404 of the Clean Water Act, 33 U.S.C. § 1344, in support of an application filed with the Maine Department of Environmental Protection (MEDEP) to expand the existing Juniper Ridge Landfill (JRL) onto an adjacent approximately 74-acre area immediately north of the existing landfill facility.

The Landfill Expansion Project (Expansion) will involve approximately 54 acres of additional landfill footprint, 20 acres of infrastructure (roads, sedimentation ponds, scales, administrative building and the like), and a relocated perimeter fence and electrical line. This development will result in unavoidable filling of 2.04 acres of freshwater wetlands and clearing in 0.10 acres of freshwater wetlands to relocate the perimeter fence and electrical line. The impacted wetlands are not designated as Wetlands of Special Significance, as defined by 06-096 CMR 310.4.

A total of 14 vernal pools were identified within and adjacent to the proposed expansion area. One vernal pool meets the criteria to be considered a Significant Vernal Pool, (SVP). This SVP depression will not be directly impacted by the Expansion, but clearing for the proposed relocated electrical line and fence will occur within the 250-foot critical terrestrial habitat surrounding this pool. This activity is covered by the Permit-by-Rule (PBR) standards of the NRPA and the PBR notification form for this activity is attached in Appendix B. Of the 14 vernal pools, 12 met the definition of a vernal pool as provided by the Programmatic General Permit (GP) of the U.S. Army Corp of Engineers (Corps) for Maine (Maine GP). The remaining two pools were small depressions located in upland areas. Because these vernal pools were not located in jurisdictional wetlands, they are not regulated by the Corps. These two pools were natural, but did not contain enough egg masses to be considered SVPs. Six of the Corps regulated pools will be directly impacted as part of the Expansion. The 94 acres of vernal pool management area impacts, as defined by the Corps, associated with these six vernal pools are addressed in the project's compensation plan.



The compensation plan includes the on-site preservation of a contiguous 266 total acres and includes approximately 57 acres of wetlands, 209 acres of adjacent upland, and 25 documented vernal pools. A site of this size can function as an independent ecological unit that provides more than suitable compensation for the resources being impacted according to the Army Corps' and MEDEP guidelines. Details of the compensation plan are found in Attachment 13.

The future Expansion capacity, which will ultimately total 9.35 million cubic yards, is anticipated to be needed by 2019 based on current landfill utilization rates of the existing JRL. An analysis of need was done by the MEDEP as part of a Public Benefit Determination for the project, pursuant to the provisions of the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S. §§ 1301 to 1319-Y, and the Solid Waste Management Rules: General Provisions, 06-096 CMR 400, and Landfill Siting, Design, and Operations, 06-096 CMR 401. As part of that analysis MEDEP determined that the Expansion's 9.35 million cubic yards are needed to ensure the long term waste disposal needs of the State.<sup>1</sup> The Expansion will provide about ten to twelve years of additional solid waste disposal capacity once the existing facility reaches its full build-out. BGS and NEWSME have evaluated options to avoid wetland impacts including off-site options and several alternate on-site development options for the Expansion and determined that the proposed footprint design is the least environmentally damaging practicable alternative to provide the State-approved capacity and avoid and minimize impacts to on-site wetlands and other protected natural resources to the maximum extent practicable.

This NRPA Application describes the project, its need, and includes a Project Description, Alternatives Analysis, Wetlands Delineation Report, Functions and Values Assessment Report, and a Wetland Compensation Plan, along with supporting information. As will be described in greater detail below, this Application demonstrates that BGS and NEWSME have satisfied each of the six applicable NRPA approval standards, as follows.

---

<sup>1</sup> The Department Order #S-020700-W5-AU-N (see Appendix A-8 of Volume I of the Expansion Application)

- The activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses. The proposed expansion will be located adjacent to and abutting an existing landfill where there are no recreational or navigational uses, and will have limited impact on scenic and aesthetic uses as summarized in the Visual Assessment included with the NRPA Permit Application.
- The activity will not cause unreasonable erosion or soil sedimentation or unreasonably inhibit the natural transfer of soil into a water environment. The design of the Expansion incorporates Best Management Practices to address erosion and sedimentation control as outlined in the Erosion and Sediment Control Plan that is included with this NRPA Permit Application.
- The activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life. In addition to their efforts to avoid and minimize impacts, for the wetland impacts that will unavoidably occur, BGS and NEWSME have proposed a wetland compensation plan on the property surrounding the project. The proposed compensation includes preservation of approximately 266 acres of the on-site parcel consisting of 57 acres of wetlands, 209 acres of adjacent upland, and 25 documented vernal pools.
- The activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.
- The activity will not violate any State of Maine water quality law, including those governing classification of the State's waters.
- The activity will not unreasonably cause or increase flooding in the area.



**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 1  
PROJECT DESCRIPTION**

**BACKGROUND**

BGS and NEWSME are proposing to expand JRL located in Old Town, Maine (the Project). The JRL is located on a 780-acre parcel southwest of Route 16 and north of Route 43 in Old Town (see Figure 1-1, Site Location Map). The existing JRL consists of a permitted 68-acre secure landfill, with an administration building, maintenance buildings, leachate storage tank, leachate pump stations, sedimentation/detention ponds, landfill gas treatment facility and flare, and access roads. The site also includes a permitted till borrow pit and clean wood waste storage and processing facility.

JRL used to be known and licensed as the “West Old Town Landfill,” and was previously owned and operated by Georgia-Pacific (the successor to Fort James and James River Paper Company). At that time, the Landfill was licensed by the MEDEP under the Maine Hazardous Waste, Septage and Solid Waste Management Act and Natural Resources Protection Act (MEDEP Permit #S-20700-7A-A-N). The license was transferred to the State of Maine in 2003 when the State acquired ownership of the facility. (MEDEP Permit #S-20700-WR-M-T). These licenses were subsequently amended, including in 2004 (MEDEP Permit #S-20700-WD-N-A). In addition, the Corps issued a permit to James River for impacts to wetlands on the property under Section 404 of the Clean Water Act (Corps Permit #1991-01909).

In 2006, NEWSME and the State of Maine filed a Preliminary Information Report (PIR) for the proposed expansion of the Landfill. The purpose of the PIR was to present sufficient information on the proposed landfill expansion to enable the MEDEP to make a determination on the environmental feasibility of the proposed expansion and to outline the scope of study for development of a full solid waste licensing application. The PIR was for a larger, 108-acre landfill with a total capacity of 22.9 million cubic yards. The MEDEP determined that the 108-acre landfill site to be environmentally feasible for landfill development and issued a Determination of Environmental Feasibility on April 13, 2007. Subsequent to that determination,

BGS and NEWSME filed an application with the MEDEP on September 15, 2011, for a Public Benefit Determination (PBD), a prerequisite to filing an application to actually build and operate the Expansion, pursuant to 38 M.R.S. § 1310-AA for the 22.9 million cubic yard expansion. On January 31, 2012, BGS and NEWSME received a partial approval of the PBD, #S-020700-W5-AU-N, for 9.35 million cubic yards of the 22.9 million cubic yards that had been requested. This Application is for unavoidable impacts to protected natural resources, as defined under NRPA, resulting from the proposed 9.35 million cubic yard expansion of JRL.

## **PROJECT DESCRIPTION**

The Expansion will increase the solid waste footprint of the landfill by approximately 54 acres (from 68 acres to 122 acres). The total developed area of the Expansion including the solid waste footprint, landfill perimeter dikes, access roads, stormwater detention ponds, and relocated scales and administrative building is 74 acres (see Figure 1-2, Site Development Plan). The project will also require some vegetative clearing to install a relocated electrical line and fence. The overall waste disposal capacity will increase by 9.35 million cubic yards. The Expansion will ensure the State's long-term solid waste disposal needs for about 10 to 12 years after it is constructed. The Expansion will not exceed JRL's present permitted peak elevation of 390 feet-Mean Sea Level (ft-MSL) or exterior sideslope grades of 3 horizontal to 1 vertical.

The Expansion is designed as a secure landfill with double liners and leak detection and leachate collection capabilities. The design uses state-of-the-art gas management and odor control systems to manage gas and odors generated at the site. The Expansion will use the site access road from Route 16 and as much of the existing facility's infrastructure as possible. In general, the facility will be developed in six discrete cells, as needed, in which the wastes will be spread in lifts of 10 feet or less and compacted to create an above ground mound. Individual cells will be constructed sequentially, during the normal construction season, with each one providing approximately two years of operating capacity. The Expansion will also include approximately 7,800 lineal feet of perimeter access, and maintenance roads and ditches, three additional, and one expanded stormwater detention ponds, and the re-routing of approximately 3,700 lineal feet of utility/communication line. The Expansion will also involve the relocation of the existing administration building, the scales, and scale house, and removal of the leachate



loading station located adjacent to the administration building, the existing back up gas flares and blower located on the north end of the existing Landfill, and one of the existing site stormwater detention ponds.

The development of the Expansion will result in filling 2.04 acres of freshwater wetlands, and clearing in 0.10 acres of freshwater wetlands to relocate the perimeter fence and electrical line. A total of 14 vernal pools were identified within and adjacent to the expansion area, one of which meets the criteria to be considered a Significant Vernal Pool (SVP). The depression of this SVP will not be directly impacted by the Expansion, but clearing for the proposed relocated electrical line and fence will occur within the 250-foot critical terrestrial habitat surrounding it. This activity is covered by the PBR standards of the NRPA and PBR notification for this activity is included in Appendix B.

Of the 14 vernal pools identified, 12 meet the definition of a vernal pool as provided by the Corps' Maine GP. The remaining 2 pools were small depressions that were located in upland areas. Because these vernal pools were not located in jurisdictional wetlands, they are not regulated by the Corps. These 2 pools were natural, but did not contain enough egg masses to be considered SVPs. Six of the Corps regulated vernal pools will be directly impacted as part of the Expansion. The locations of the area of wetland and vernal pool impacts are described and shown in Attachment 9, their functions and values are set forth in Attachment 12. The 94 acres of vernal pool management area impacts, as defined by the Corps, associated with these 6 vernal pools are addressed in the Project's compensation plan.

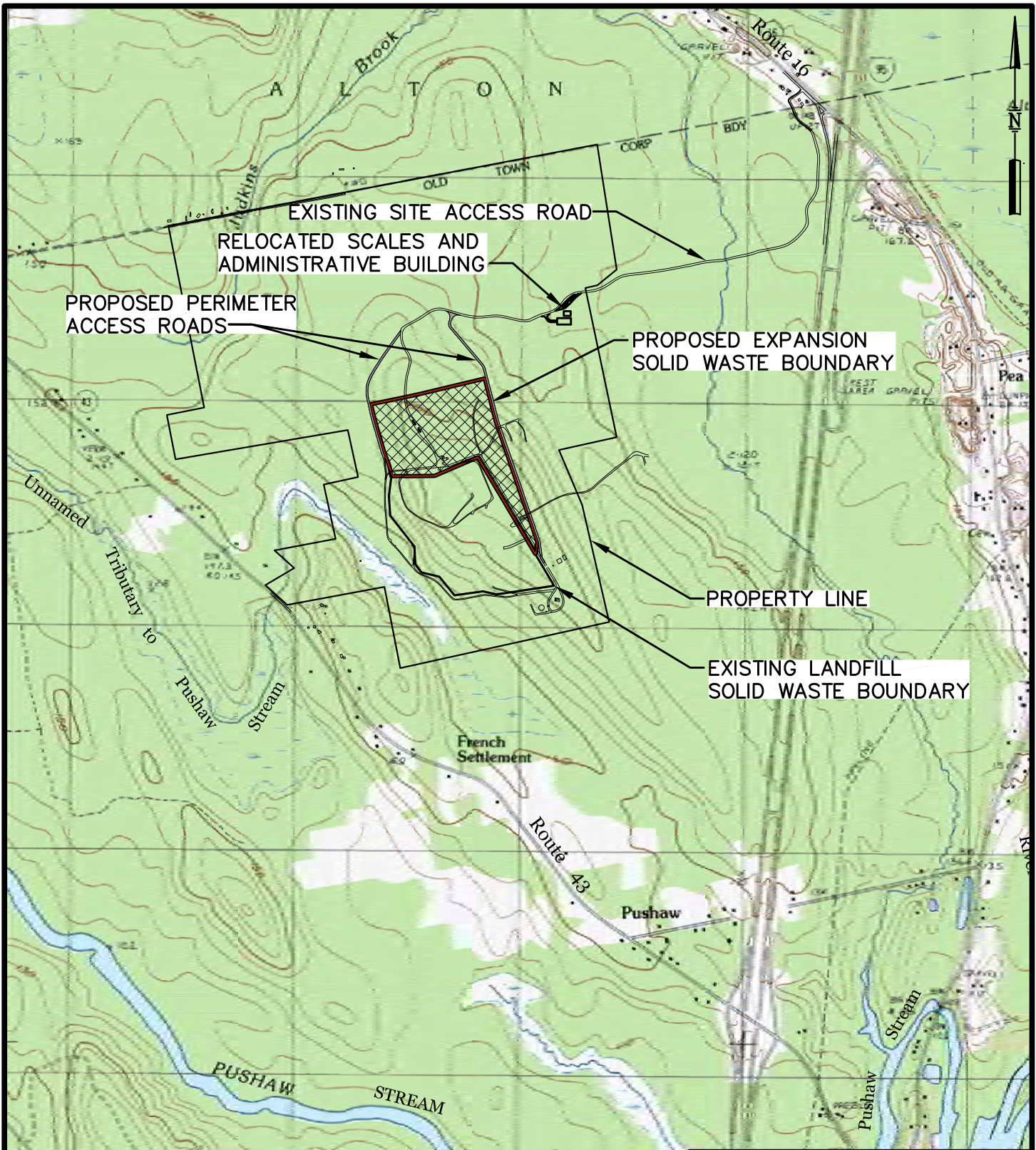
The compensation plan includes the on-site preservation of a contiguous 266 total acres and includes approximately 57 acres of wetlands and 25 documented vernal pools. A site of this size can function as an independent ecological unit that provides more than suitable compensation for the resources being impacted according to the Army Corps and MEDEP's guidelines. The compensation plan to mitigate for the wetland impacts is provided in Attachment 13.

Included in Appendix A is a visual assessment of the facility prepared by SMRT of Portland Maine. The assessment was completed in accordance with MDEP Rules Chapter 315 which

state that “An applicant is required to demonstrate that the proposed activity will not unreasonably interfere with existing scenic and aesthetic uses of a scenic resource” as defined. Chapter 31.5.D (Definitions) defines a scenic resource as “Public natural resources or public lands visited by the general public, in part for the use, observation, enjoyment, and appreciation of natural or cultural visual qualities.” The assessment confirmed that the Expansion will satisfy this standard.

During the development and operation of the Expansion, NEWSME will not (a) discharge any water pollutants, directly or indirectly, that affect the state classification of a surface water body, as specified in 38 M.R.S. § 464, (b) discharge any pollutant without obtaining a license to do so pursuant to 38 M.R.S. § 413, (c) degrade surface water quality by contributing to phosphorous concentrations in “water bodies most at risk from new development,” as defined in 06-096 CMR 502, or (d) cause the discharge of a nonpoint source of pollution to waters of the United States that violates any area-wide or State-wide water quality management plan that has been approved and is in compliance with section 319 of the Federal Water Pollution Control Act.

The Expansion design incorporates several features to protect the quality of surface water leaving the site. First, the secure nature of the Expansion design allows any precipitation that comes in contact with the waste to be collected and treated as leachate. Second, surface water management for the Expansion, which addresses both construction practices to protect surface waters, and clean surface water runoff from within the covered portion of the landfill and outside of the operational areas of the Expansion, was developed based on the four objectives outlined in the “Maine Erosion and Sediment Control BMPs” (BMP-MEDEP, 2003): effective drainage, flood prevention, erosion control, and water quality control. The BMPs incorporated in the design to protect water quality include stormwater detention basins design, low velocity ditches, and stone check dams within on-site ditches, as presented in the Erosion and Sediment Control Plan (see Attachment 8).



**NOTE:**

BASE MAP ADAPTED FROM 7.5 MIN  
USGS TOPOGRAPHIC QUADRANGLE  
OLD TOWN, MAINE-1988



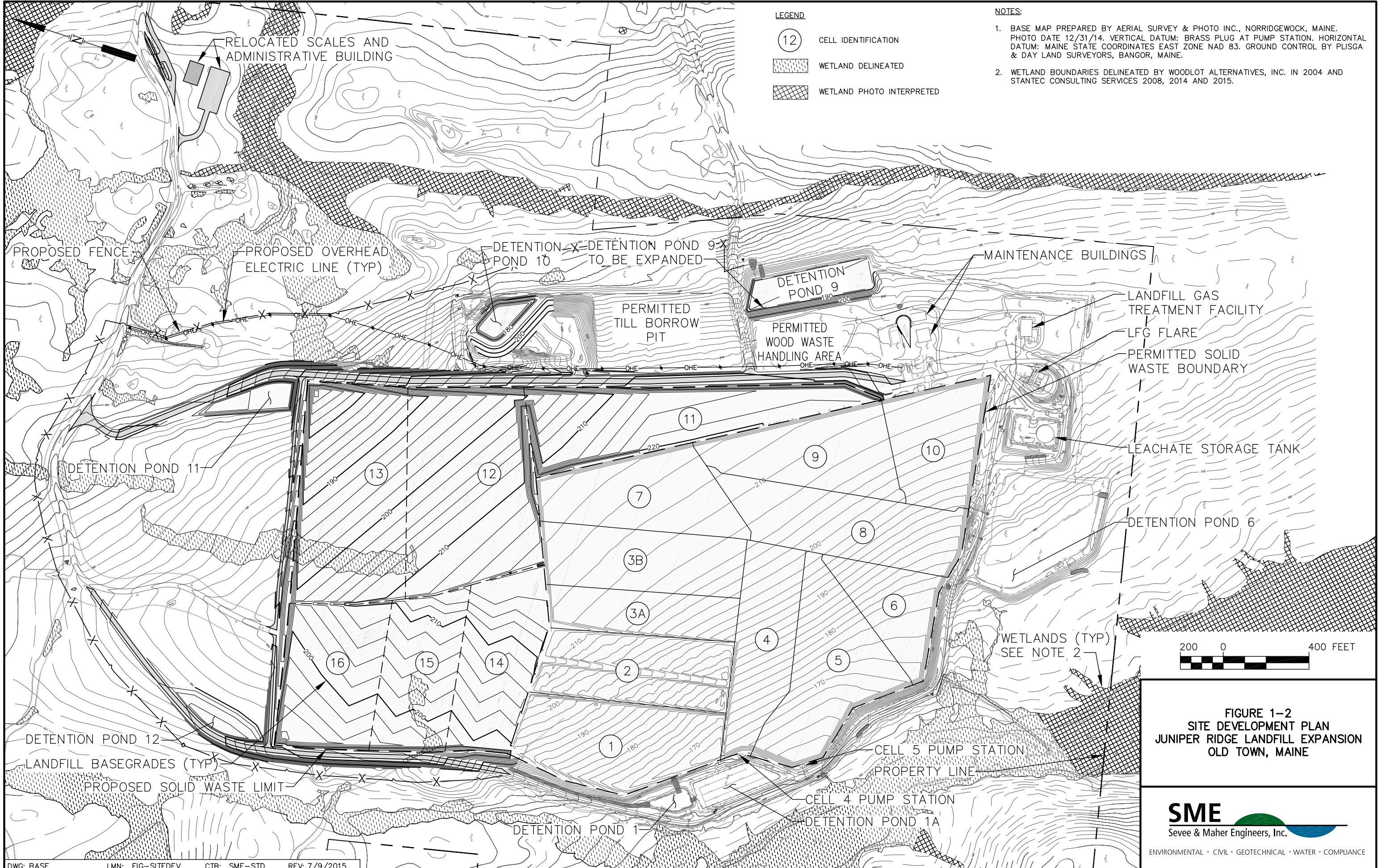
**FIGURE 1-1**  
**SITE LOCATION MAP**  
**JUNIPER RIDGE LANDFILL EXPANSION**  
**OLD TOWN, MAINE**



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE



I:\server\cfis\Casella\OldTownLandfillExpansion\9.35M\Expansion\Acad\Plans\BASE.dwg, 7/9/2015 1:44:16 PM, .pdf



**LEGEND**

	CELL IDENTIFICATION
	WETLAND DELINEATED
	WETLAND PHOTO INTERPRETED

- NOTES:**
1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 12/31/14. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY PLISGA & DAY LAND SURVEYORS, BANGOR, MAINE.
  2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.



**FIGURE 1-2**  
**SITE DEVELOPMENT PLAN**  
**JUNIPER RIDGE LANDFILL EXPANSION**  
**OLD TOWN, MAINE**

**SME**  
 Sevee & Maher Engineers, Inc.  
 ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 2  
ALTERNATIVES ANALYSIS**

As required by Chapter 310.9 of MEDEP's regulations pursuant to the NRPA, BGS and NEWSME have analyzed whether there exists a less environmentally damaging practicable alternative to the proposed alteration that meets the project purpose.

**PROJECT PURPOSE AND NEED**

The purposes of the Expansion are to: (1) satisfy long-term solid waste disposal needs of the State of Maine;<sup>2</sup> (2) utilize an environmentally suitable site that meets MEDEP's stringent landfill siting criteria; and (3) comply with the provisions of the facility's Operating Services Agreement (the OSA) between the State of Maine and NEWSME's ultimate parent company, Casella Waste Systems (CWS). The OSA is included in Appendix A-1 of Volume I of the Expansion application. These purposes are discussed in greater detail below.

Maine's Solid Waste Disposal Capacity and Needs. The Expansion received PBD from the MEDEP (#S-020700-W5-AU-N) on January 31, 2012. That decision was upheld on appeal to the Maine Board of Environmental Protection on July 19, 2012. The approval was for 9.35 million cubic yards of additional JRL capacity, the basis for the activity addressed by this application. In granting the PBD approval, the Commissioner determined, pursuant to 38 M.R.S. § 1310-AA.3.A, that the 9.35 million cubic yards of capacity meets Maine's long-term disposal capacity needs. The Maine Solid Waste Generation and Disposal Capacity Report: For Calendar Year 2013 (Capacity Report), the most recent such report, was issued in January of 2015 (MEDEP 2015). The Report provides a summary of the solid waste management activities in the State, including information on the State's solid waste landfills. The Report provides disposal capacity data for non-generator owned landfills in Maine, which include:

---

<sup>2</sup> As a solid waste disposal project, the Expansion constitutes a "health or safety" project under Chapter 310.3.K and 310.5.A(1)(a).



- Seven municipally or quasi-municipally-owned municipal solid waste landfills: Augusta, Bath, Brunswick, ecomaine, Lewiston, Presque Isle, and Tri-Community;
- One commercial landfill: Crossroads Landfill;
- Three State-owned landfills: JRL, Dolby Landfill in Millinocket, Carpenter Ridge Landfill (undeveloped); and,
- Two Municipal CDD Disposal Facilities.

In total, the disposal capacity consumed at these facilities in calendar year 2013 was 1,133,232 cubic yards, disposing of 1,096,622 tons of solid waste.<sup>3</sup> The reported overall remaining landfill capacity, in the State, as of December 31, 2013, was reported as being 13,659,875 cubic yards.

Municipal and quasi-municipal landfills serve a very limited geographic area so the overall need for disposal capacity within the State must consider this reality. As discussed in greater detail below, these landfills would be unable to serve the long term solid waste disposal needs for the solid waste proposed to be taken in the Expansion. If these wastes were instead sent to other facilities rather than a JRL expansion, assuming they were licensed to accept the materials, it would greatly reduce the available capacity of these facilities, and their ability to meet future disposal needs of the waste generators they serve.

Crossroads, owned by Waste Management and located in Norridgewock, Maine, is a commercial landfill that accepts similar materials to the JRL. According to the Capacity Report, it has capacity until about 2025, assuming its 2013 landfill consumption rate of about 296,022 cubic yards per year. If the design cubic yards for the Expansion (814,000 cubic yards/year) were disposed of at Crossroads it would reduce the life of that facility by 2.7 years for each year the waste is sent to that facility. Thus, the shift in disposal capacity from one facility to another only shortens the other facility's life, and does not provide additional long term disposal capacity afforded by the Expansion.

---

<sup>3</sup> Table 6 of the Capacity Report (MEDEP 2015)

Landfill Siting Criteria. In Section 1302 of the Solid Waste Management Act, the Legislature found that “environmentally suitable sites for waste disposal are in limited supply and represent a critical natural resource.” The MEDEP Solid Waste Management Rules (Rules) set forth an extensive and stringent list of siting criteria, the application of which results in the elimination of many potential facility locations. These siting criteria include the following:

Prohibitive Siting Criteria (Chapter 401). The following Prohibitive Siting Criteria (06-096 CMR 401.1.C.2) were established to protect public health, safety, and the environment. Variances from the following criteria are not permitted:

- The solid waste handling area must be at least 1,000 feet from Class AA or Class SA waters;
- The area within the solid waste boundary must not lie over or be within 300 feet of a significant sand and gravel aquifer;
- The area within the solid waste boundary must not be located within 200 feet of a fault that has had displacement in Holocene time; and,
- The facility must not be located on a coastal dune system, coastal wetland, or fragile mountain area.

Restrictive Siting Criteria (Chapter 401). The Restrictive Siting Criteria (06-096 CMR 401.1.C.3) apply to new landfills and expansions of existing landfills and primarily address required setbacks. Restrictive Siting Criteria include:

- A minimum 300-foot setback between the solid waste boundary and public roads;
- A minimum 300-foot setback between the solid waste boundary and the property boundary;
- A minimum 1,000-foot setback between the solid waste boundary and the nearest residence not owned by the applicant;
- A minimum 100-foot setback between the solid waste boundary and stratified sand and gravel deposits capable of providing sufficient water for domestic use or that would act as a contaminant migration pathway to a significant

groundwater aquifer, a significant sand and gravel aquifer, a fractured bedrock aquifer, or a surface water body;

- A minimum 100-foot setback between the waste handling area and any classified surface water;
- A minimum 1,000-foot setback between the solid waste boundary and any water supply spring at the time the PIR is filed with the MEDEP;
- A minimum 1,000-foot setback between the solid waste boundary and any water supply well not owned by the applicant at the time the PRI Report is filed with the MEDEP ;
- The area within the solid waste boundary must be located on soils that contain sufficient fines and clay-size particles to minimize infiltration of leachate. The in situ soils must have an undisturbed hydraulic conductivity less than or equal to  $1 \times 10^{-5}$  cm/sec;
- The landfill and leachate storage ponds must be located so that site characterization monitoring, detection monitoring, and assessment monitoring can be conducted (see 06-096 CMR 405 for detailed monitoring requirements);
- The waste handling area may not be located on a 100-year floodplain;
- A waste handling area may not overlie an unstable area; and,
- The facility site must not be located in, on, or over a significant wildlife habitat, as this term is defined in 38 M.R.S. § 480-B.

These landfill siting criteria define a specific geologic and environmental setting to protect the health, safety, and welfare of Maine's residents and the surrounding environment. Adherence to these siting criteria results in the selection of good landfill sites, but also significantly limits potential sites. Moreover, good landfill sites typically possess the same geologic and hydrogeologic conditions that promote the growth of hydrophytic vegetation; therefore, these areas often contain areas of delineable wetlands.

Operating Services Agreement (OSA). With respect to JRL in particular, authorization for State ownership was created pursuant to a Legislative Resolve enacted in 2003. In response to the Resolve, the State of Maine issued a Request for Proposals (RFP) to select an operator of the State-owned landfill. CWS submitted a proposal in response to the RFP and was subsequently

selected as the operator of the landfill. In February 2004, the State and CWS entered into an OSA for a term of thirty years, ending in 2034. Among multiple other obligations, under the terms of the OSA, CWS is required to apply for an Expansion permit, which was initially contemplated to be an expansion of ten million cubic yards. Thus, another purpose of the proposed Expansion is to provide the capacity necessary to meet the solid waste disposal needs of the current and anticipated customers of JRL for the remaining term of the OSA, as determined to be necessary by the State, in accordance with the terms of the OSA. At the end of 2014, JRL had 3,903,600 cubic yards of capacity remaining, of which 3,239,600 cubic yards is capacity that can be used prior to the development of the Expansion cells.<sup>4</sup> At the 2014 consumption rate of about 733,400 cubic yards/year, the first cell of the Expansion will need to be constructed in 2018 to be available for use in 2019. At projected fill rates, the Expansion will provide an additional 10 to 12 years of landfill life.

For the reasons stated above, the capacity proposed in the JRL Expansion application, and the timing of the application, are necessary to meet the future solid waste disposal needs of the State of Maine.

## **EXAMINATION OF ALTERNATIVES**

NEWSME/BGS examined practicable alternatives to the selected Project site and design, including development of alternate sites, a “no build” alternative, waste reduction/alternative waste management strategies, alternate designs on-site that would impact less wetland area. None of these alternatives were found to present a less environmentally damaging practicable alternative while meeting the project’s purpose and need.

---

<sup>4</sup> The difference, 664,000 cubic yards, is associated with the construction of a mechanically stabilized earthen berm (MSEB), which BGS and NEWSME do not plan to construct. Instead, this approved capacity will be obtained within the existing licensed footprint when the Expansion is constructed by filling against the existing sideslopes of the current landfill. Constructing the MSEB would require a larger expansion footprint and cause potentially more wetland impacts.

Alternate Greenfield Sites. The JRL Site was initially selected as the most suitable site to develop during the James River site search in the early 1990s, which identified 58 potential sites based primarily on favorable landfill soil conditions. A detailed screening of these 58 sites eliminated all but 18 of the sites from consideration because of surrounding land use, presence of streams and tributaries, potential wetland impacts, and proximity to ponds and lakes. On ten of these sites on-site investigations were completed to evaluate the site conditions in terms of soil conditions, and potential wetlands areas.<sup>5</sup>

After a complete analysis the JRL site was ultimately selected for landfill development because of the following characteristics: thick, dense, impermeable glacial till soils; upward seepage gradients in the lower elevations of the site; desirable siting and setback distances; sufficient parcel size to site a large landfill for long-term disposal capacity; limited areas of relatively low value wetlands; and site remoteness. That site search study also determined that the limiting features that precluded selection of the other sites initially identified by the study will not change in the future. Each of the other sites investigated had more wetlands that would have been impacted by landfill development than the development impacts associated with the original JRL. Additionally, the other sites had characteristics that would have restricted and/or prohibited their use based upon the MEDEP siting criteria described above and thus likely would not have met the project purpose.

In contrast to the alternative sites assessed during previous site searches, an intensive hydrogeologic investigation of the State-owned property surrounding the existing JRL indicates that its location is well-suited to landfill development and satisfies applicable siting and engineering criteria. Site investigations conducted to date at the JRL site include the installation of over 80 borings, 94 test pits, seismic refraction surveys (approximately 34,000 lineal feet of transects), photolineament mapping, bedrock outcrop mapping, in situ hydraulic conductivity testing, groundwater measurements (wet- and dry-season), groundwater age-dating, groundwater tracer test analysis, numerous bedrock pumping tests, and water quality sampling and analysis.

---

<sup>5</sup> The location of the 10 sites where on-site investigations were completed is documented in the 1991 Application for a Corps 404 permit prepared for James River Corporation, Old Town Mill by Sevee & Maher Engineers, Inc., with assistance from Woodlot Alternatives, Inc. (SME 1991).



Through the application of best engineering practices, it is possible to design an expansion of the existing JRL facility that both meets the long-term disposal capacity needs of the State and minimizes impacts to natural resources and the environment. Based on the findings of the previous site searches and the fact that developing a “greenfield” site of the same disposal capacity as the proposed Expansion would involve a larger landfill footprint for waste disposal (i.e., no airspace gained by piggy-backing the expansion onto the existing landfill), and additional new environmental impacts (i.e., to wetlands and other natural resources) to develop necessary infrastructure that is already in place at the JRL facility, NEWSME and BGS concluded that co-locating the Expansion project at an already-disturbed site is a significantly more practicable alternative than the development of a greenfield site elsewhere.

The proposed JRL Expansion is the only new or expanded landfill project that has a current PBD approval. Because PBD approval is a prerequisite for a new or expanded landfill application, the only new or expanded landfill project that can proceed in Maine at this time is the subject project.

Other alternatives to the expansion of the JRL considered included the following:

No Build/Do Nothing. The option to do nothing or not build an expansion at the existing JRL is not an option that meets the purpose of providing for the long-term waste disposal needs for the State of Maine as supported by the PBD discussed previously.

Use of Other Existing Waste Disposal Facilities. In 1989, the State of Maine imposed a ban on new commercial landfills and began closing municipal landfills throughout the State. There are 10 landfills currently operating in the State that accept the majority of Maine’s solid waste, including the ash and residues from the waste-to-energy incineration facilities.

- Five are municipally-owned and used primarily for disposal of solid waste generated within the specific community or the region: Bath, Brunswick, Augusta (Hatch Hill), Presque Isle, and Fort Fairfield (Tri-Community).
- Two are municipally-owned/operated by regional entities and are used primarily for the disposal of residues from two waste-to-energy plants. Mid-Maine Waste

Action Corporation sends ash to the Lewiston Landfill and the residue from the ecomaine waste-to-energy plant in Portland is sent to its ash landfill in Scarborough.

- One commercial landfill is privately-owned by a solid waste management company: Waste Management, Inc. owns and operates the Crossroads Landfill, located in Norridgewock.
- Two landfills, JRL and Dolby, are owned by the State of Maine. The Dolby landfill has very limited capacity of about 300,000 cubic yards and is only permitted to accept wastes from the Millinocket Mills and surrounding area. The State owns another landfill site outside of Lincoln (Carpenter Ridge Landfill), but that site remains undeveloped and would require legislative authorization and funding to develop.
- Three additional municipal disposal sites used primarily for CDD disposal.

The Capacity Report estimated the life for these facilities as of 2013 to be as shown on Table 2-1.

**TABLE 2-1  
REMAINING CAPACITY AND LIFE AT STATE SOLID WASTE LANDFILLS  
AS OF 2013**

Landfill	Remaining Capacity (cubic yards)		Remaining Life (years)
<b>Commercial Landfill</b>			
Crossroads	3,680,158		12.4
<b>Municipal MSW Landfills</b>			
Municipally Owned	4,372,452 total		19.8 to 74.1
<b>Ash Landfills</b>			
ecomaine	169,690		6.9
Lewiston	595,024		44.6
<b>Municipal CDD Disposal Facilities</b>			
Municipally Owned	261,851		4.5 to 9.6
<b>State-Owned Landfill</b>			
Juniper Ridge	4,637,000		7.2
<b>Notes:</b>			
1. Information presented is from Table 6 of the Capacity Report.			
2. Because the 2015 report reflects data two years old, the numbers listed in this table should be reduced by two additional years of disposal to reflect their current status.			

All of the remaining landfill capacities assume that the landfill space is consumed at the same filling rate as previously filled. As described above, transferring the projected 700,000 tons of

material (which equates to 814,000 cubic yards of landfill capacity) to be disposed annually at the Expansion to any of these facilities would significantly impair their operations and shorten their remaining life. Therefore, redirecting the waste that is projected to go to JRL to one of these other facilities is not a viable option.

On-Site Avoidance and Minimization. The site selection process conducted for the original siting of JRL, as described above, eliminated multiple alternative sites because they would have had greater natural resource impacts than an expansion at the existing JRL site, and thus those potential impacts have been avoided. The following discussion explains how the Expansion avoids and minimizes on-site impacts to wetlands and other protected nature resources to the maximum extent practicable.

Waste Reduction and Alternative Waste Management. The wastes received at the JRL and proposed for disposal at the Expansion can be categorized into three primary groups. These are: (1) residuals from processing and waste reduction facilities, whose chemical or physical properties limit the ability to recycle or reuse these materials in non-secure landfill settings. Examples of these materials would include incinerator ash and front end process residue from the Penobscot Energy Recovery Company, which incinerates municipal solid waste; (2) waste for which there currently do not exist feasible alternatives to totally recycle or reuse for the communities served by the JRL, such as construction and demolition debris for which limited processing capacity exists in the State; and, (3) special wastes, for which there are not environmentally sound waste management methods other than landfilling, such as sand blast grit.

Prior to their arrival at JRL, however, many of these waste streams will have been reduced by the waste generators by using waste management methods such as reuse, recycling, composting, processing, and incineration to the maximum extent practicable. For example, construction and demolition debris disposed of at JRL has had some metal and wood removed at transfer stations prior to disposal at JRL. By-products and residuals from waste processing facilities will also be used in daily cover operations at the Expansion thereby reducing the amount of landfill capacity consumed by non-waste materials (e.g., virgin soil) that are required by the Solid Waste Rules. These materials include incinerator ashes and construction and

demolition debris fines. Therefore, the need for Expansion's disposal capacity will continue into the future even with initiatives to find alternate means of managing solid waste in the State of Maine. For more information on how these waste streams are reduced to the maximum extent practicable, please see Section 3.14 of Volume I of the application

Modify Proposed Expansion Landfill Boundary/Design. The proposed JRL expansion landfill footprint was established after considering several layouts for the Expansion that would provide the required 9.35 million cubic yards of capacity within the suitable landfill development area (i.e., 108 acres), which was the basis for the MEDEP's Determination of Environmental Feasibility in April of 2007.<sup>6</sup> The selection of the final layout of the landfill expansion, including associated infrastructure (i.e., access roads, stormwater detention ponds, and the like), was an iterative process with several alternate landfill configurations evaluated prior to arriving at the proposed layout.

Alternative 1 (total wetland impact 4.5 acres) – This option consisted of a 70-acre landfill footprint as shown on Figure 2-1. An additional 20-plus acres of area would be needed for site infrastructure, such as roadways and stormwater ponds. This alternative was not selected because of the larger landfill footprint, the limited use of available capacity over the existing landfill area, and the greater wetland impact area.

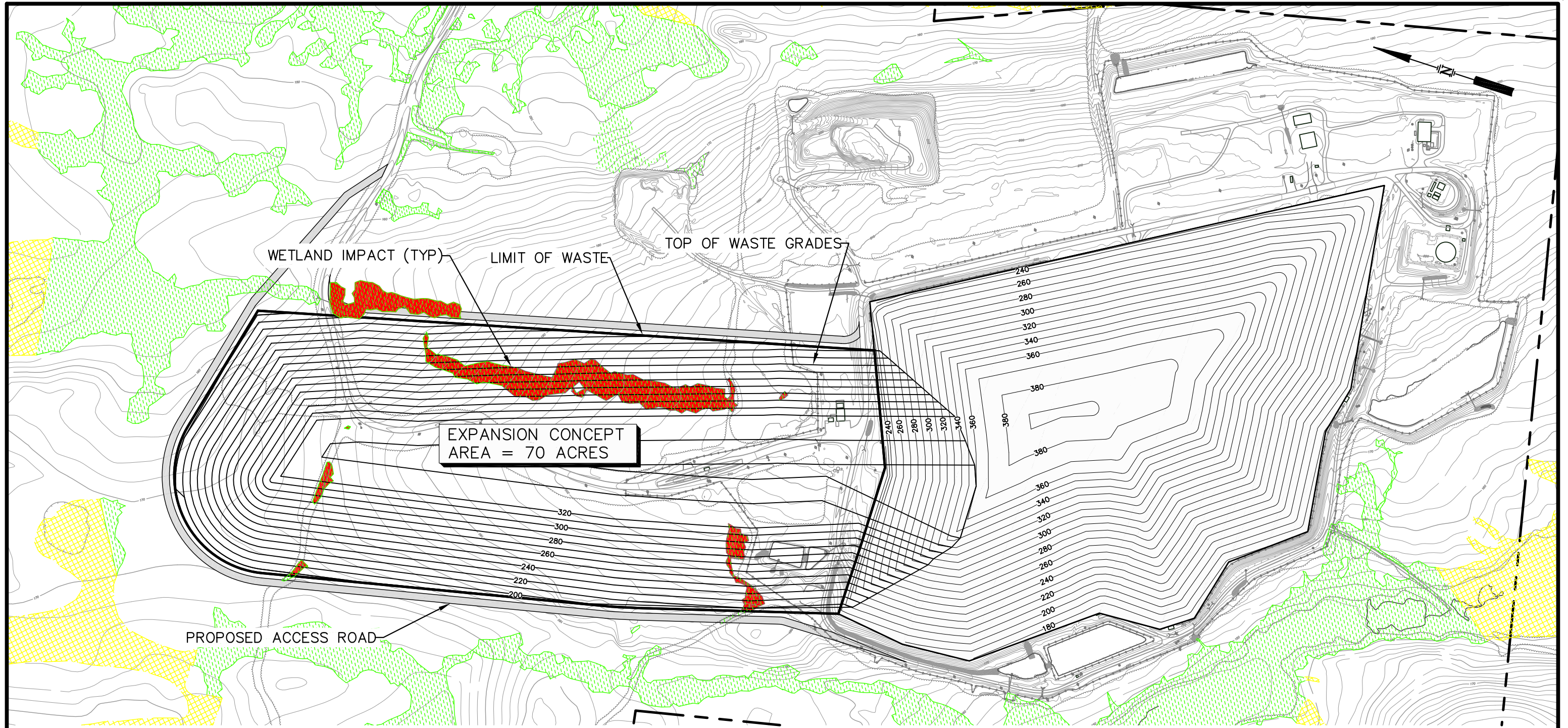
Alternative 2 (total wetland impact 3.4 acres) – This option consisted of a 60-acre landfill footprint as shown on Figure 2-2. An additional 20-plus acres of area would be needed for site infrastructure, such as roadways and stormwater ponds. This alternative was not selected because of the larger landfill footprint, and the greater wetland impact area.

Avoidance. The site roadways, office building, stormwater ponds have been located to either totally avoid or minimize wetland impacts. The Expansion design intentionally located the scales, administrative buildings, stormwater management ponds, and perimeter site access

---

<sup>6</sup> The 108 acres of suitable landfill area exists primarily to the north of the existing JRL. Other areas of the 780-acre site have landfill siting constraints due to setbacks, soil conditions, and wetland boundaries.





**NOTES:**

1. EXISTING GROUND CONTOURS FROM DECEMBER 31, 2014 AERIAL SURVEY PERFORMED BY AERIAL SURVEY AND PHOTO, INC. OF NORRIDGEWOCK, MAINE.
2. PROPERTY LINE LOCATIONS ARE A RESULT OF FIELD SURVEY PERFORMED BY HERRICK AND SALSBUURY, INC. LAND SURVEYORS, ELLSWORTH, MAINE FOR TRYTON TREE FARM PROJECT, PATTEN CORPORATION-DOWNEAST, OLD TOWN, MAINE, FEBRUARY 23, 1988, REVISED APRIL 7, 1988.
3. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.
4. WETLAND BOUNDARIES AND VERNAL POOL LOCATIONS ARE APPROXIMATE AND SHOULD NOT BE USED FOR DESIGN, QUANTITY, TAKE-OFFS, GRADES ETC.

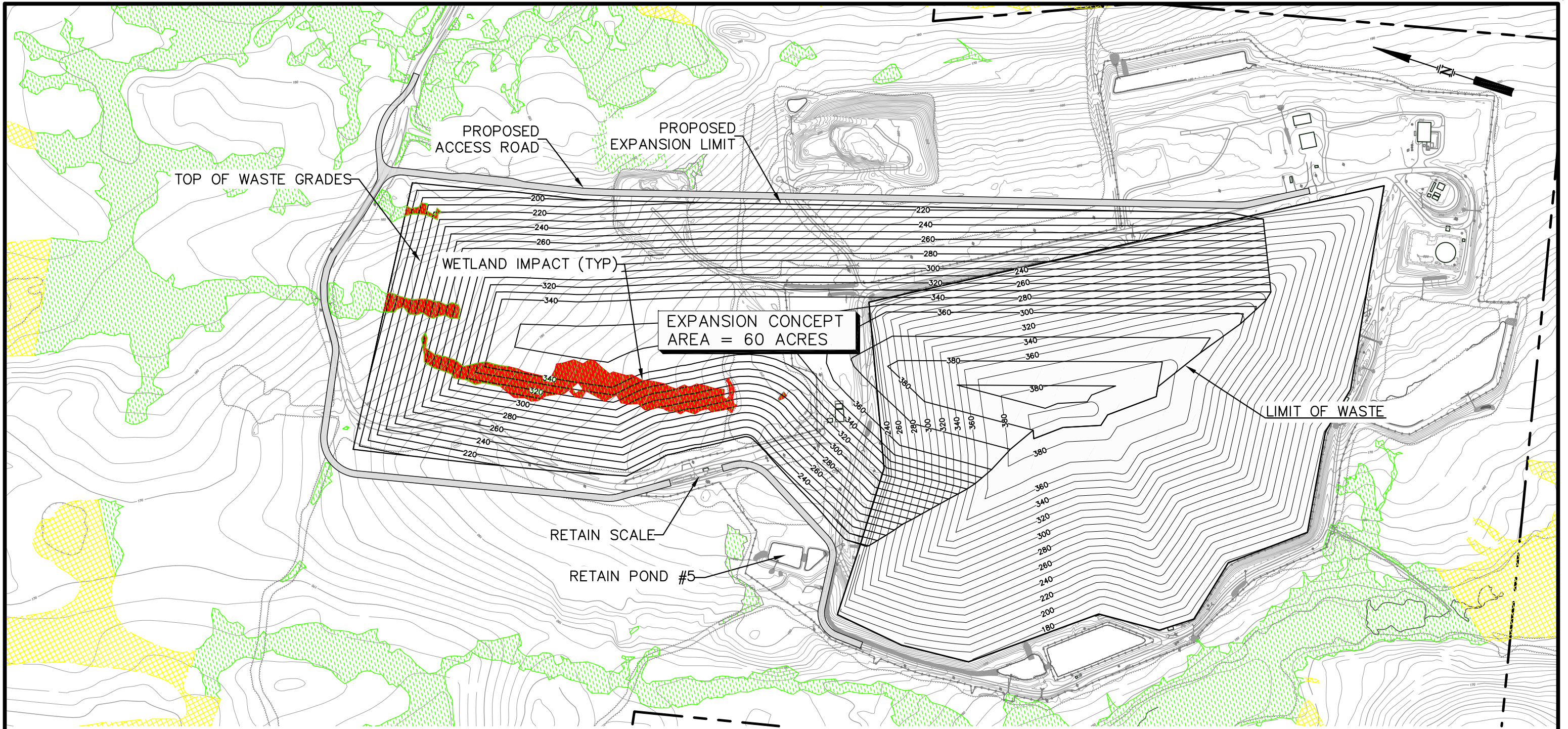
**LEGEND**

- WETLAND DELINEATED IN FIELD
- WETLAND PHOTO-INTERPRETED
- WETLAND IMPACT (4.5 ACRES)

**FIGURE 2-1**  
**DEVELOPMENT CONCEPT**  
**ALTERNATIVE 1**  
**JUNIPER RIDGE LANDFILL EXPANSION**  
**OLD TOWN, MAINE**

I:\server\cfs\Casella\OldTownLandfill\Expansion\9.35M\Expansion\Acad\Figures\Figures.dwg, 7/16/2015 8:22:09 AM, .pdf





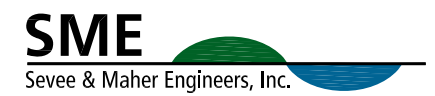
**NOTES:**

1. EXISTING GROUND CONTOURS FROM DECEMBER 31, 2014 AERIAL SURVEY PERFORMED BY AERIAL SURVEY AND PHOTO, INC. OF NORRIDGEWOCK, MAINE.
2. PROPERTY LINE LOCATIONS ARE A RESULT OF FIELD SURVEY PERFORMED BY HERRICK AND SALSBURY, INC. LAND SURVEYORS, ELLSWORTH, MAINE FOR TRYTON TREE FARM PROJECT, PATTEN CORPORATION-DOWNEAST, OLD TOWN, MAINE, FEBRUARY 23, 1988, REVISED APRIL 7, 1988.
3. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.
4. WETLAND BOUNDARIES AND VERNAL POOL LOCATIONS ARE APPROXIMATE AND SHOULD NOT BE USED FOR DESIGN, QUANTITY, TAKE-OFFS, GRADES ETC.

**LEGEND**

- WETLAND DELINEATED IN FIELD
- WETLAND PHOTO-INTERPRETED
- WETLAND IMPACT (3.4 ACRES)

**FIGURE 2-2  
DEVELOPMENT CONCEPT  
ALTERNATIVE 2  
JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

I:\server\cfs\Casella\OldTownLandfill\Expansion\9.35M\CY-Expansion\Acad\Figures\FIGURES.dwg, 7/10/2015 8:15:32 AM, .pdf



roads, which are not part of the landfill berms, in upland areas to avoid direct impacts to wetlands and vernal pools.

The development activities that impact wetlands are limited to the landfill cell construction and associated perimeter and perimeter berms. Cell development requires a large contiguous parcel for both the development of the disposal area and perimeter landfill berms. The presence of wetlands areas within the parcel results in unavoidable wetland impacts. Completely avoiding wetland impacts would mean reducing the cell size to an insufficient area and an inefficient layout (i.e., developing the Expansion in separate parcels around the wetlands that would not meet the disposal needs of the project). The unavoidable wetland impacts were minimized by locating the portion of the site access road needed to access the landfill cells on the exterior landfill berms. Therefore, multiple steps were taken on-site to avoid wetland impacts to the greatest extent practicable.

The presence and configuration of wetlands on the proposed site, the need for a large tract of land to meet the State's long-term waste disposal needs, and the fact that the physical characteristics that make a site suitable for a landfill also tend to make it suitable for wetlands necessitates impacting some wetland areas within the proposed Expansion.<sup>7</sup> To meet the project purpose and waste disposal needs, it is not possible to completely avoid wetland impacts or to develop the Expansion around existing wetlands. The Expansion must meet minimum size requirements to provide the capacity to serve the State's solid waste needs and must also meet the MEDEP's siting criteria, including maintaining setbacks (i.e., property line and other setbacks).

Minimization. The design of the Expansion also minimizes unavoidable wetland impacts to the maximum extent practicable. Development plans use the upland areas for a majority of the Expansion, and only directly impact wetlands that fall within the landfill footprint. The cell development plan includes building the cells vertically, as much as allowed by state rules, thereby reducing the horizontal footprint and minimizing wetland acreage impacted, while

---

<sup>7</sup> Good landfill sites typically possess the same geologic and hydrogeologic conditions that promote the growth of hydrophytic vegetation; therefore, these areas often contain areas of delineable wetlands. See U.S. Army Corps of Engineers 1987 Wetland Delineation Manual and the 2012 Regional Supplement to the Manual for the Northcentral and Northeast (version 2.0).

meeting the project's capacity needs. Furthermore, additional landfill capacity is obtained by using the "in-fill" areas between the slopes of the existing landfill cells and the proposed expansion cells. These in-fill areas allow for increasing the disposal capacity of the site up to the full height of the existing landfill (elevation 390 ft-MSL) without increasing the surface area footprint of the existing landfill. By maximizing the height of the cells, using in-fill areas, and developing as much upland acreage as possible, wetland impacts have been minimized to the maximum extent practicable. Clearing impacts to wetlands (associated with the relocated overhead electrical lines, and perimeter fence) is minimized by avoiding and/or crossing wetlands at narrow points where wetland impact is limited.

### **ALTERNATIVES ANALYSIS CONCLUSIONS**

The Expansion of JRL is the most practicable alternative available that provides both the necessary long-term disposal capacity for the State and involves the least amount of wetland impacts and other protected natural resources. Expansion of the existing landfill facility is consistent with the site's current land use and with the preference to expand existing environmentally suitable disposal sites, which Maine law acknowledges are in short supply, instead of developing "greenfield" sites. A no-build alternative is impractical because it does not meet the project needs and ongoing waste reduction/recycling efforts and existing landfills cannot accommodate or eliminate the future waste disposal needs of the State. In addition, once the site was selected, BGS and NEWSME designed the proposed landfill to avoid and minimize wetland impacts to the maximum extent practicable. BGS and NEWSME have chosen the least environmentally damaging practicable alternative to meet the long-term disposal needs of the State.

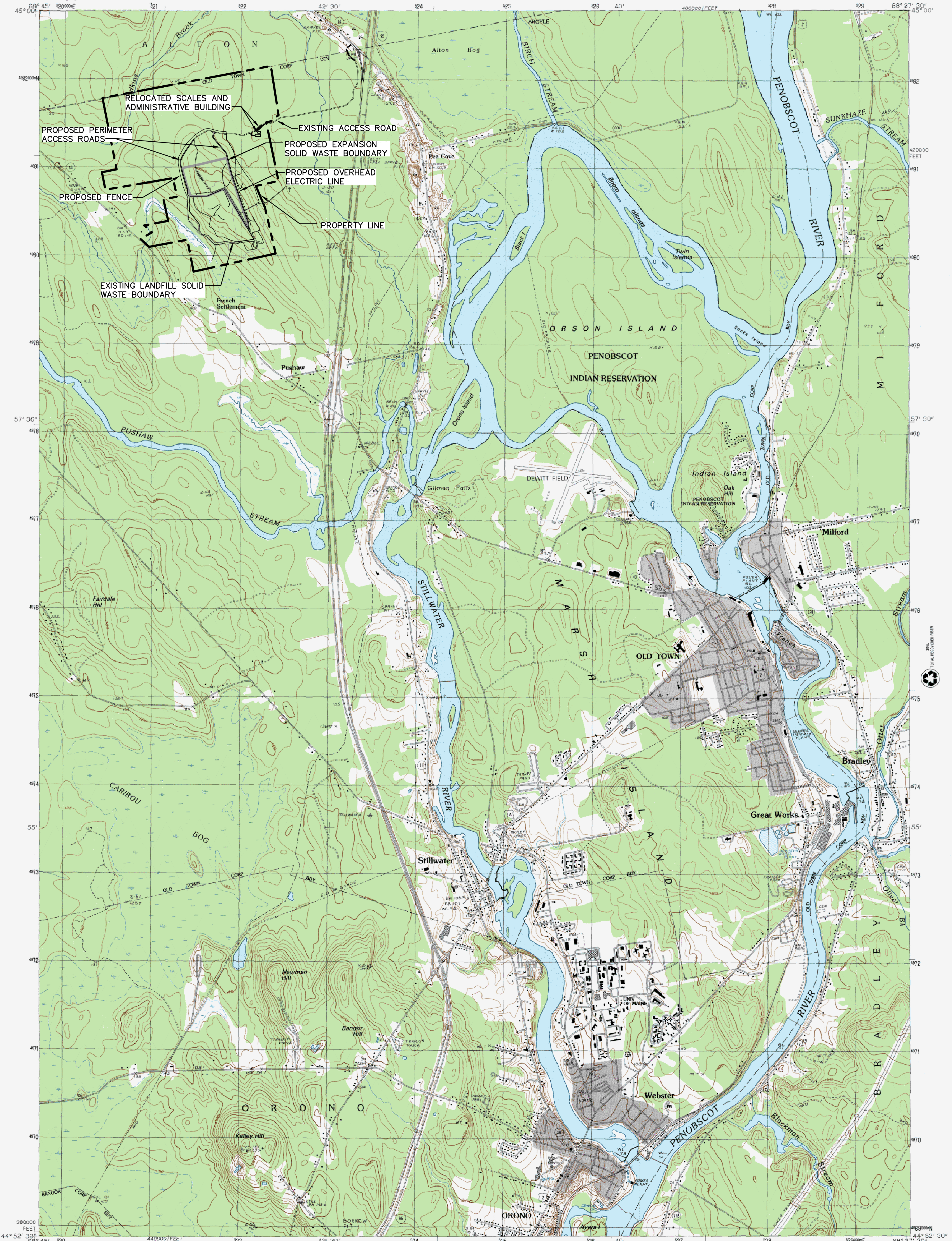
## **REFERENCES**

Maine Department of Environmental Protection, January 2015. Maine Solid Waste Generation and Disposal Capacity Report: for Calendar Year 2013: Report to the Joint Standing Committee on Environmental and Natural Resources 127<sup>th</sup> Legislature, First Session.

Sevee & Maher Engineers, Inc. (SME), 1991. James River Corporation Old Town Mill Secure Landfill Site Old Town Maine, Application for an Army Corp of Engineers SS404 Permit April 1991.

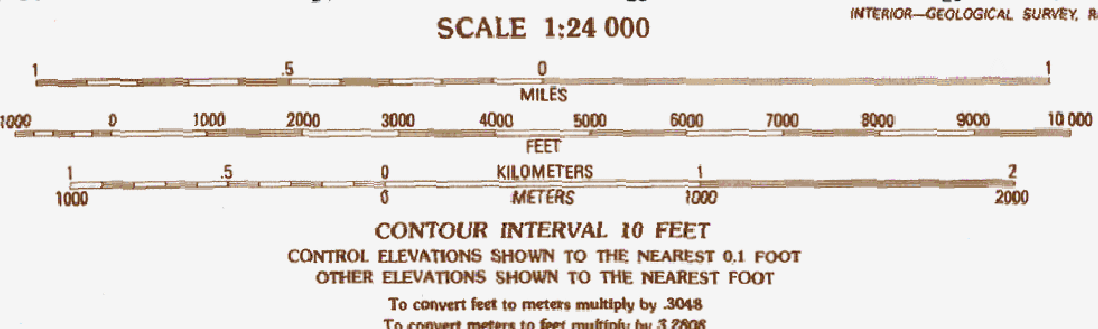
**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 3  
USGS MAP**





PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY DERIVED FROM IMAGERY DATED.....1981  
PHOTOINSPECTED USING IMAGERY TAKEN.....1998  
NO MAJOR CULTURE OR DRAINAGE CHANGES OBSERVED  
SURVEY CONTROL CURRENT AS OF.....1981  
BOUNDARIES, OTHER THAN CORPORATE, REVISED.....2000  
PROJECTION.....TRANSVERSE MERCATOR  
1000-METER UNIVERSAL TRANSVERSE MERCATOR GRID.....ZONE 19  
10,000-FOOT STATE GRID TICKS.....MAINE, EAST ZONE  
UTM GRID DECLINATION.....0°13' EAST  
2001 MAGNETIC NORTH DECLINATION.....18°00' WEST  
VERTICAL DATUM.....NATIONAL GEODETIC VERTICAL DATUM OF 1929  
HORIZONTAL DATUM.....NORTH AMERICAN DATUM OF 1927 (NAD 27)  
North American Datum of 1983 (NAD 83) is shown by dashed corner ticks. The values of the shift between NAD 27 and NAD 83 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software  
There may be private inholdings within the boundaries of Federal and State reservations shown on this map

**PROVISIONAL MAP**  
Produced from original manuscript drawings. Information shown as of date of photography.

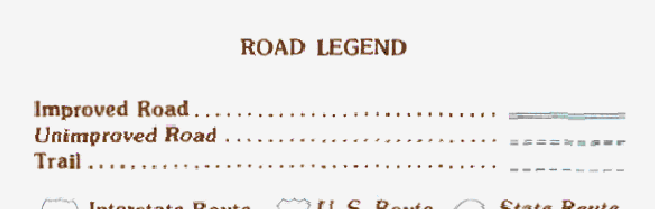


THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
FOR SALE BY U.S. GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

1	2	3	1 South Lagrange
2	3	4	2 Greenbush
3	4	5	3 Olamont
4	5	6	4 Pushaw Lake
5	6	7	5 Otter Chain Ponds
6	7	8	6 Bangor
7	8		7 Veazie
8			8 Chemo Pond

ADJOINING 7.5' QUADRANGLE NAMES



**OLD TOWN, MAINE**  
PROVISIONAL EDITION 1998

44068-116-TF-024



**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 4  
COLOR PHOTOS**

Color photos of the wetland impacted are contained in the Wetland Delineation Report (Attachment 9 Appendix B).

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 5  
OVERHEAD AND SITE VIEW DRAWINGS**

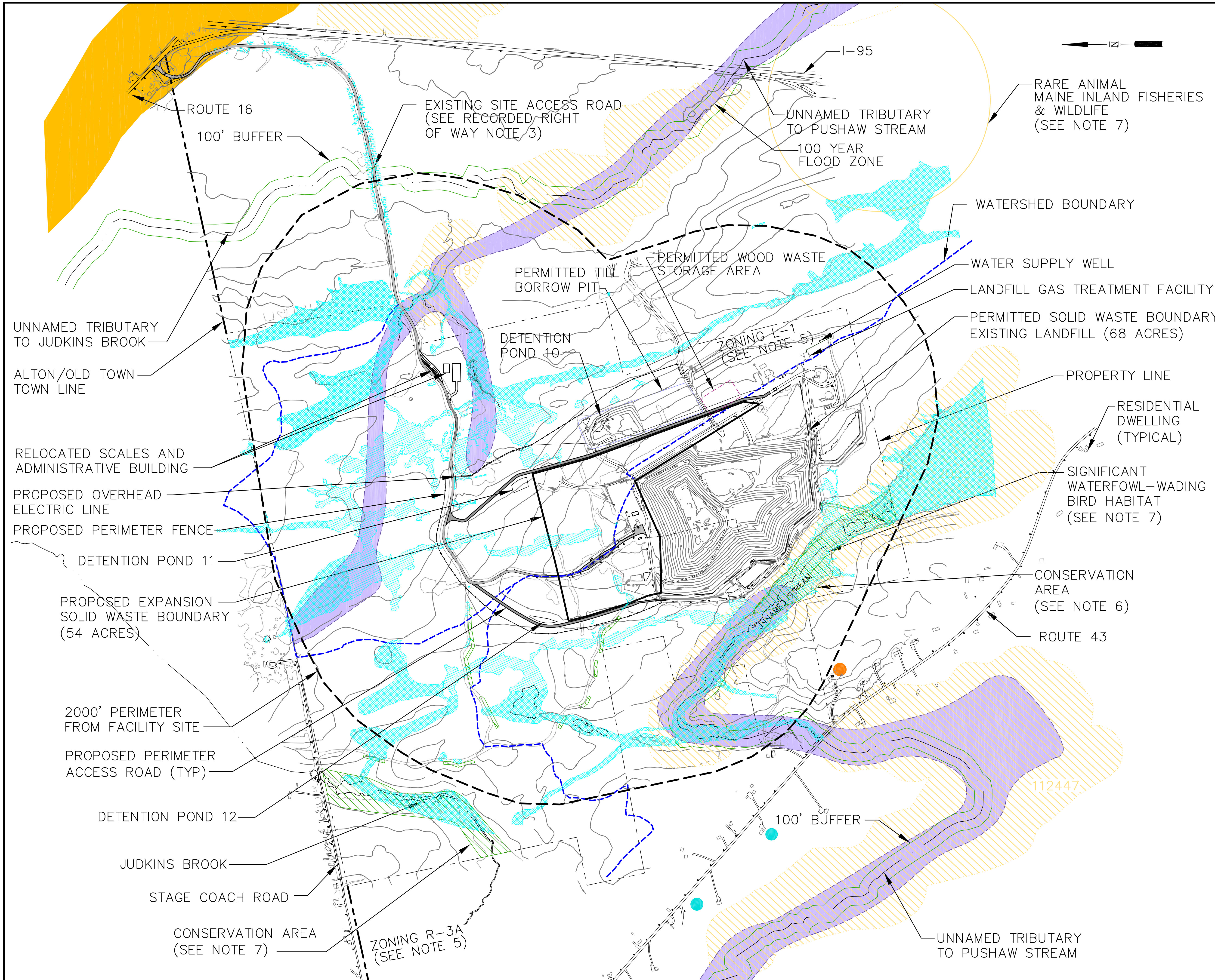
Overhead and side view plans drawn to scale show the project and the immediate surroundings in detail. These plans are required to provide the following information:

- The exact location of any lake, pond, river, stream, brook (perennial or intermittent) and/or wetland with the normal high-water line, low-water line, and/or wetland boundary shown. Show direction of flow for rivers, streams, and brooks. (See attached Site Surroundings Map.)
- The exact location and dimensions of the proposed activity on the lot or parcel, including areas of soil disturbance, fill, and vegetation removal and permanent structures. (See attached Drawing C-101 Site Development Plan.)
- The location and dimensions of all existing structures on the lot. Existing structures must all be shown on abutting lots, if they are located within 50 feet of any proposed structure. (See attached Drawing C-100 Existing Site Conditions Plan)
- The location and dimension of any proposed seasonal or temporary structures. (Not applicable.)
- The location and type of all proposed erosion control measures. (See attached Drawings C-107 Final Site Drainage Plan, and C-308 Sections and Details.)
- For piers, wharves, floats, etc., show the distance to abutting property lines from the proposed structure(s) and the distance to any existing structures (piers, wharves, etc.) on the abutting properties. (Not applicable.)
- Clearly identify resource boundaries and resource impact areas. (See Figure 1 in Attachment 9.)
- The location of all property lines and the names of all abutters. (See attached Tax Map of Property Abutters Figure)
- For work in tidal waters the mean high and mean low water lines should be shown on all plans. (Not applicable.)



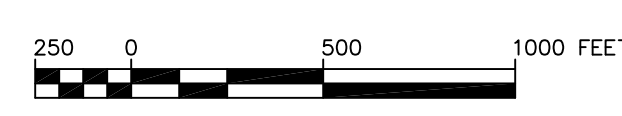
- The applicant's name, the scale of the drawings or plans, a north arrow, a legend, and the date. If drawings are not to scale they should be clearly dimensioned (see attached Drawings and Figures).
- Contour lines for significant regrading projects and large-scale projects that trigger pre-application meetings or that require a Site Location of Development Act Permit. (See attached Drawings C-100, C-101, and C-107)





- NOTES:**
- EXISTING GROUND CONTOURS FROM JULY 31, 2014 AND APRIL 17, 2004. AERIAL SURVEY PERFORMED BY AERIAL SURVEY AND PHOTO, INC. OF NORRIDGEWOCK, MAINE.
  - PROPERTY LINE LOCATIONS ARE A RESULT OF FIELD SURVEY PERFORMED BY HERRICK AND SALSBUARY, INC. LAND SURVEYORS, ELLSWORTH, MAINE FOR TRYTON TREE FARM PROJECT, PATTEN CORPORATION-DOWNEAST, OLD TOWN, MAINE, FEBRUARY 23, 1988, REVISED APRIL 7, 1988.
  - RIGHT OF WAY FOR ALL PURPOSES OVER THE ACCESS ROAD (50) FOOT WIDE, AS DESCRIBED IN EXHIBIT A TO QUITCLAIM DEED WITH COVENANT (BOOK 9188, PAGE 154, #3751 - PENOBSCOT REGISTRY OF DEEDS).
  - THERE ARE NO HISTORICAL OR ARCHAEOLOGICAL SITE IDENTIFIED WITHIN THE 2000 FOOT PERIMETER FROM THE FACILITY SITE.
  - ZONING, AS DESCRIBED BY THE CITY OF OLD TOWN CODE OF ORDINANCES, FOR PROPERTY OWNED BY THE STATE OF MAINE IS L-1 (LANDFILL ZONE). ALL OTHER PROPERTY SURROUNDING THE SITE IS R-3A (RESIDENCE AND FARMING).
  - CONSERVATION AREAS SHOWN ARE WETLAND AREAS PREVIOUSLY PRESERVED AS DESCRIBED IN DECLARATIONS OF COVENANTS AND RESTRICTIONS BY JAMES RIVER PAPER COMPANY (REVISED PLAN AUGUST 10, 1995). LOCATIONS ARE APPROXIMATE.
  - THERE ARE NO RARE BOTANICAL FEATURES DOCUMENTED WITHIN THE PROJECT AREA BASED UPON A REVIEW OF THE NATURAL AREAS PROGRAM'S BIOLOGICAL AND CONSERVATION DATA SYSTEMS FILES BY THE MAINE DEPARTMENT OF AGRICULTURE AND FORESTRY (OCTOBER 7, 2014 CORRESPONDENCE). THE MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE, WILDLIFE DIVISION, IDENTIFIED POTENTIAL SIGNIFICANT WATERFOWL - WADING BIRD HABITATS AND A WOOD TURTLE OBSERVATION BUFFER NEAR THE SITE (OCTOBER 6, 2014 AND NOVEMBER 5, 2014 CORRESPONDENCE). THERE HAVE BEEN NO OTHER UNIQUE AREAS IDENTIFIED WITHIN THE GENERAL VICINITY OF THE SITE.
  - THERE ARE NO INDUSTRIAL OR PUBLIC WATER SUPPLY WELLS, PUBLIC WATER SUPPLY WATERSHED AREAS, WELLHEAD PROTECTION AREAS OR SIGNIFICANT SAND AND GRAVEL AQUIFERS LOCATED WITHIN 2000 FEET OF THE PROPOSED EXPANSION. ALL RESIDENTIAL DWELLINGS SHOWN ARE ASSUMED TO HAVE A DOMESTIC WATER SUPPLY WELL.

- LEGEND**
- MAINE INLAND FISHERIES AND WILDLIFE SIGNIFICANT WILDLIFE HABITAT SOURCE: NOVEMBER 5, 2014 CORRESPONDENCE WITH THE MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE
  - 100 YEAR FLOOD ZONE (FEMA OLD TOWN QUAD PANEL NUMBER 2301120002A DATED APRIL 1978)
  - STANTEC WETLANDS (2004, 2008, 2014 AND 2015 DELINEATION)
  - GROUNDWATER YIELDS GREATER THAN 10 GPM SIGNIFICANT SAND & GRAVEL AQUIFER MGS SURVEY OPEN FILE 08-07 BY TOLMAN AND LANCTOT, 2008.
  - CONSERVATION AREAS
  - YIELD BETWEEN 5 AND 10 GALLONS PER MINUTE
  - YIELD BETWEEN 10 AND 15 GALLONS PER MINUTE
- MAPPING SOURCE: MAINE GEOLOGICAL SURVEY WATER WELL DATABASE, DATED AUGUST 28, 2014.



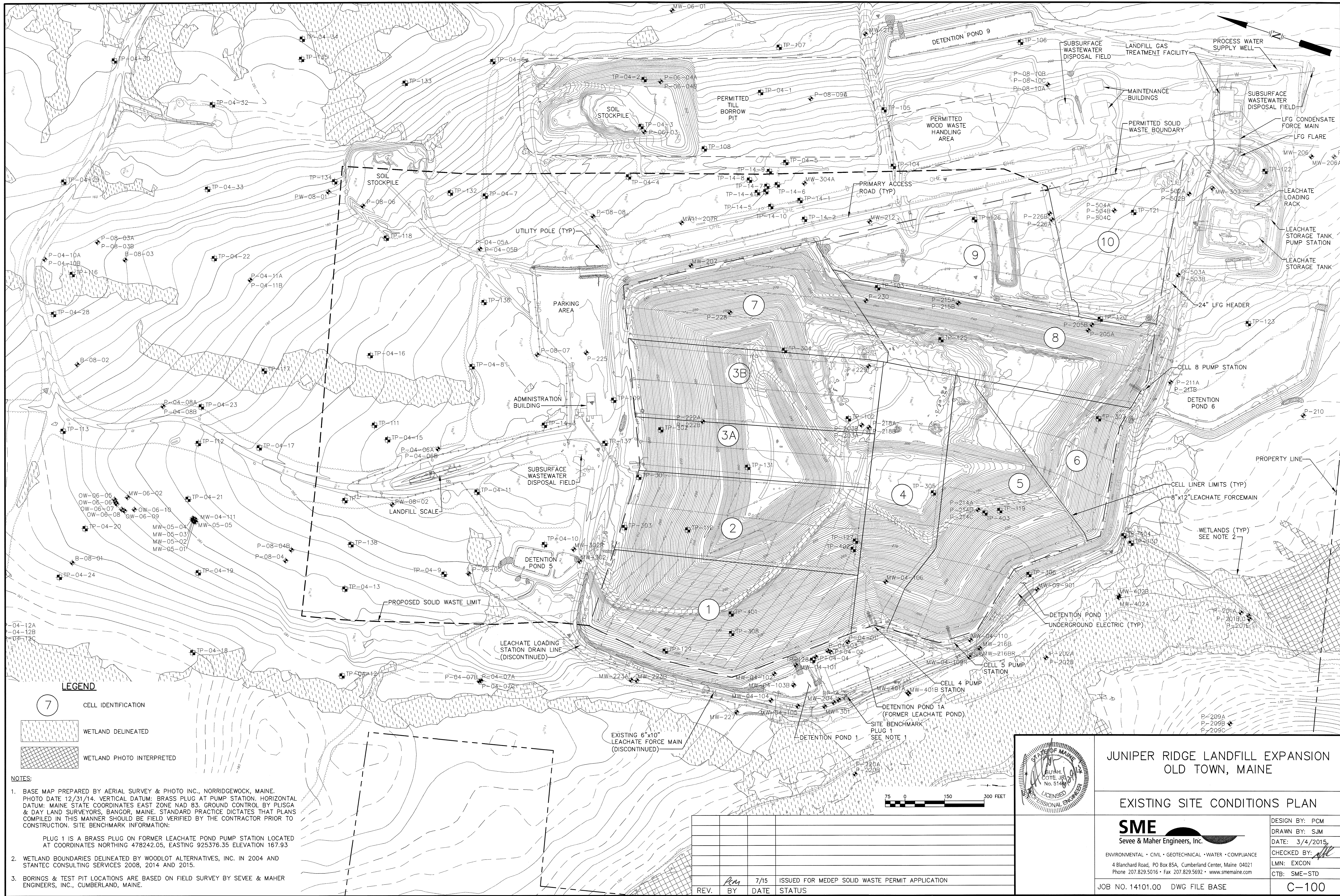
**SITE SURROUNDINGS MAP  
JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**

**SME**  
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smemaine.com





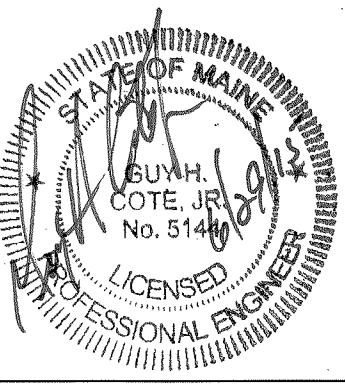
**LEGEND**

- 7 CELL IDENTIFICATION
- WETLAND DELINEATED
- WETLAND PHOTO INTERPRETED

**NOTES:**

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 12/31/14. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY PLUSGA & DAY LAND SURVEYORS, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLANS COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SITE BENCHMARK INFORMATION:  
 PLUG 1 IS A BRASS PLUG ON FORMER LEACHATE POND PUMP STATION LOCATED AT COORDINATES NORTHING 478242.05, EASTING 925376.35 ELEVATION 167.93
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.
3. BORINGS & TEST PIT LOCATIONS ARE BASED ON FIELD SURVEY BY SEVEE & MAHER ENGINEERS, INC., CUMBERLAND, MAINE.

REV.	BY	DATE	STATUS
	RM	7/15	ISSUED FOR MEDEP SOLID WASTE PERMIT APPLICATION



**JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**

**EXISTING SITE CONDITIONS PLAN**

**SME**  
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smemaine.com

DESIGN BY: PCM  
DRAWN BY: SJM  
DATE: 3/4/2015  
CHECKED BY: LMN  
LMN: EXCON  
CTB: SME-STD

JOB NO. 14101.00 DWG FILE BASE  
**C-100**





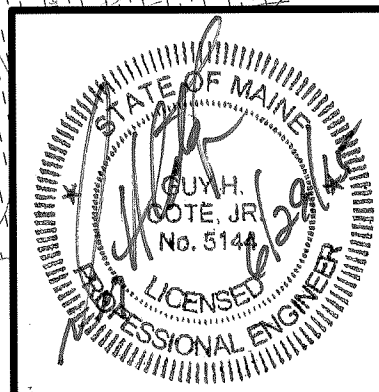
**LEGEND**

- 7 CELL IDENTIFICATION
- WETLAND DELINEATED
- WETLAND PHOTO INTERPRETED

**NOTES:**

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 12/31/14. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY PLISGA & DAY LAND SURVEYORS, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLANS COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SITE BENCHMARK INFORMATION:  
 PLUG 1 IS A BRASS PLUG ON FORMER LEACHATE POND PUMP STATION LOCATED AT COORDINATES NORTHING 478242.05, EASTING 925376.35 ELEVATION 167.93
2. EXISTING PERMITTED LANDFILL BASE GRADES REPRESENT THE TOP OF THE 12-INCH UNDERDRAIN LAYER.
3. PROPOSED EXPANSION GRADES WITHIN THE PROPOSED SOLID WASTE LIMIT REPRESENT BASE GRADES PRIOR TO CONSTRUCTION OF THE LINER SYSTEM. THE PROPOSED GRADES SHOWN OUTSIDE THE PROPOSED SOLID WASTE LIMIT ARE THE SUBBASE ROAD GRADES.
4. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.
5. BORINGS & TEST PIT LOCATIONS ARE APPROXIMATE AND BASED ON FIELD SURVEY BY SEVEE & MAHER ENGINEERS, INC., CUMBERLAND, MAINE.

REV.	BY	DATE	STATUS
	PCM	7/15	ISSUED FOR MEDEP SOLID WASTE PERMIT APPLICATION



**JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**

**SITE DEVELOPMENT PLAN**

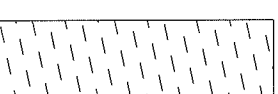

**SME**  
Sevee & Maher Engineers, Inc.  
ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smaine.com

DESIGN BY: PCM  
DRAWN BY: SJM  
DATE: 3/4/2015  
CHECKED BY: [Signature]  
LMN: SITEDEV  
CTB: SME-STD



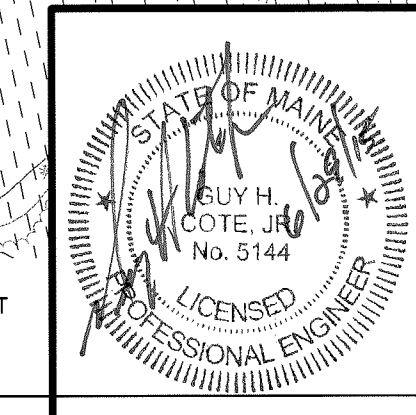
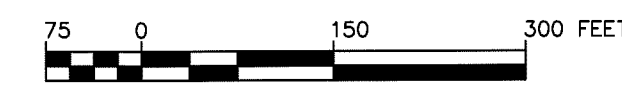


**LEGEND**

 WETLAND DELINEATED  
 WETLAND PHOTO INTERPRETED

- NOTES:**
1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 12/31/14. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY PLISGA & DAY LAND SURVEYORS, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLANS COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SITE BENCHMARK INFORMATION:  
 PLUG 1 IS A BRASS PLUG ON FORMER LEACHATE POND PUMP STATION LOCATED AT COORDINATES NORTING 478242.05, EASTING 925376.35 ELEVATION 167.93
  2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.
  3. PERMITTED LANDFILL FINAL WASTE GRADES REPRESENT GRADES PRIOR TO CONSTRUCTION OF FINAL COVER SYSTEM.
  4. PROPOSED FINAL WASTE GRADES REPRESENT GRADES PRIOR TO CONSTRUCTION OF FINAL COVER SYSTEM.
  5. CULVERT SCHEDULE IS SHOWN ON DRAWING C-306. CULVERT SCHEDULE INCLUDES CULVERTS FOR DETENTION BASIN OUTLET STRUCTURES.

REV.	BY	DATE	STATUS
	PCM	7/15	ISSUED FOR MEDEP SOLID WASTE PERMIT APPLICATION



**JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**

**FINAL SITE DRAINAGE PLAN**

**SME**  
Sevee & Maher Engineers, Inc.

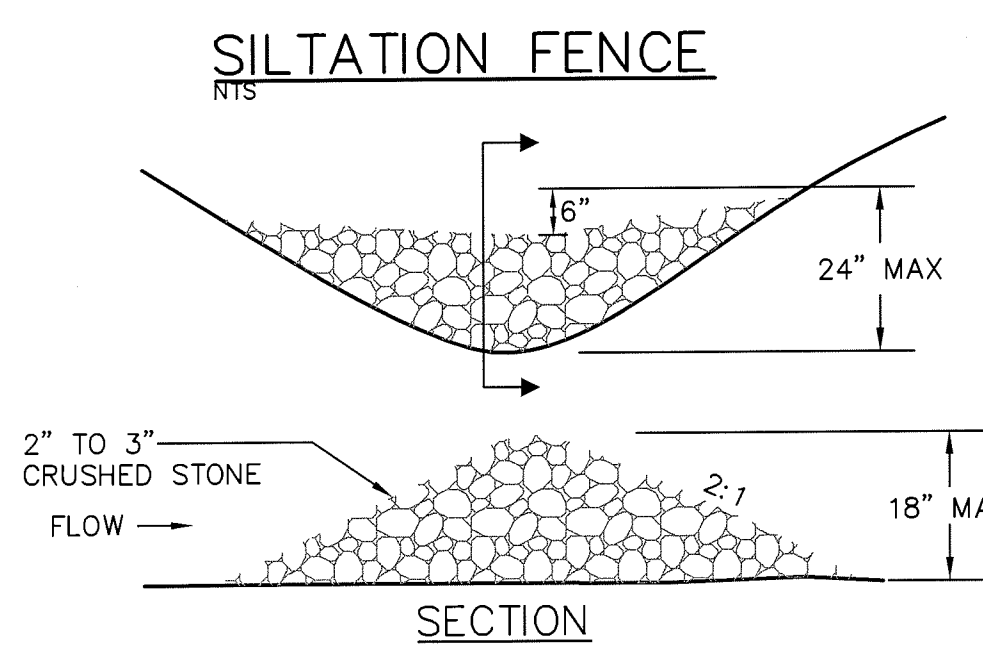
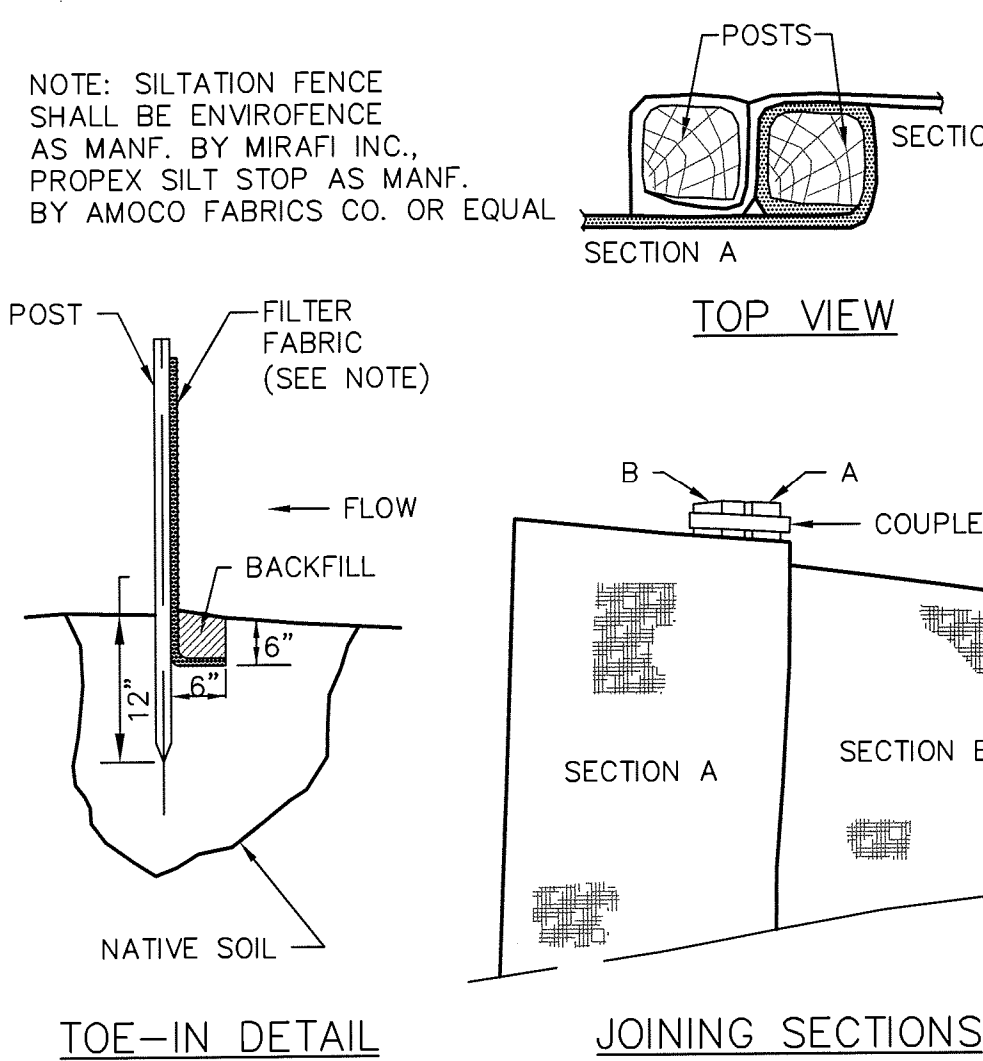
ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smaine.com

DESIGN BY: PCM  
DRAWN BY: SJM  
DATE: 3/4/2015  
CHECKED BY: [Signature]  
LMN: FINAL-DRAIN  
CTB: SME-STD

JOB NO. 14101.00 DWG FILE BASE **C-107**

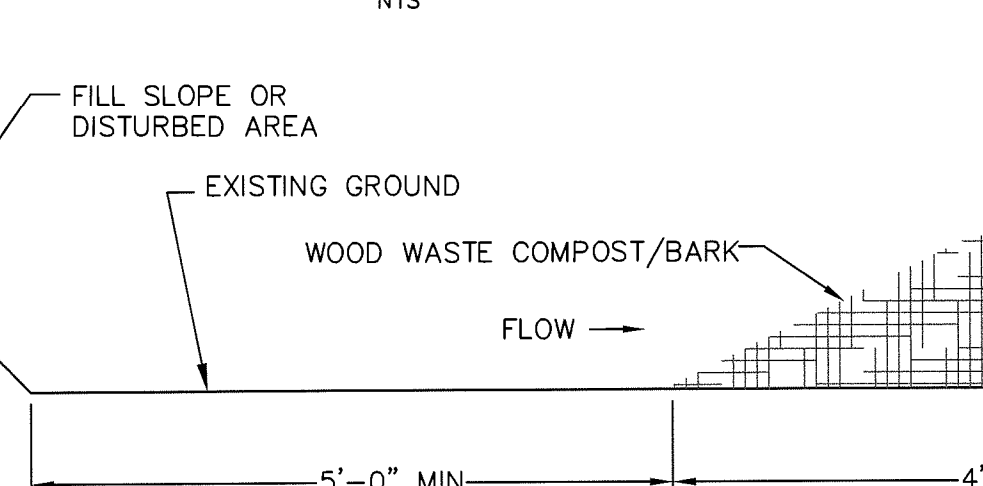


NOTE: SILTATION FENCE SHALL BE ENVIRONMENT AS MANF. BY MIRAFI INC., PROPEX SILT STOP AS MANF. BY AMOCO FABRICS CO. OR EQUAL.



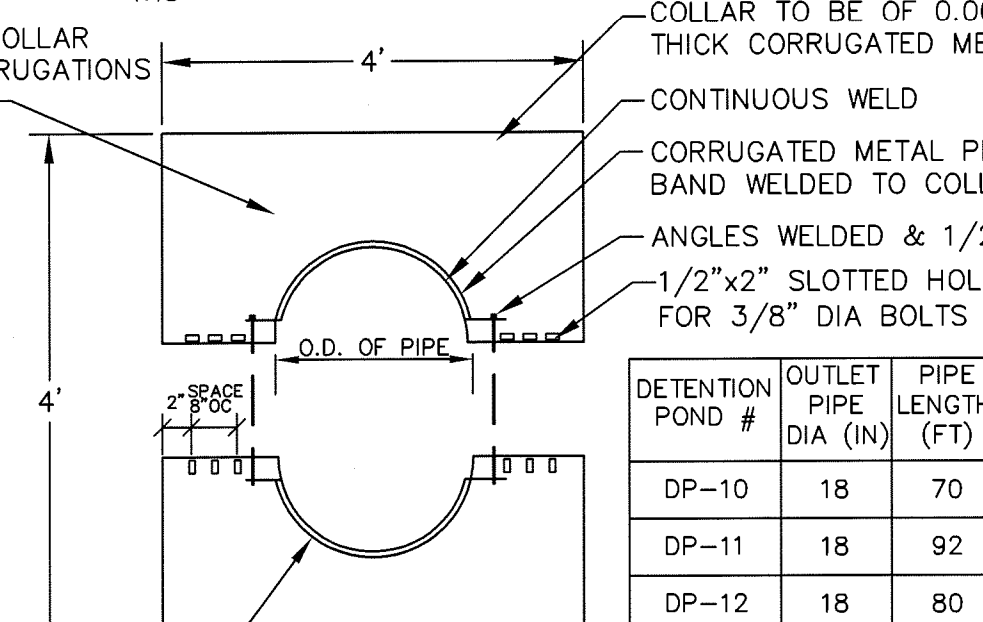
L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

SPACING BETWEEN CHECK DAMS (S <sub>0</sub> ) (FT)	L (FT)
0.020	75
0.030	50
0.040	40
0.050	30
0.080	20
0.100	10



NOTE: BARK MULCH SEDIMENT BARRIERS MAY BE USED AS AN ALTERNATE TO SILT FENCE WHEN APPROVED BY THE ENGINEER.

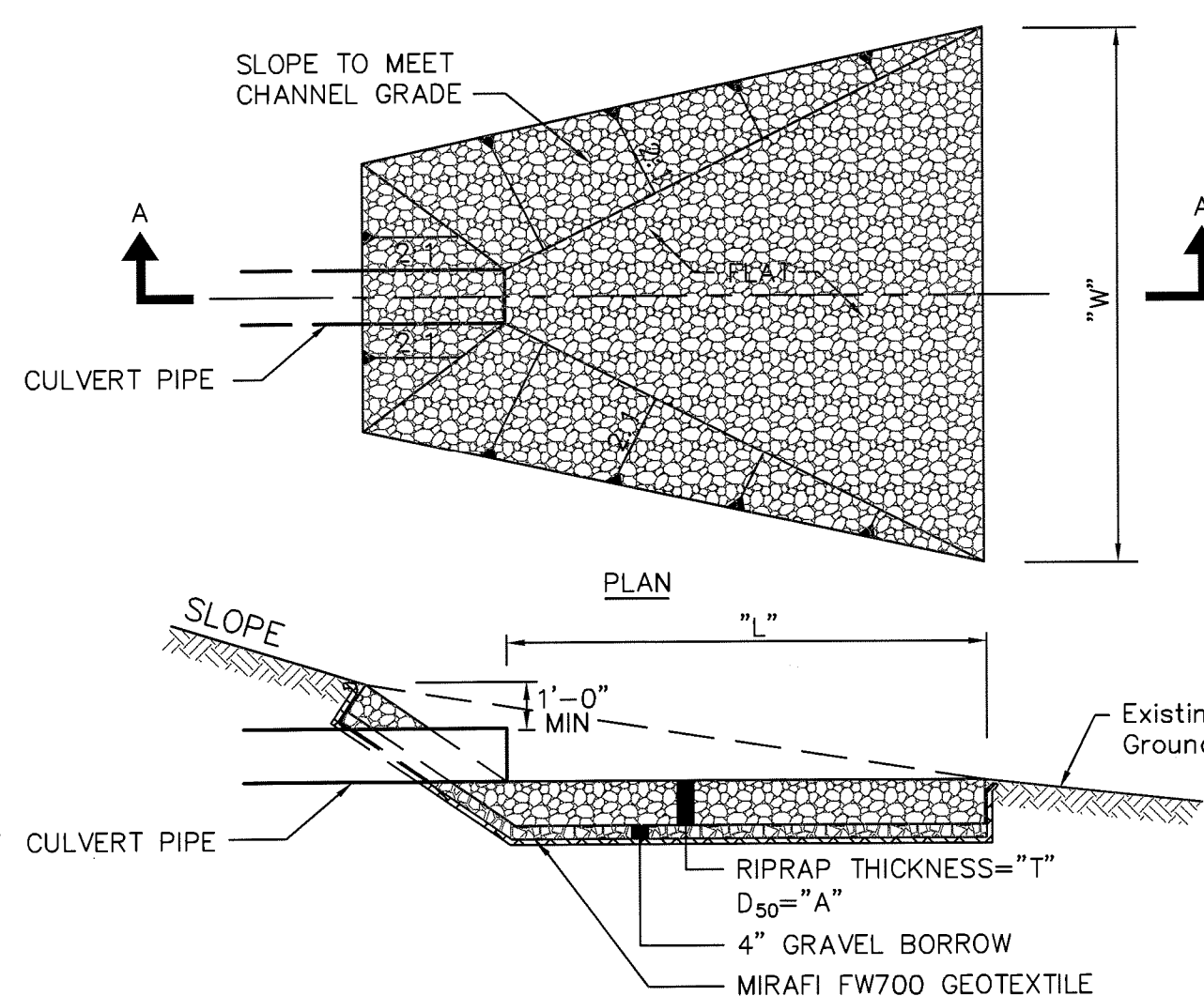
**BARK MULCH SEDIMENT BARRIER**



DETENTION POND #	OUTLET PIPE DIA (IN)	PIPE LENGTH (FT)	SATURATED LENGTH (FT)	# OF COLLARS	SPACING (FT)
DP-10	18	70	32	2	11
DP-11	18	92	30	2	10
DP-12	18	80	31	2	10

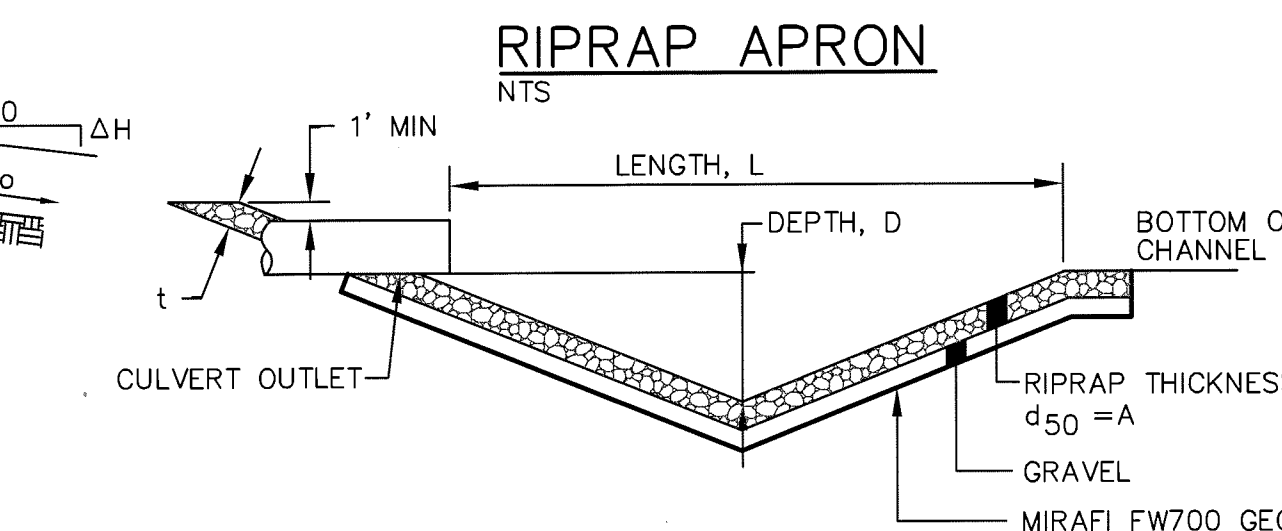
- NOTES:
- UNASSEMBLED COLLAR SHALL BE MARKED BY PAINTING OR TAGGING TO IDENTIFY MATCHING PARTS.
  - THE LAP BETWEEN THE TWO HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND SHALL BE CAULKED WITH ASPHALT MASTIC AT TIME OF INSTALLATION.
  - RIPLEY'S DAM BY MCRIP MANUFACTURING MAY BE USED WITH ENGINEERS APPROVAL PROVIDING THAT LENGTH AND WIDTH OF COLLAR IS EQUAL TO OR GREATER THAN THAT SPECIFIED IN THE DETAIL.

**ANTI-SEEP COLLAR**



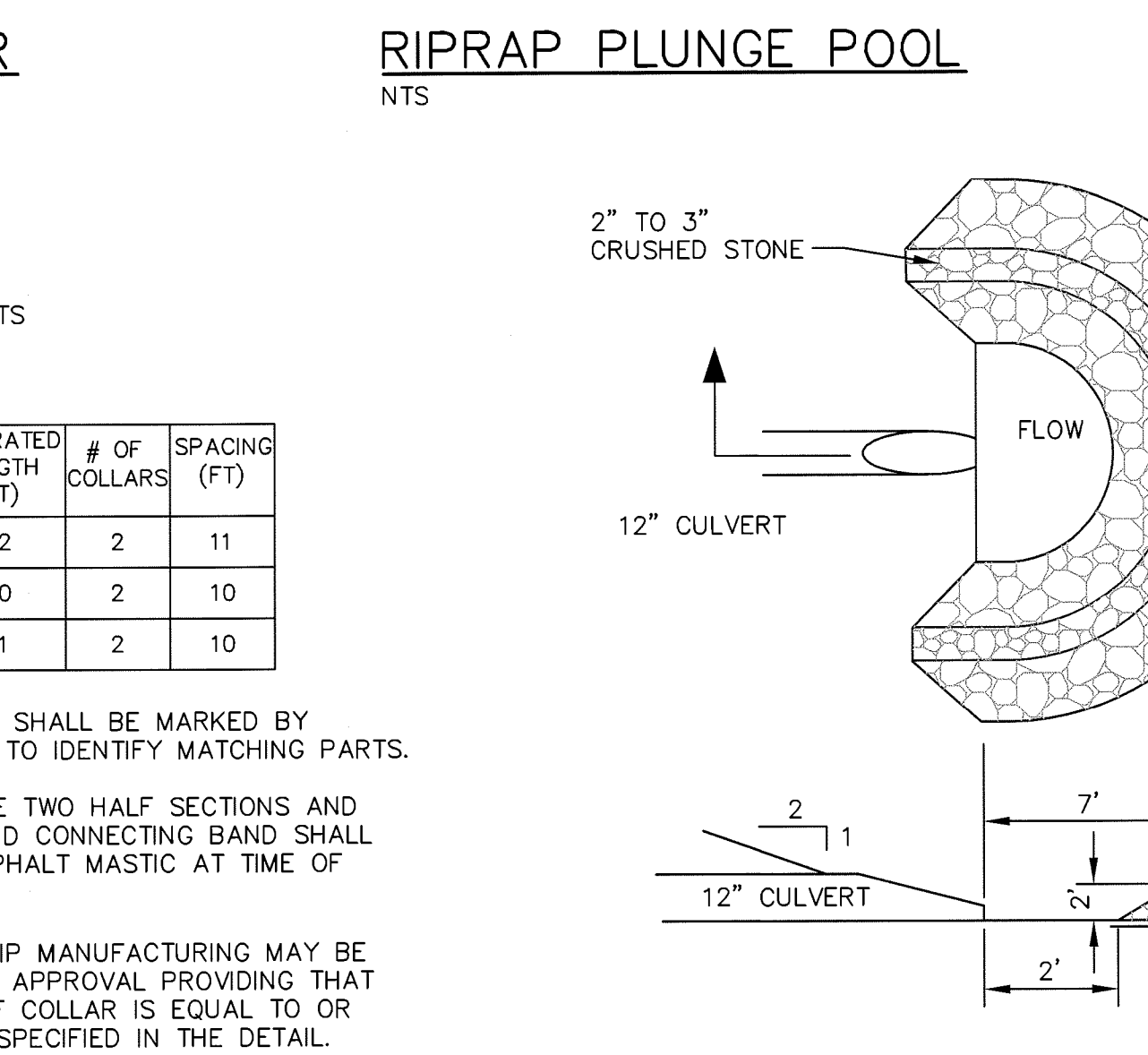
SECTION A-A

CULVERT OUTLET	L (FT)	W (FT)	A (d <sub>50</sub> ) IN.	t (IN)
2BA	18	20	8	18
2BB	18	20	6	14
4BA	12	14	5	12
4BB	12	14	5	12
4F	10	12	4	9
4G	12	14	5	12
4HA	10	12	4	9
4HB	10	12	4	9
4I	18	20	10	23
4IA	10	12	4	9
4JA	18	20	10	23
4JB	12	14	5	12
4JC	12	14	5	12
4K	12	14	5	12
4L	14	16	8	18
4N	10	12	4	9



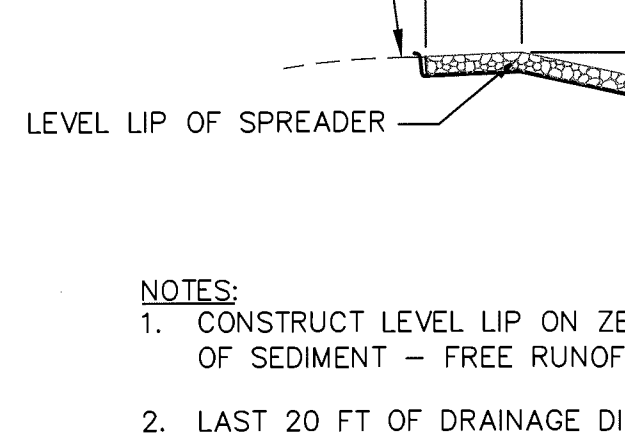
RIPRAP PLUNGE POOL

CULVERT OUTLET	L (FT)	W (FT)	A (d <sub>50</sub> ) IN.	t (IN)	D (FT)
DP-10	6	6	8	18	1.5
DP-11	6	6	4	9	1.5
DP-12	6	6	4	9	1.5



**RIPRAP CULVERT INLET PROTECTION (TEMPORARY)**

DO NOT DAMAGE OR DESTROY EXIST VEGETATION BELOW LIP LEVEL LIP TO BE CUT ALONG EXISTING CONTOUR NO MACHINERY BELOW LIP



NOTES:

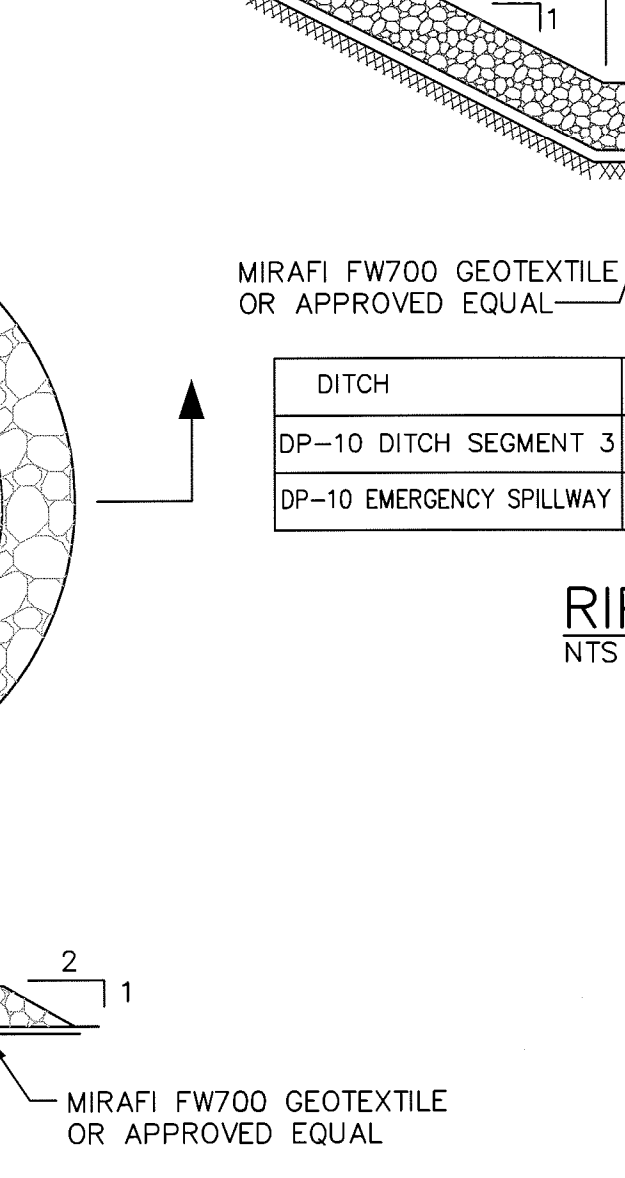
- CONSTRUCT LEVEL LIP ON ZERO PERCENT GRADE TO INSURE UNIFORM SPREADING OF SEDIMENT - FREE RUNOFF (CONVERTING CHANNEL FLOW TO SHEET FLOW).
- LAST 20 FT OF DRAINAGE DITCH NOT TO EXCEED 1% GRADE

LEVEL SPREADER

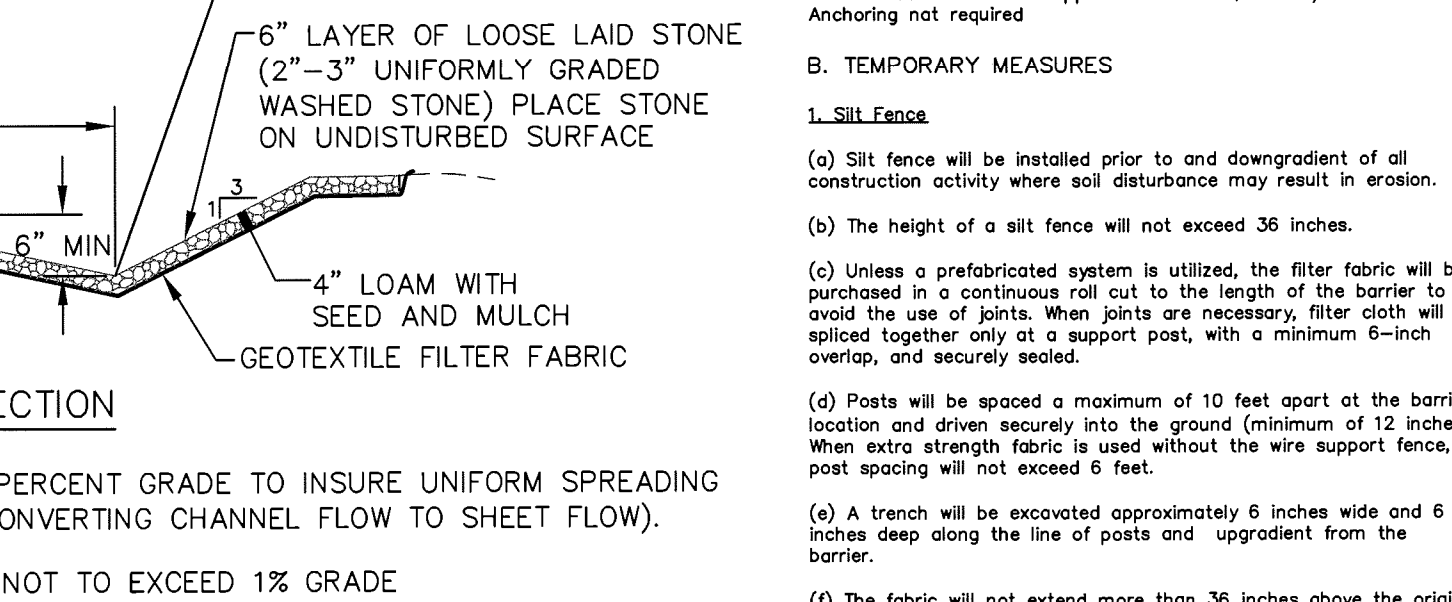
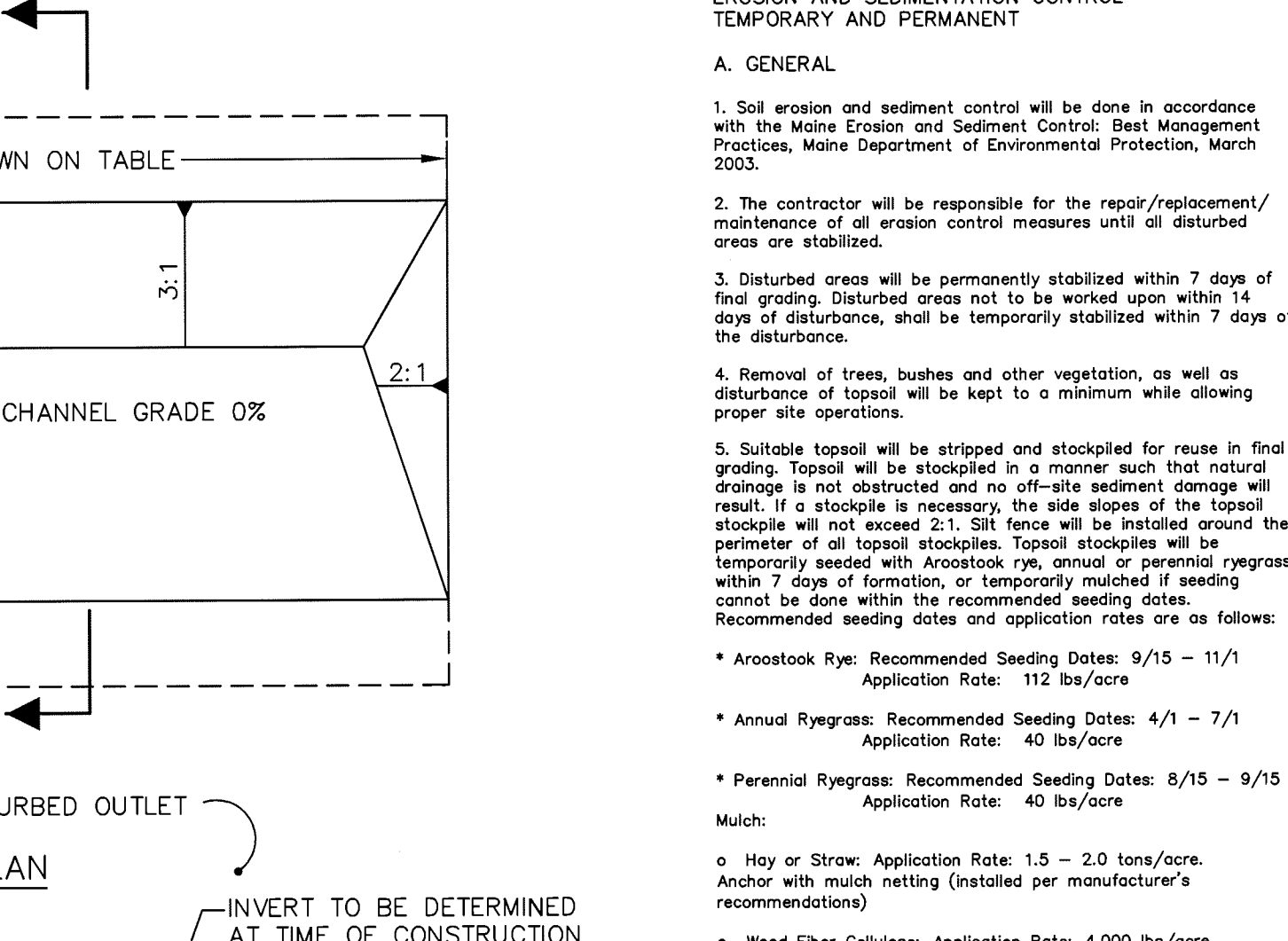
LEVEL SPREADER	LENGTH, L (FT)
DP-10	20
DP-11	15
DP-12	15

GRASS DITCH

DITCH	"A"	"B"	"C"	"D"	"E"
TOE DITCH	2'	2'	2'	2'	NAG S75
DP-10 DITCH SEGMENTS 1 & 2	2'	2'	2'	2'	NAG S75
DITCH 4B-1	2'	2'	2'	2'	NAG S75
MAINTENANCE ROAD DITCH	3'	2'	2'	2'	NAG S75



**RIPRAP DITCH**



EROSION CONTROL MATS

DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'

- CONSTRUCTION SEQUENCE
- Construct temporary sediment and erosion control facilities. Erosion and sediment measures shall be installed prior to any earth moving operation in the area of work.
  - All permanent ditches are to be stabilized with vegetation or stone check dams prior to directing runoff to them.
  - Inspect and maintain all erosion and sediment control measures.
  - Complete permanent erosion control measures which may include seeding, mulching, and landscaping.
  - Remove all temporary erosion control measures.
  - Each stage will be stabilized prior to initiating the next stage.
  - Any exposed areas will be hay mulched prior to winter shutdown, if necessary.

- EROSION CONTROL MEASURES
- The smallest practical area of land shall be exposed to construction at any one time.
  - The temporary erosion control measures shall be maintained until permanent erosion control measures are present.
  - All areas disturbed by construction shall have available loam placed before seeding (or an acceptable alternate).
  - After construction is terminated, all temporary erosion control measures shall be removed and accumulated sediment disposed of in a secure location.
  - Mulch shall be mowings of acceptable herbaceous growth, free from noxious weeds or woody stems, and shall be dry.

REVISIONS

REV.	BY	DATE	STATUS
1	PCM	7/15	ISSUED FOR MEDEP SOLID WASTE PERMIT APPLICATION

- WOOD WASTE COMPOST/BARK MULCH FILTER BERMS
- The filter berm shall consist of an approved wood waste compost/bark mulch mix or recycled composted bark fluff grit and fragmented wood generated from water-flume log handling systems or small shredding of stumpage (6 inches long x 1 1/2" dia.). The mixture needs to be a well-graded blend of organic and mineral nutrients. The composition is usually manufactured on or off site or by blending it with a well graded sand and gravel. The objective is a light, heavy, non-erodible mixture that is not composed of one uniform material, i.e. just bark mulch will not suffice. Comparable composted mixes can be used upon approval of the Department of Environmental Protection, Bureau of Land and Water Quality.
  - The mix shall conform to the following standards:
    - Moisture Content 30 - 60%
    - pH=5.0-8.0
    - Screen Size - 100% less than 3" max; 70% less than one inch.
    - No less than 40% organic material (dry weight) by loss of lignin.
    - No stones larger than 2 inch diameter.
    - Silt, clay or sugar sands are not acceptable in the mix.
  - Installation and Size of Berms:
    - The dimensions of the berm are more a function of the strength of the material than the flow (forces) it will encounter. At a minimum the berm shall be 4 feet wide and 18 inches high. The berm shall be placed, uncompacted along a relatively level contour. Wherever possible the existing surface must be secured and the mixture keyed in like any other sediment control measure.
    - Maintenance: All deficiencies shall be immediately corrected with additional material placed on top of the berm to reach the desired height. When the berm is decomposed, clogged with sediment, eroded, or becomes ineffective, it shall be replaced.
    - Clean up and Retrieval: At the end of the job, an erosion control berm shall be removed or approved by the native earth can be seen below.
    - Rock Filter Berms: To provide more filtering capacity or to act as a velocity check dam, a berm's center can be composed of clean crushed rock ranging in size from the French drain stone to riprap. The rocks shall be laid on geotextile to facilitate removal and the geotextile shall be wrapped over the core layer of stone and then covered with another layer of erosion control material. The center of the berm shall be approx. 12 inches high or two-thirds the height of the filter berm. Rock filter berms shall be a minimum of 18 inches high by 4 feet wide.

- STABILIZED CONSTRUCTION ENTRANCE
- Aggregate size: Use 2 inch stone, or reclaimed or recycled concrete equivalent.
  - Aggregate thickness: Not less than eight inches.
  - Width: 16 foot minimum, but not less than the full width of where ingress or egress occurs.
  - Length: as required, but not less than 50 feet.
  - Geotextile: To be placed over the entire area to be covered with aggregate. Piping of surface water under entrance shall be provided as required. All piping is impossible, a mountable berm with 5:1 slopes will be permitted.
  - Criteria for Geotextile: The filter cloth shall be woven or NON-WOVEN fabric consisting only of continuous chain polymeric filaments or yarns of polypropylene. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew and rot resistant.
  - Acceptable materials are Trivex Spunbound 1135, Mirafi 600X, or equivalent.
  - Fabric not meeting these specifications may be used only when design procedure and engineering consultation are supplied to determine aggregate depth and fabric strength.
  - Maintenance: The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way. When washing is required, it shall be done in an area stabilized with aggregate which drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways.

- EROSION CONTROL MATS
- During the growing season (April 15 to September 15) use mats specified in the drawings or, if not specifically identified, use North American Green S75 or equal or mulch with netting on:
    - Base of grassed waterway and steep slopes (>15 percent)
    - Any disturbed soil within 100 feet of streams and wetlands.
  - During the late fall and winter (September 15 to April 15) use heavy grade mats specified in the drawings or, if not specifically identified, use North American Green S150 or equal on all areas noted above plus lighter grade mats or mulch with netting on:
    - Sideslopes of grassed waterways
    - Moderate slopes (>8 percent)
  - Install mats in accordance with manufacturers' recommendations.

- CONSTRUCTION SEQUENCE
- Install all fence and other temporary erosion control measures for the construction of Cell and accessory facilities such as detention ponds, berms, and service roads;
  - Construct upstage stormwater diversion berms, ditches, culvert outlets, and control structures;
  - Clear and grub Cell areas;
  - Construct service road;
  - Construct Cell base grade and underdrain system;
  - Construct Cell liner system, and leachate collection system;
  - Operate Cell;
  - As permanent erosion control measures become stabilized, remove temporary measures (e.g., silt fence, stone check dams); and
  - Install intermediate and final cover on cells filled to capacity in areas shown in the Cell Development Plans - Appendix C of this application.

- CONSTRUCTION INSPECTIONS
- Inspections will be undertaken by qualified personnel to ensure that temporary and permanent erosion and sedimentation controls are properly installed and correctly functioning, and that additional erosion control measures are installed if needed. Such inspections will occur bi-weekly and after each significant rainfall event (1 inch or more within a 24 hour period) during construction until permanent erosion control measures have been properly installed and the site is stabilized.

JUNIPER RIDGE LANDFILL EXPANSION OLD TOWN, MAINE

SECTIONS AND DETAILS

**SME**  
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smeinc.com

DESIGN BY: PCM  
DRAWN BY: SJM  
DATE: 12/5/2014  
CHECKED BY: [Signature]  
LMN: NONE  
CTB: SME-STD

JOB NO. 14101.00 DWG FILE DETAILS C-308





ALTON / OLD TOWN BOUNDARY

EXISTING SITE ACCESS ROAD

RELOCATED SCALES AND ADMINISTRATIVE BUILDING

PROPOSED PERIMETER ACCESS ROADS

PROPOSED EXPANSION SOLID WASTE BOUNDARY

PROPERTY LINE

EXISTING SOLID WASTE LANDFILL

REST AREA

OLD TOWN		
MAP NO.	LOT NO.	NAME
2	40	Laurent J. & Barbara Beaugard
2	41	Laurent J. & Barbara Beaugard
2	44	Robert W. & Wendy Hall
2	46	Thomas Dunn & Karen Bertolino
2	47	Lawrence H. Steeves - Heirs
2	52	Raymond A. Perkins
2	53	United Cerebral Palsy
2	55	Robyn Emmons
2	54	Gregg & Evlynn Wallace
2	51	New England Waste Services
3	53	SSR, LLC
3	6B	Scott E. Bergquist
3	7A	Angela D. Cyr
3	15	Newsme Landfill Operations LLC
3	41C	Herbert A. Robertson, Jr
3	45B	SSR, LLC
3	50A	SSR, LLC
3	54B	SSR, LLC
3	58B	SSR, LLC
3	1A	University of Maine System
3	1B	SSR, LLC

ALTON		
MAP NO.	LOT NO.	NAME
8	102	NewsMe Landfill Operations LLC
8	104	Tasanee Longola
8	106	Karl Held
8	107	Harry & Tammy Feero
8	108	Win & Nancy Chaiyabhat
8	111	Win & Nancy Chaiyabhat
8	112	Win & Nancy Chaiyabhat
8	113	Jesse Pekkala
8	114	Charles Tringale III
8	116	Anthony Madden
8	117	Challis Randall
8	117.1	Town of Alton
8	118	Kenneth Gray
8	119	Kathryn Pelletier
8	119.1	Ruth Dalton
8	121	Anthony & Cynthia Brown
8	121.1	Mary St. Louis/Cynthia & Anthony Brown
8	122	NewsMe Landfill Operations LLC
8	122.1	NewsMe Landfill Operations LLC
8	123	Jennifer & Richard Paradise
8	124	Margo Diaz

NOTE:

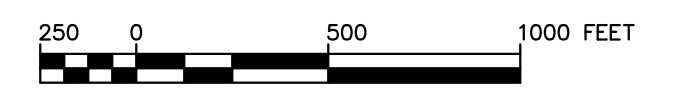
1. THIS IS AN INFORMATIONAL FIGURE ONLY AND IS NOT INTENDED TO SERVE AS A BOUNDARY SURVEY MAP. DIMENSIONS, NORTHING AND EASTING INFORMATION PRESENTED ON THIS FIGURE ARE APPROXIMATE AND ARE BASED UPON AVAILABLE SITE INFORMATION FOR THE JUNIPER RIDGE LANDFILL. NO FIELD SURVEY HAS BEEN PERFORMED BY SEVEE AND MAHER ENGINEERS REGARDING THE INFORMATION PRESENTED ON THIS DRAWING.

LEGEND

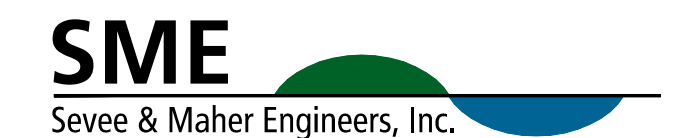


PROPERTY LINE LOCATIONS ARE APPROXIMATE AND ARE BASED UPON A RESULT OF FIELD SURVEY PERFORMED BY HERRICK AND SALSBERY, INC. LAND SURVEYORS, ELLSWORTH, MAINE FOR TRYTON TREE FARM PROJECT, PATTEN CORPORATION-DOWNEAST, OLD TOWN, MAINE, FEBRUARY 23, 1988, REVISED APRIL 7, 1988

LOT LOCATIONS ARE APPROXIMATE AND ARE BASED UPON AVAILABLE TAX MAP INFORMATION FOR THE TOWN OF ALTON AND OLD TOWN, MAINE, (2015).



TAX MAP OF  
PROPERTY ABUTTERS  
JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smeinc.com

\\server6\cadd\oldtown\landfill\cadd\figs\AREAMAP.dwg, 7/17/2015 11:44:48 AM, plf

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 6  
ADDITIONAL PLANS**

Additional plans, if applicable:

- Cross-sectional drawings for piers, roadways, stream crossings, dredging projects, retaining walls, riprap, gravel removal, pond construction, fill projects, and dams. (See attached Drawings C-109, C-200, and C-204)
- Profile drawing or plans for projects involving significant amounts of stream culverting or channelization work, roads involving steep embankments or inclines, and boat ramps. (Not applicable.)











**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 7  
CONSTRUCTION PLANS**

(Cover Page Included) A complete set of Expansion Plans are contained in Volume III  
Appendix E of the Solid Waste Application





**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 8  
EROSION SEDIMENTATION CONTROL PLAN**



**JUNIPER RIDGE LANDFILL  
EXPANSION  
EROSION SEDIMENTATION CONTROL PLAN**

**Submitted by:**

**STATE OF MAINE BUREAU OF GENERAL  
SERVICES  
as Owner  
&  
NEWSME LANDFILL OPERATIONS, LLC,  
as Operator**

**July 2015**



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE



## TABLE OF CONTENTS

Section No.	Title	Page No.
<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>SITE DESCRIPTION .....</b>	<b>1</b>
<b>3.0</b>	<b>SITE SETTING .....</b>	<b>3</b>
<b>4.0</b>	<b>EXISTING AND PROPOSED DRAINAGE FACILITIES .....</b>	<b>6</b>
	4.1 Existing Drainage Facilities .....	6
	4.2 Proposed Drainage Facilities .....	8
<b>5.0</b>	<b>TIMING AND SEQUENCE OF LAND DISTURBANCE ACTIVITIES.....</b>	<b>12</b>
<b>6.0</b>	<b>EROSION CONTROL MEASURES .....</b>	<b>12</b>
	6.1 Temporary Erosion Control .....	13
	6.2 Permanent Erosion Control.....	13
	6.3 Standard Erosion Control Procedures .....	14
<b>7.0</b>	<b>MAINTENANCE .....</b>	<b>17</b>
	7.1 Routine Maintenance .....	17
	7.2 Grassed Areas .....	17
<b>8.0</b>	<b>INSPECTIONS.....</b>	<b>17</b>
<b>9.0</b>	<b>CONCLUSION.....</b>	<b>17</b>

### LIST OF APPENDICES

APPENDIX A	POST-DEVELOPMENT STORMWATER ANALYSIS DRAWING D-101 AND FINAL SITE DRAINAGE PLAN DRAWING C-107
APPENDIX B	EROSION CONTROL DESIGN B-1 GRASS DITCH LINING DESIGN B-2 RIPRAP DITCH LINING DESIGN B-3 CULVERT INLET/OUTLET DESIGN B-4 LEVEL LIP SPREADER DESIGN B-5 PLUNGE POOL DESIGN B-6 EMERGENCY SPILLWAY DESIGN
APPENDIX C	TYPICAL CONSTRUCTION EROSION AND SEDIMENTATION CONTROL SPECIFICATIONS AND DRAWING C-308

**LIST OF FIGURES**

<u>Figure No.</u>	<u>Title</u>	<u>Page No.</u>
1-1	SITE LOCATION MAP.....	2
3-1	MEDIUM INTENSITY SOIL TYPES .....	5

**LIST OF TABLES**

<u>Table No.</u>	<u>Title</u>	<u>Page No.</u>
3-1	SITE SURFICIAL SOIL SUMMARY .....	6
4-1	SUMMARY OF STORMWATER CULVERTS, STORM DRAINS, CATCH BASINS, DITCHES .....	10
6-1	SEEDING SPECIFICATIONS.....	14

**JUNIPER RIDGE LANDFILL  
EXPANSION  
EROSION SEDIMENTATION CONTROL PLAN**

**1.0 INTRODUCTION**

This erosion and sedimentation control plan (ESCP) for the Juniper Ridge Landfill (JRL) expansion (Expansion) located in Old Town, Maine was designed to comply with the requirements of 6-096 CMR, Chapter 400 Section 4.J of the Maine Solid Waste Management Rules.

This plan has been prepared to address the standards and submission requirements of including the following:

1. That the facility be located on soils suitable for their intended purpose, and
2. That the facility not cause unreasonable sedimentation or erosion of soil.

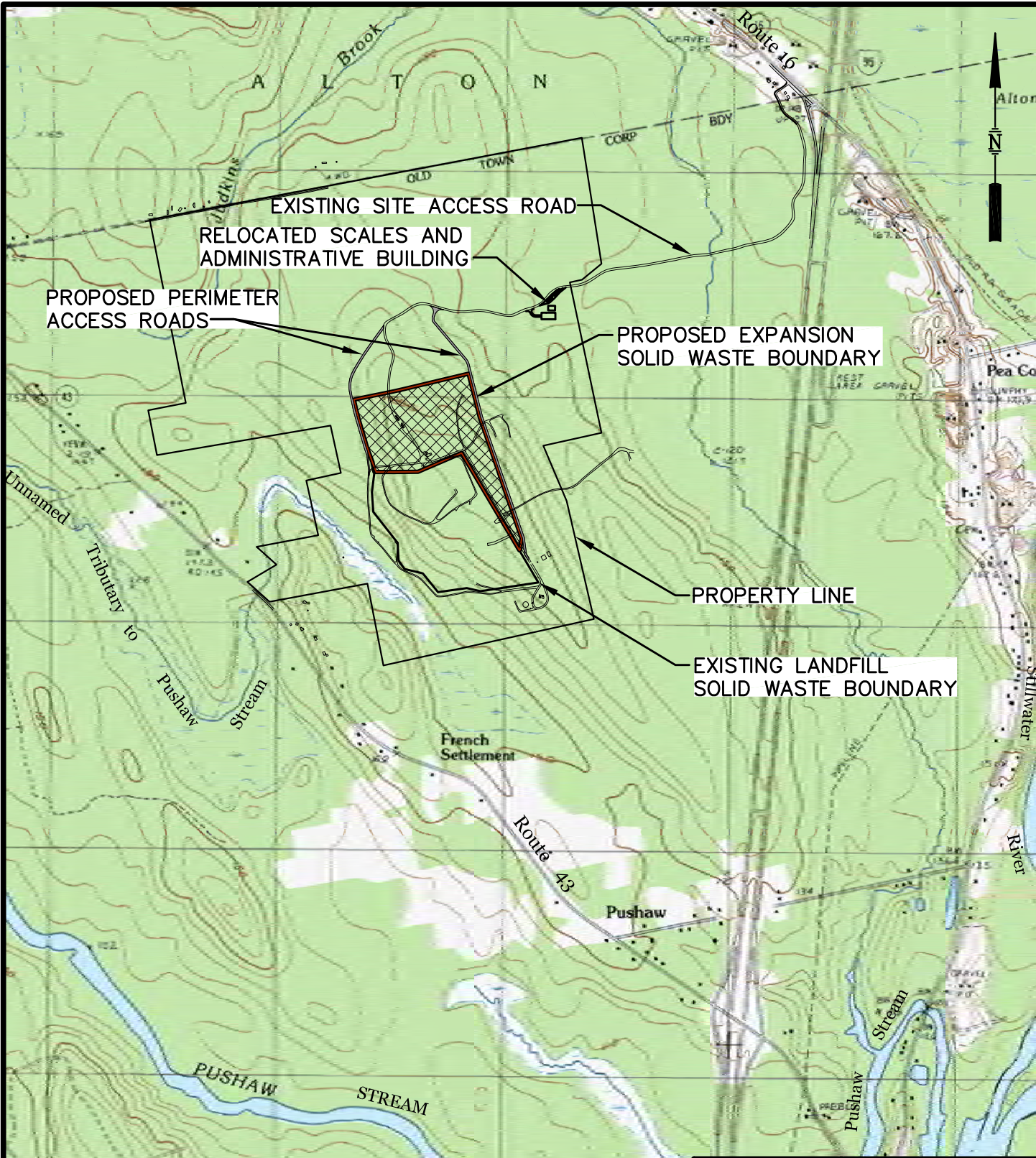
**2.0 SITE DESCRIPTION**

The existing landfill and the Expansion are located on an approximately 780-acre parcel of land located approximately one mile west of Interstate 95 in Old Town, Maine.

The existing landfill consists of the previously permitted 68-acre solid waste footprint (of which approximately 60 acres are currently developed or undergoing development), the former leachate pond (which has been repurposed to contain stormwater and renamed to Pond 1A), leachate storage tank, maintenance building, scale house (to be relocated as part of the expansion), landfill gas flare, office building, soil borrow areas, soil stockpile areas, stormwater detention ponds, parking areas, access roads and other grassed areas (i.e., berm slopes, laydown areas, etc.).

The Expansion will be adjacent to and generally north of the existing landfill and will expand the solid waste footprint by about 54 acres. The total facility site, including supporting site





BASE MAP ADAPTED FROM 7.5 MIN  
 USGS TOPOGRAPHIC QUADRANGLE:  
 OLD TOWN, MAINE-1988



FIGURE 1-1  
 SITE LOCATION MAP  
 JUNIPER RIDGE LANDFILL EXPANSION  
 OLD TOWN, MAINE



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

infrastructure (e.g., access roads, stormwater management ponds, etc.) will be approximately 74 acres.

The development of the Expansion is projected to begin in 2018 and will be constructed in a phased fashion over an approximate 10 year period. As the project progresses, subsequent landfill cells will be constructed and intermediate or final cover will be placed on landfill cells filled to capacity. Additional accessory land development around the perimeter of the Expansion will include; additional stormwater detention ponds, a perimeter berm with a paved access road, electric utilities, leachate force mains and a gas header pipe located within the eastern perimeter berm.

Detention ponds will be used for sediment control and to decrease peak flows prior to discharge. Stormwater discharge from the ponds will be spread using level lip spreaders to limit erosion associated with the point discharge.

### **3.0 SITE SETTING**

The majority of the 780 acre parcel is wooded, with hardwoods predominating in the upper elevations, and softwoods predominating in the lower elevations. The parcel is irregularly shaped and the existing landfill is positioned in the southern portion of the parcel. A drumlin oriented in a northwest to southeast direction effectively divides the parcel into four watersheds, east, northeast, northwest, and southwest. The area analyzed for each of the watersheds is approximately 346, 26, 271, and 240 acres respectively in the predevelopment conditions. The northeast and the northwest watersheds both contribute to Judkins Brook and eventually Birch Stream. These watersheds will not be affected by the Expansion. The southwest watershed contributes to an unnamed tributary to Pushaw Stream, and the east watershed drains to an unnamed and unmapped tributary to Judkins Brook. Both Birch Stream and Pushaw Stream are tributaries to the Stillwater River which flows to the Penobscot River. For the purpose of estimating pre-development flows, two of the four watersheds are further broken down into subcatchments with five analysis points, which represent the locations where stormwater flows across the site's property boundary. The points of analysis are labeled as Analysis Points 1 through 5 on Drawing D-101 in Appendix A. Flow from Subcatchments 1 and 2 contribute to

southwestern watershed flows, Subcatchment 3 contributes to the northwest watershed flows, and Subcatchments 4 and 5 contribute to the east watershed flows. The location of stormwater control structures are shown on Drawing C-107 included in Appendix A.

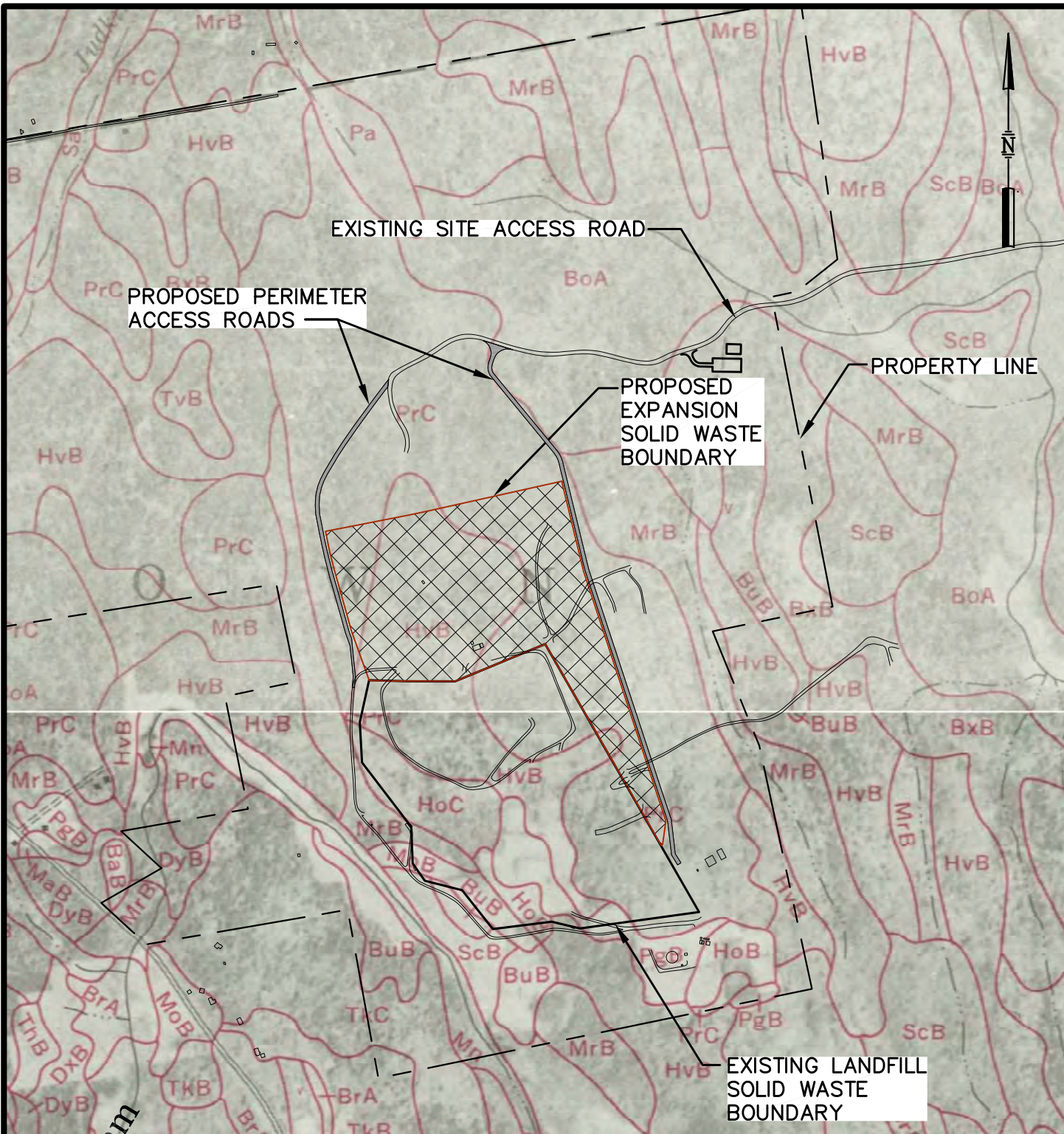
As stated, a portion of the Expansion is located within several watersheds that will eventually drain to unnamed tributaries of Pushaw Stream and Judkins Brook. This project is not within the direct watershed of lakes most at risk for new development or an urban impaired stream, as listed in Appendices A and B of the Maine Department of Environmental Protection (MDEP) Rules 6-096 CMR, Chapter 502: *Direct Watersheds of Lakes Most At Risk from New Development and Urban Impaired Streams.*

The ground elevation within the Expansion area currently ranges from approximately 170 to 215 feet MSL. The Expansion area is mostly wooded with a mixed stand of hardwood and softwood overlying underbrush along the forest floor. The existing ground within the Expansion area slopes radially from the top of the drumlin toward the property boundary at grades varying from 1 to 20 percent. Surface drainage within the Expansion area consists of sheet and shallow concentrated flow with some channelization occurring in existing roadside ditches.

The surficial soils at the site are primarily Plaisted and Howland series along with some Monarda, Buxton, and Scantic, as shown on Figure 3-1. Surficial soils at the site were delineated based on mapping shown on the Soil Conservation Service Medium Intensity Soils Survey for Penobscot County. Table 3-1 shows the hydrologic soil group (HSG) for the various soil series at the site.

On-site observations within the landfill site have not identified areas that would be prone or highly susceptible to erosion (i.e., exposed sideslopes). A review of the SCS soils mapping did not identify the presence of highly erodible soils in close proximity to the Expansion.





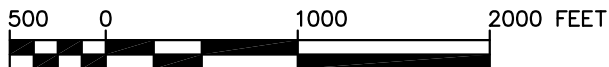
**MAPPING SOURCE**

NATURAL RESOURCES  
CONSERVATION SERVICE, WEB  
SOIL SURVEY OF PENOBSCOT  
COUNTY, MAINE, 2014.

**LEGEND**

- BoA BIDDEFORD MUCKY PEAT
- BuB BUXTON SILT LOAM
- HoC HOWLAND GRAVELLY LOAM
- HvB HOWLAND VERY STONY LOAM
- MoB MONARDA SILT LOAM
- MrB MONARDA-BURNHAM COMPLEX
- PgB PLAISTED GRAVELLY LOAM
- PrC PLAISTED VERY STONY LOAM
- ScB SCANTIC SILT LOAM

FIGURE 3-1  
MEDIUM INTENSITY SOIL TYPES  
JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE



**SME**

Seve & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE



TABLE 3-1

SITE SURFICIAL SOIL SUMMARY

Soil Series	Hydrologic Soil Group	Runoff Curve No.	Description
Plaisted	C	70/71	Woods, good condition/Meadow
Howland	C	70/71	Woods, good condition/Meadow
Monarda	D	77/78	Woods, good condition/Meadow
Buxton	C	70/71	Woods, good condition/Meadow
Scantic	D	77/78	Woods, good condition/Meadow
Landfill Cover	C	71	Meadow
Gravel Surfaces	C/D	89/91/96	Gravel Roads, Pads, Berms
Buildings/Roofs/Pond/ Paved Surfaces	NA	98	Impervious Surface

An emergent marsh area that forms the headwaters to an unnamed tributary that feeds the Pushaw Stream is downgradient and to the southwest of the Expansion. The marsh can be classified as in good condition and stable with a heavy growth of marsh grasses and no apparent signs of erosion problems. A minimum 100-foot wooded buffer will also be maintained between any site development and the emergent wetland marsh to the west of the existing landfill.

The grading and layout of the proposed facility was undertaken with a major consideration being to minimize impacts to wetland areas. Existing drainage courses will be utilized where feasible to convey stormwater from the developed site. No surface drainage outlet structures from the developed site will discharge concentrated flows directly onto abutting properties. Where necessary, the runoff from the developed site will discharge into detention basins that will attenuate peak flows rates to the unnamed tributaries feeding Pushaw Stream and Judkins Brook.

#### **4.0 EXISTING AND PROPOSED DRAINAGE FACILITIES**

##### **4.1 Existing Drainage Facilities**

There are several existing drainage structures within the existing landfill project site. The locations of these drainage structures are shown on Drawing C-107 in Appendix A.

Detention Pond 1 currently functions as a detention and sedimentation basin during the landfill operational life. The modifications to Detention Pond 1 as part of the Expansion will involve enlarging the flow control orifice located on the side of the existing composite outlet control structure and adding a second orifice to the structure prior to final closure of the site. This is a result of converting the existing pond from a sedimentation pond to a detention pond (as described in the Expansion Application Stormwater Management Plan) and also due to diverting flow from Detention Pond 1A into Detention Pond 1. The existing pond itself does not require any modifications and can adequately accommodate the peak flow both during and after Expansion development. Detention Pond 1 is located to the west of the existing landfill cells and will remain in operation throughout the Expansion development.

Detention Pond 1A is the pond that was formerly used to store leachate adjacent to Detention Pond 1. The pond is an existing pond that does not require modification. It is currently being used as a stormwater detention pond and will remain a detention pond throughout the life of the facility. Detention Pond 1A will outlet via a broad crested weir into Detention Pond 1.

Detention Ponds 2 and 6 are additional existing detention ponds located to the south of the existing landfill that will remain in place for the life of the facility. There are no proposed modifications to either Pond 2 or Pond 6 as part of the proposed Expansion.

Detention Pond 9 is an existing detention pond located east of the previously permitted landfill and permitted wood handling area and it will remain in place for the life of the facility. As part of the proposed Expansion, this detention pond will be enlarged to increase storage below the emergency spillway outlet (elev. 190.5) from 2.3 acre-feet to 5.1 acre-feet. The existing pond outlets will remain in place without modification.

Existing Detention Pond 5 is located in the northwest of the existing landfill. This pond will be removed as the western portion of the Expansion is developed.

A more thorough description of the outlet structures of existing detention ponds is presented in the Expansion Application Stormwater Management Plan.

## 4.2 Proposed Drainage Facilities

Proposed drainage facilities used to effectively manage stormwater associated with the Expansion will include grass lined and riprap lined channels, catch basins, culverts, storm drains, detention ponds, riprap aprons, riprap plunge pools and level spreaders.

Stormwater runoff from the developed and covered areas of the Expansion will be conveyed by a series of drainage structures consisting of ditches, catch basins, culverts as summarized on Table 4-1. Locations of the proposed permanent ditches, catch basins, and culverts are shown on Drawing C-107 included in Appendix A. The post-development stormwater analysis Drawing D-101 located in Appendix A shows the drainage area for each of the above-mentioned structures. A printout of the post-development stormwater analysis is included in Appendix B of the Expansion Stormwater Management Plan. These structures were sized to handle the projected peak flows resulting from the 24-hour/25-year rainfall event.

The design capacity of the stormwater drainage structures was based on SCS TR20 methodology. Culverts and catch basins were sized using a computer stormwater modeling system entitled *Hydrocad* by Applied Microcomputer Systems of Chocorua, New Hampshire. Ditches were sized using the *Hydraulic Design Series No. 4, Design of Roadside Drainage Channels (Mannings Equation)*. Ditch linings, culvert inlet and outlet protection were designed using SCS guidance found in the *Maine Erosion and Sediment Control BMPs* (SCS, 3/2003). These calculations are attached in Appendix B of the application. Calculations for the proposed pond level lip spreaders, plunge pools, and emergency spillways are included in Appendix B.

New culverts will be high-density polyethylene (HDPE) pipe and have diameters ranging from 18 to 36 inches. The culverts were designed with riprap aprons at inlet and riprap-lined aprons or plunge pools at outlet. Riprap for culvert inlet and outlet protection D-50 rating (i.e., 50 percent of riprap) ranges from 4 to 10 inches. Culvert outflows will be routed through level lip spreaders or vegetated swales.

The site stormwater drainage ditches (toe ditch) around the Expansion perimeter will be turf lined grass channels with a minimum base width of 2 feet, depth of 2 feet, and maximum sideslopes of 2H:1V.

Riprap downspouts on the landfill cover will be lined with riprap (D50 of 8 inches) and have a base width of 4 feet, depth of two feet, and maximum sideslopes of 2H:1V. Surface water ditches will have a minimum base width of 2 foot, depth of 2 feet and maximum sideslopes of 2H: 1V.

Terrace drain swales on the sideslopes of the landfill cover will be turf-lined 'v'-channels with a depth of 1 foot, pitch of 5 percent (typical), and maximum sideslopes of 2H:1V. Terrace drain swales were uniformly sized based on the largest contributing drainage area and minimum expected slope. Riprap sizing was based on the maximum longitudinal slope. Rock chutes (riprap terrace downspouts) were uniformly sized for capacity based on the largest contributing drainage area and riprap size based on contributing area and slope. Computer software entitled HYDRAIN 6.01 (1996), Integrated Drainage Design Computer System, from the Federal Highway Administration (FHWA) was utilized to size the riprap for downspouts and ditches. Computer software entitled Erosion Control Materials Design Software (ECMDS) Version 4.2 (2002) from the North American Green Co. (N.A.G.) was utilized to determine temporary erosion matting for turf-lined and vegetated ditches.



TABLE 4-1

SUMMARY OF STORMWATER CULVERTS, STORM DRAINS, CATCH BASINS, DITCHES

Structures Culvert	Diameter (in.)	Material	Length (ft.)	Slope (%)	Inv. In Elev.	Inv. Out Elev.
EC-D-1G	24 (2)	CMP	56	0.018	183.0	182.0
C-2BA	36	HDPE	40	0.008	203.2	202.9
C-2BB	24	HDPE	96	0.010	195.0	194.0
C-4BA	24	HDPE	78	0.009	204.4	203.7
C-4BB	24	HDPE	78	0.009	204.4	203.7
C-4F	18	HDPE	78	0.04	165.0	162.0
C-4G	24	HDPE	36	0.028	175.0	174.0
C-4HA	18	HDPE	40	0.025	201.9	200.9
C-4HB	18	HDPE	101	0.025	178.5	176.0
C-4I	18	HDPE	80	0.131	202.5	192.0
C-4IA	18	HDPE	40	0.023	212.9	212.2
C-4JA	18	HDPE	60	0.028	214.0	212.3
C-4JB	24	HDPE	73	0.021	211.5	210.0
C-4JC	24	HDPE	73	0.021	211.5	210.0
C-4K	24	HDPE	51	0.043	216.5	214.3
C-4L	18	HDPE	121	0.017	213.0	211.0
C-4N	18	HDPE	33	0.030	184.0	183.0

Catch Basin	Basin Dia. (ft)	Grate Opening (in.)	Depth (ft)	Culvert Dia. (in.)
CB-2BB	4	30	7.2	24
CB-4G	4	24	8	24
CB-4HB	4	24	6.9	18
CB-4I	4	24	7.1	18
CB-4JA	4	24	6.7	18
CB-4K	4	30	5.5	24
CB-4L	4	24	4	18

Ditch	Base Width (ft)	Depth (ft.)	Sideslope Z-Value (f')	Lining
Ditch to Detention Pond 10	2	2	2	Segments 1&2: NAG S75 Erosion Mat Segment 3: Riprap (D50=4", t=9")
Detention Pond 10 Emergency Spillway	10	2	2	Riprap (D50=4", t=9")
Perimeter (toe)	2	2	2	NAG S75 Erosion Mat
Maintenance Road Ditch	2	3	2	NAG S75 Erosion Mat
Terrace Drain	0' - V-ditch	2	2	NAG C125BN Erosion Mat
Downspouts	4	2	2	Riprap (D50=8", t=18")
Note: Location of structures shown on Drawing C-107 contained in Appendix A.				

The HYCHL Module of the FHWA HYDRAIN 6.01 software and the ECMDS software is designed to provide recommendations to the user for effective temporary and permanent erosion protection of stormwater ditches and channels conveying intermittent, concentrated, uniform water flows. The channel lining analysis and performance evaluations are conducted using the maximum shear stress (tractive force) method as outlined in the Federal Highway Administration's HEC-15. The stability check for channel lining materials is based on its capability to physically survive and effectively control soil loss on the channel surface under the calculated shear stresses for a specified flow period.

The proposed detention ponds (Detention Ponds 10, 11, and 12) were designed to provide flow control and sedimentation during construction. To allow sedimentation each pond was designed to allow 24-hours (minimum) of plug flow detention time during the 2-year/24-hour storm event. Proposed Detention Ponds 10, 11, and 12 will each have a composite outlet structure consisting of a 4-foot diameter drop inlet with a side-mounted orifice which will discharge to an 18-inch diameter HDPE outlet culvert. Each outlet culvert will have anti-seep collars to minimize "piping" of water along the outside of the outlet pipe. Each culvert outlet discharges to a riprap lined plunge pool. From this plunge pool, stormwater discharges will flow to level lip spreaders which will discharge to the adjacent wooded buffer areas. Plunge pools and level spreaders were designed to meet the requirements of *Maine Erosion and Sedimentation Control (MESOC) BMP's* (SCS 3/2003). Detention Pond 10 will have a riprap lined channel emergency spillway designed to pass the 100-year/24-hour storm event with at least one foot of freeboard.

Detention Ponds 11 and 12 will be adjacent to proposed roadways and thus will utilize the grate atop each of the 4-foot diameter drop structures to allow flow into the outlet culvert during emergency conditions, rather than a traditional emergency spillway. The emergency spillways for these ponds were designed to pass the 100-year/24-hour storm event with at least one foot of freeboard.

Design calculations for the ponds including riprap plunge pools, level spreaders, anti-seep collars, and emergency spillways are included in the Expansion Stormwater Management Plan Appendix C.

## **5.0 TIMING AND SEQUENCE OF LAND DISTURBANCE ACTIVITIES**

The proposed timing and sequence of land disturbance activities associated with the Expansion cell construction, landfill operations, and cover placement is anticipated to be as follows:

- a. Install silt fence and other temporary erosion control measures for the construction of the cell and accessory facilities such as detention ponds, berms, and service roads;
- b. Clear and grub cell area;
- c. Construct upslope stormwater diversion berms, ditches, culvert outlets, and outlet control structures (if necessary);
- d. Construct service road(s) (if necessary);
- e. Construct cell, cover system or perform construction required for landfill operations; and,
- f. As permanent erosion control measures become stabilized, remove temporary measures (e.g., silt fence, stone check dams).

Site construction activities will follow the landfill construction drawings and specifications that will contain detailed requirements for Erosion and Sedimentation control. These requirements are as discussed in Section 6.0 of this plan.

## **6.0 EROSION CONTROL MEASURES**

To minimize erosion during Expansion cell construction, operations, and cover placement temporary and permanent erosion control measures will be implemented. Temporary measures (e.g., silt fences, temporary seeding, mulching, and stone check dams) and permanent measures (e.g., downspouts, sedimentation basins, permanent seeding, mulching, and culvert inlet and outlet protection) will be monitored on a regular basis. The contractor and/or landfill operator (whichever entity is performing the construction activity) will ensure that structures are functioning properly, and will perform necessary maintenance. Construction project technical specifications will contain an Erosion and Sedimentation control section. A typical specification that will be used on the project is contained in Appendix C.

## 6.1 Temporary Erosion Control

The greatest potential for erosion will occur during grubbing and grading operations. This is when stumps and topsoil are removed from the site, the base grades prepared, and perimeter dikes constructed. Before beginning the grubbing phase, a siltation fence will be placed. In addition, stone check dams will be installed in newly created surface water drainage ditches. Once the perimeter dikes, culverts, ditches, and roadway embankments are completed, they will be mulched and seeded within seven days of final grading. Areas that are disturbed and cannot be completed for periods of more than 15 days will receive temporary seeding. The seeding specifications are included on Table 6-1.

## 6.2 Permanent Erosion Control

Permanent erosion control measures will be implemented during Expansion cell construction, Expansion operation and cover placement. During landfill operations, stormwater falling within the open area of the landfill cell will be collected internally and treated as leachate. Surface water within the active cell will be collected internally within the cells and directed to the Cell's leachate sump.

Upon reaching final grade, the landfill sideslope cover will be applied. Once the cover has been applied, if soil cover is used, the cover will be seeded and mulched to minimize erosion. Seeding of the cover with the permanent seeding mixture will be done within 15 days of placing the cover material.

TABLE 6-1

SEEDING SPECIFICATIONS

Permanent Seeding (120 lbs/acre)		Temporary Seeding (120 lbs/acre)
Tall Fescue	54 lbs/acre	Aroostook Rye
Red Fescue	25 lbs/acre	
Red Top	5 lbs/acre	
Ladino Clover	13 lbs/acre	
Annual Ryegrass	8 lbs/acre	
Birdsfoot Trefoil	5 lbs/acre	
Timothy	10 lbs/acre	
<p><u>Fertilizer</u>: Apply 1,300 pounds per acre of 10-10-10 fertilizer or equivalent per acre (29.8 lbs/1,000 sq. ft).  <u>Lime</u>: Apply liquid limestone at a rate of 3 tons per acre (138-lbs./1,000 sq. ft.).  <u>Mulch</u>: Mulch with weed-free hay or straw at 2.0 – 3.0 tons per acre with tack or 300 lbs./acre fiber mulch.</p>		

Seeding operations typically occur no later than October 1st, at which time the soil shall be protected with mulch consisting of either hay or straw and the temporary seed mixture. The mulch may be required to be secured with either netting or twine. Seeding operations shall be done on 100-by-100-foot blocks. Problem areas and continually eroding areas shall be repaired immediately, and in these areas temporary erosion control blankets shall be used. The blankets shall conform and be installed in accordance with the manufacturers recommendations. Silt fence shall also be installed at the toe of slopes of greater than 100 feet in length where intermediate cover has been applied. Ditches constructed to convey water off the intermediate cover shall be protected with stone check dams. Details of erosion control fencing, stone check dams and other erosion control measures are shown on the typical erosion control drawing included in Appendix C. The sedimentation ponds and drainage ditches shall be cleaned and repaired as necessary.

6.3 Standard Erosion Control Procedures

In addition to these measures, the following erosion control procedures will be implemented during Expansion cell construction, operations and cover placement:



- a. Soil erosion and sediment control measures will be performed in accordance with procedures outlined in the *Maine Erosion and Sediment Control BMPs* (SCS, 3/2003).
- b. Removal of trees, brush, and other vegetation, as well as disturbance of soil, will be kept to a minimum during site development.
- c. Usable topsoil will be stripped and stockpiled for reuse. Excess topsoil will be stockpiled on-site or removed from the project site and disposed of, or reused, in an approved manner. Topsoil needed for on-site reuse will be stockpiled on-site for use in final grading. Topsoil will be stockpiled such that natural drainage is not obstructed and no off-site sediment damage will result. Sideslopes of the stockpiled topsoil will not exceed 2H:1V and the stockpile will be surrounded with a siltation fence. Topsoil stockpiles will be temporarily seeded with Aroostook Rye or Annual Ryegrass within 15 days of formation, or temporarily mulched if seeding cannot be done within the recommended seeding dates.
- d. The site will be brought to approximate finish grades and stabilized without extended delays. This includes the application of mulch to surfaces designated for revegetation and placement of riprap where shown. Erosion and sedimentation control measures such as bark mulch sediment barriers, stone check dams, and a silt fence will be installed as shown, and/or adjusted to suit construction after a cut or fill slope has been created.
- e. The silt fence will be inspected after each rainfall and at least daily during prolonged rainfall. Required repairs will be made. Sediment deposits will be removed periodically from the upstream side of the silt barriers and will be spread and stabilized in site areas not subject to erosion. The silt fence will be replaced, as necessary, to provide proper filtering action.

- f. Riprap required at culverts will consist of fieldstone or rough unhewn quarystone of approximately rectangular shape. Stones will be of a size as noted on the construction drawings.
- g. Following final grading, all graded or disturbed areas, not to be used as gravel roadways, parking areas, or landfill structures will be spread with a minimum compacted depth of 6 inches of topsoil and seeded to provide a permanent vegetative cover.
- h. All areas receiving topsoil will be seeded. Seeding normally will occur between April 30 and September 30. Surface water runoff control measures (e.g., drainage ditches, berms, and culverts) will be constructed before seeding; all grading also will be performed before seeding. The top layer of soil will be loosened by raking, discing, or other acceptable means before seeding. Application rates for the lime, fertilizer, seed, and mulch are as presented on Table 6-1. The seed will be applied uniformly with a cyclone seeder, drill, cultipack seeder, or hydroseeder. Seed will not be planted if there is danger of frost shortly after seed germination. Maximum seeding depth is 1/4-inch when using methods other than hydroseeding.
- i. Wood fiber cellulose mulch or hay mulch will be spread uniformly upon completion of the seedbed preparation, liming, fertilization, and seeding. The mulch may be anchored in place by uniformly applying an acceptable mulch binder such a Curasol or Terratac.
- j. If germination is unsuccessful (i.e., less than 75-percent catch) within 30 days of seeding or there is unsatisfactory growth in the next year, the area will be reseeded in accordance with seeding specifications described herein.

## **7.0 MAINTENANCE**

### **7.1 Routine Maintenance**

Inspection shall be performed annually by a qualified person during wet weather to assure that the erosion/sediment control system performs as intended. Inspection priorities shall include checking erosion controls for accumulation of sediments.

Maintenance of the detention ponds will be a continuous process that involves routine inspections of the inlet structures, containment dikes, and outlet structures. At least once annually, sediment will be removed from the ponds and deposited within the limits of the landfill where future erosion of the sediment is unlikely.

### **7.2 Grassed Areas**

Lime according to a soil test as necessary.

## **8.0 INSPECTIONS**

Inspections will be undertaken by the Landfill Operator to assure that temporary and permanent erosion and sedimentation controls are properly installed and correctly functioning, and that additional erosion control measures are installed if needed. Such inspections will occur bi-weekly and after each significant rainfall event (1 inch or more within a 24-hour period) during construction until permanent erosion control measures have been properly installed and the site is stabilized.

## **9.0 CONCLUSION**

The foregoing measures and controls will help to assure that no unreasonable erosion of soil or sediment will occur as a result of the development or operation of the facilities.

**APPENDIX A**

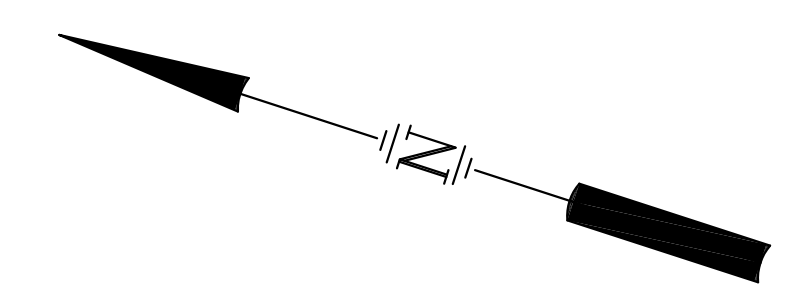
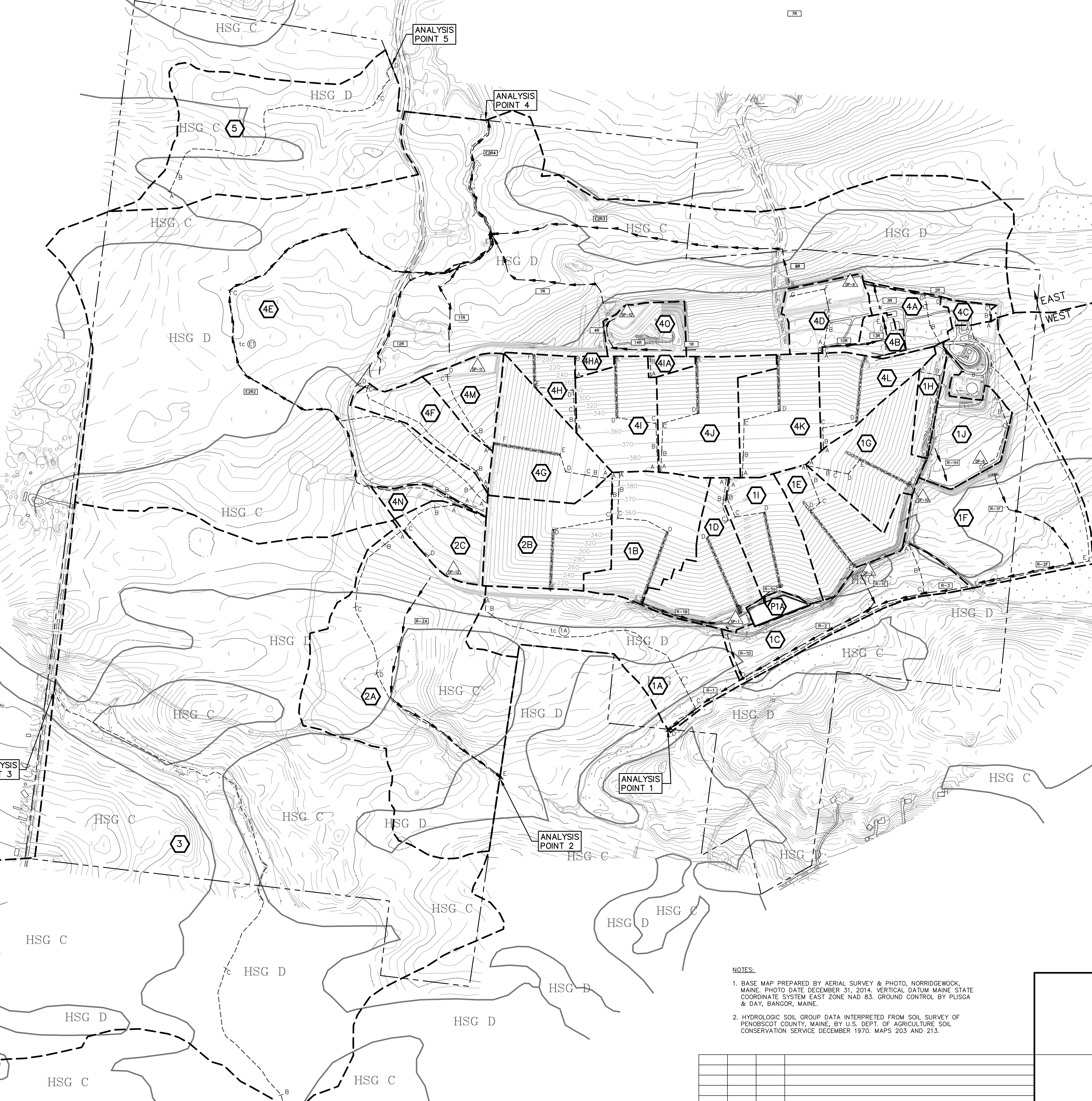
**POST-DEVELOPMENT STORMWATER ANALYSIS DRAWING D-101  
AND FINAL SITE DRAINAGE PLAN DRAWING C-107**



**TIME OF CONCENTRATION**

- SUBCATCHMENT 1A  
A - B: Sht L=150', S=0.020  
B - C: Direct Entry, L=1840'  
C - D: Direct Entry, L=260'
- SUBCATCHMENT 1B  
A - B: Sht L=150', S=0.050  
B - C: ShC L=185', S=0.100  
C - D: Ch L=390', S=0.050  
D - E: Ch L=560', S=0.330
- SUBCATCHMENT 1C  
A - B: Sht L=150', S=0.035  
B - C: ShC L=230', S=0.013  
C - D: Direct Entry
- SUBCATCHMENT 1D  
A - B: Sht L=150', S=0.050  
B - C: ShC L=160', S=0.100  
C - D: Ch L=200', S=0.050  
D - E: Ch L=605', S=0.330
- SUBCATCHMENT 1E  
A - B: Sht L=150', S=0.100  
B - C: ShC L=150', S=0.150  
C - D: Ch L=93', S=0.050  
D - E: Ch L=517', S=0.330
- SUBCATCHMENT 1F  
A - B: Sht L=100', S=0.010  
B - C: Sht L=17', S=0.330  
C - D: ShC L=300', S=0.019  
D - E: ShC L=1649', S=0.050  
E - F: Direct Entry
- SUBCATCHMENT 1G  
A - B: Sht L=150', S=0.100  
B - C: ShC L=62', S=0.100  
C - D: ShC L=90', S=0.330  
D - E: Ch L=140', S=0.500  
E - F: Ch L=415', S=0.330
- SUBCATCHMENT 1H  
A - B: Sht L=150', S=0.330  
B - C: Ch L=610', S=0.030
- SUBCATCHMENT 1I  
A - B: Sht L=150', S=0.050  
B - C: ShC L=150', S=0.100  
C - D: Ch L=220', S=0.050  
D - E: Ch L=570', S=0.330
- SUBCATCHMENT 1J  
A - B: Sht L=100', S=0.040  
B - C: ShC L=123', S=0.057  
C - D: Ch L=370', S=0.019
- SUBCATCHMENT 2A  
A - B: Sht L=150', S=0.030  
B - C: ShC L=540', S=0.020  
C - D: ShC L=530', S=0.009  
D - E: Cf L=1213', S=0.008
- SUBCATCHMENT 2B  
A - B: Sht L=150', S=0.050  
B - C: ShC L=190', S=0.100  
C - D: Ch L=430', S=0.050  
D - E: Ch L=450', S=0.330
- SUBCATCHMENT 2C  
A - B: Sht L=150', S=0.013  
B - C: ShC L=290', S=0.024  
C - D: Ch L=260', S=0.011
- SUBCATCHMENT 3  
A - B: Sht L=150', S=0.020  
B - C: ShC L=1120', S=0.005  
C - D: Direct Entry, L=3070'
- SUBCATCHMENT 4A  
A - B: Sht L=150', S=0.017  
B - C: ShC L=160', S=0.041  
C - D: ShC L=70', S=0.043
- SUBCATCHMENT 4B  
A - B: Sht L=24', S=0.020  
B - C: Sht L=19', S=0.500  
C - D: ShC L=584', S=0.014  
D - E: Ch L=40', S=0.025
- SUBCATCHMENT 4C  
A - B: Sht L=61', S=0.020  
B - C: Sht L=61', S=0.020  
C - D: ShC L=374', S=0.011
- SUBCATCHMENT 4D  
A - B: Sht L=125', S=0.022  
B - C: Sht L=25', S=0.052  
C - D: ShC L=270', S=0.019  
D - E: ShC L=40', S=0.330  
E - F: ShC L=100', S=0.015  
F - G: ShC L=258', S=0.003
- SUBCATCHMENT 4E  
A - B: Sht L=150', S=0.013  
B - C: ShC L=2625', S=0.019  
C - D: Direct Entry, L=1590'  
D - E: Direct Entry, L=760'  
E - F: Direct Entry, L=960'
- SUBCATCHMENT 4F  
A - B: Sht L=140', S=0.028  
B - C: ShC L=1067', S=0.029  
C - D: Ch L=20', S=0.021
- SUBCATCHMENT 4G  
A - B: Sht L=100', S=0.050  
B - C: Sht L=50', S=0.100  
C - D: ShC L=150', S=0.100  
D - E: Ch L=130', S=0.050  
D - F: Ch L=500', S=0.330
- SUBCATCHMENT 4H  
A - B: Sht L=75', S=0.100  
B - C: Sht L=75', S=0.330  
C - D: ShC L=150', S=0.330  
D - E: Ch L=290', S=0.050  
E - D: Ch L=240', S=0.330
- SUBCATCHMENT 4HA  
A - B: Sht L=140', S=0.330
- SUBCATCHMENT 4I  
A - B: Sht L=150', S=0.050  
B - C: ShC L=200', S=0.100  
C - D: Ch L=270', S=0.050  
D - E: Ch L=440', S=0.330
- SUBCATCHMENT 4IA  
A - B: Sht L=140', S=0.333
- SUBCATCHMENT 4J  
A - B: Sht L=150', S=0.050  
B - C: ShC L=200', S=0.100  
C - D: Ch L=270', S=0.050  
D - E: Ch L=430', S=0.330
- SUBCATCHMENT 4K  
A - B: Sht L=150', S=0.050  
B - C: Sht L=270', S=0.055  
C - D: Ch L=270', S=0.050  
D - E: Ch L=410', S=0.330
- SUBCATCHMENT 4L  
A - B: Sht L=20', S=0.050  
B - C: ShC L=130', S=0.100  
C - D: Ch L=250', S=0.050  
D - E: Ch L=490', S=0.330
- SUBCATCHMENT 4M  
A - B: Sht L=150', S=0.330  
B - C: ShC L=470', S=0.044  
C - D: ShC L=20', S=0.330
- SUBCATCHMENT 4N  
A - B: Sht L=150', S=0.020  
B - C: ShC L=580', S=0.023
- SUBCATCHMENT 4O  
A - B: Sht L=55', S=0.300  
B - C: ShC L=289', S=0.030  
C - D: ShC L=319', S=0.012
- SUBCATCHMENT 5  
A - B: Sht L=150', S=0.013  
B - C: ShC L=1930', S=0.011  
C - D: Direct Entry, L=275'

- SUBCATCHMENT 4E  
A - B: Sht L=150', S=0.013  
B - C: ShC L=2625', S=0.019  
C - D: Direct Entry, L=1590'  
D - E: Direct Entry, L=760'  
E - F: Direct Entry, L=960'
- SUBCATCHMENT 4F  
A - B: Sht L=140', S=0.028  
B - C: ShC L=1067', S=0.029  
C - D: Ch L=20', S=0.021
- SUBCATCHMENT 4G  
A - B: Sht L=100', S=0.050  
B - C: Sht L=50', S=0.100  
C - D: ShC L=150', S=0.100  
D - E: Ch L=130', S=0.050  
D - F: Ch L=500', S=0.330
- SUBCATCHMENT 4H  
A - B: Sht L=75', S=0.100  
B - C: Sht L=75', S=0.330  
C - D: ShC L=150', S=0.330  
D - E: Ch L=290', S=0.050  
E - D: Ch L=240', S=0.330
- SUBCATCHMENT 4HA  
A - B: Sht L=140', S=0.330
- SUBCATCHMENT 4I  
A - B: Sht L=150', S=0.050  
B - C: ShC L=200', S=0.100  
C - D: Ch L=270', S=0.050  
D - E: Ch L=440', S=0.330
- SUBCATCHMENT 4IA  
A - B: Sht L=140', S=0.333
- SUBCATCHMENT 4J  
A - B: Sht L=150', S=0.050  
B - C: ShC L=200', S=0.100  
C - D: Ch L=270', S=0.050  
D - E: Ch L=430', S=0.330
- SUBCATCHMENT 4K  
A - B: Sht L=150', S=0.050  
B - C: Sht L=270', S=0.055  
C - D: Ch L=270', S=0.050  
D - E: Ch L=410', S=0.330
- SUBCATCHMENT 4L  
A - B: Sht L=20', S=0.050  
B - C: ShC L=130', S=0.100  
C - D: Ch L=250', S=0.050  
D - E: Ch L=490', S=0.330
- SUBCATCHMENT 4M  
A - B: Sht L=150', S=0.330  
B - C: ShC L=470', S=0.044  
C - D: ShC L=20', S=0.330
- SUBCATCHMENT 4N  
A - B: Sht L=150', S=0.020  
B - C: ShC L=580', S=0.023
- SUBCATCHMENT 4O  
A - B: Sht L=55', S=0.300  
B - C: ShC L=289', S=0.030  
C - D: ShC L=319', S=0.012
- SUBCATCHMENT 5  
A - B: Sht L=150', S=0.013  
B - C: ShC L=1930', S=0.011  
C - D: Direct Entry, L=275'

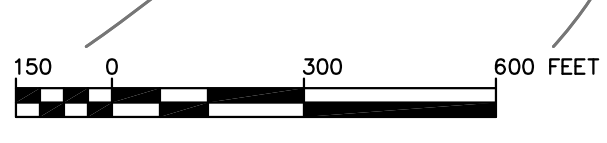


**LEGEND**

- 1B SUBCATCHMENT DESIGNATION
- SUBCATCHMENT BOUNDARY
- A B C TIME OF CONCENTRATION SEGMENT DESIGNATION
- TIME OF CONCENTRATION PATH
- HYDROLOGIC SOIL GROUP BOUNDARY
- HSG D HYDROLOGIC SOIL GROUP DESIGNATION
- Sht L=50', S=0.005 TIME OF CONCENTRATION TYPE, LENGTH AND SLOPE
- Sht SHEET FLOW
- Shc SHALLOW CONCENTRATED FLOW
- Ch CHANNEL FLOW
- DRAINAGE REACH
- R-1H REACH DESIGNATION (HYDROCAD)
- P-1 POND/STRUCTURE DESIGNATION (HYDROCAD)
- tc ① TIME OF CONCENTRATION WITH SUBCATCHMENT DESIGNATION

**NOTES:**

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO, NORRIDGEWOCK, MAINE. PHOTO DATE DECEMBER 31, 2014. VERTICAL DATUM MAINE STATE COORDINATE SYSTEM EAST ZONE NAD 83. GROUND CONTROL BY PLUSGA & DAY, BANGOR, MAINE.
2. HYDROLOGIC SOIL GROUP DATA INTERPRETED FROM SOIL SURVEY OF PENOBSCOT COUNTY, MAINE, BY U.S. DEPT. OF AGRICULTURE SOIL CONSERVATION SERVICE DECEMBER 1970. MAPS 203 AND 213.



REV.	BY	DATE	STATUS

**CASELLA JUNIPER RIDGE LANDFILL OLD TOWN, MAINE**

**STORMWATER MANAGEMENT PLAN POST DEVELOPMENT ANALYSIS**

**SME**  
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smemaine.com



DESIGN BY: MNA  
DRAWN BY: SJM  
DATE: 2/15  
CHECKED BY:  
LMN: SMP-POST  
CTB: SME-STD

JOB NO. 14101.00 DWG FILE SMP-POST D-101





**LEGEND**

-  WETLAND DELINEATED
-  WETLAND PHOTO INTERPRETED

**NOTES:**

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 12/31/14. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY PLUSGA & DAY LAND SURVEYORS, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLANS COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SITE BENCHMARK INFORMATION:  
 PLUG 1 IS A BRASS PLUG ON FORMER LEACHATE POND PUMP STATION LOCATED AT COORDINATES NORTHING 478242.05, EASTING 925376.35 ELEVATION 167.93
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014 AND 2015.
3. PERMITTED LANDFILL FINAL WASTE GRADES REPRESENT GRADES PRIOR TO CONSTRUCTION OF FINAL COVER SYSTEM.
4. PROPOSED FINAL WASTE GRADES REPRESENT GRADES PRIOR TO CONSTRUCTION OF FINAL COVER SYSTEM.
5. CULVERT SCHEDULE IS SHOWN ON DRAWING C-306. CULVERT SCHEDULE INCLUDES CULVERTS FOR DETENTION BASIN OUTLET STRUCTURES.

REV.	BY	DATE	STATUS
7/15			ISSUED FOR MEDEP SOLID WASTE PERMIT APPLICATION

**JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**

**FINAL SITE DRAINAGE PLAN**

**SME**  
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE  
4 Blanchard Road, PO Box 85A, Cumberland Center, Maine 04021  
Phone 207.829.5016 • Fax 207.829.5692 • www.smemaine.com

DESIGN BY: PCM  
DRAWN BY: SJM  
DATE: 3/4/2015  
CHECKED BY:  
LMN: FINAL-DRAIN  
CTB: SME-STD

JOB NO. 14101.00 DWG FILE BASE

C-107



**APPENDIX B**  
**EROSION CONTROL DESIGN**

**APPENDIX B-1**

**GRASS DITCH LINING DESIGN**

## GRASS CHANNEL DESIGN

Project Name: Juniper Ridge  
 Project Location: Old Town, ME  
 Project No: 14101.00  
 Comp By: MNA  
 Date: 3/12/2015  
 Chk. By: fcu

**OBJECTIVE:** Design channel with adequate lining to convey stormwater flows from 25-year, 24-hour storm event assuming full grass cover and 2-year, 24-hour storm event assuming bare ditch condition.

**REFERENCES:**

1. Applied Microcomputer Systems, HydroCAD Stormwater Modeling System, Version 7.0, Chocorua, New Hampshire, 2001
2. North American Green Erosion Control Material Design Software.
3. Maine Erosion and Sedimentation Control BMP's, MEDEP, March 2003.

**DESIGN PROCEDURE:**

1. Determine peak stormwater flows from 2-year and 25-year, 24-hour storm event using TR-20. Evaluate permanent and temporary channel lining using maximum flow rate.

**SUMMARY OF RESULTS:**

GRASS DITCH	FLOW FROM	SLOPE (MAX.) (ft/ft)	Q <sub>2</sub> (cfs)	Q <sub>25</sub> (cfs)	Bottom Width (ft)	Side Slopes (H:1V)	Temp. Lining	Permanent Lining
NPD-1	North Perimeter Ditch 1	0.0299	5.2	20.2	2	2	NAG S75	Grass Only
NPD-2	North Perimeter Ditch 2	0.0027	5.3	22.1	2	2	NAG S75	Grass Only
EPD-1	East Perimeter Ditch 1	0.0075	5.0	19.5	2	2	NAG S75	Grass Only
EPD-2	East Perimeter Ditch 2	0.0157	0.5	1.9	2	2	NAG S75	Grass Only
EPD-3	East Perimeter Ditch 3	0.0167	4.5	17.6	2	2	NAG S75	Grass Only
EPD-4	East Perimeter Ditch 4	0.0191	0.4	1.6	2	2	NAG S75	Grass Only
EPD-5	East Perimeter Ditch 5	0.0350	2.0	7.7	2	2	NAG S75	Grass Only
EPD-6	East Perimeter Ditch 6	0.0056	4.4	16.9	2	2	NAG S75	Grass Only
DP-10-1	DP-10 Ditch 1	0.0079	4.9	19.0	2	2	NAG S75	Grass Only
DP-10-2	DP-10 Ditch 2	0.0362	4.9	18.7	2	2	NAG S75	Grass Only
4B-1	Ditch 4B-1	0.0085	4.2	16.3	2	2	NAG S75	Grass Only
MRD-1	Maintenance Road Ditch	0.0194	5.1	19.7	2	2	NAG S75	Grass Only

# Tensar

## NORTH AMERICAN GREEN®

Tensar International Corporation  
5401 St. Wendel-Cynthiana Road  
Poseyville, Indiana 47633  
Tel. 800.772.2040  
Fax 812.867.0247  
www.nagreen.com

### Erosion Control Materials Design Software Version 5.0

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: North Perimeter Ditch**

PERMANENT LINING

Discharge	22.1
Peak Flow Period	1
Channel Slope	0.0299
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Clay Loam

DITCH  
NPD-1  
NPD-2

Q<sub>25</sub>  
20.2  
22.1

SLOPE  
0.0299  
0.0027

#### Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	22.1 cfs	3.87 ft/s	1.26 ft	0.055	4.2 lbs/ft <sup>2</sup>	2.35 lbs/ft <sup>2</sup>	1.78	STABLE	-- ✓
Underlying Substrate	Straight	22.1 cfs	3.87 ft/s	1.26 ft	--	0.05 lbs/ft <sup>2</sup>	0.048 lbs/ft <sup>2</sup>	1.04	STABLE	-- ✓

GRASS LINED OKAY FOR PERMANENT LINING





Tensar International Corporation  
 5401 St. Wendel-Cynthiana Road  
 Poseyville, Indiana 47633  
 Tel. 800.772.2040  
 Fax 812.867.0247  
 www.nagreen.com

**Erosion Control Materials Design Software  
 Version 5.0**

**Project Name: Juniper Ridge Landfill**

**Project Number: 60548**

**Channel Name: North Perimeter Ditch**

- TEMP. LINING

Discharge	5.3
Peak Flow Period	1
Channel Slope	0.0299
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	
Vegetation Type	
Vegetation Density	
Soil Type	

DITCH  
 NPD-1

Q<sub>2</sub>  
 5.2

SLOPE  
0.0299

NPD-2

5.3

0.0027

S75

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75 Unvegetated	Straight	5.3 cfs	2.72 ft/s	0.61 ft	0.053	1.55 lbs/ft <sup>2</sup>	1.13 lbs/ft <sup>2</sup>	1.37	STABLE	D ✓

∴ S75 w/ STAPLE PATTERN D



Tensar International Corporation  
 5401 St. Wendel-Cynthiana Road  
 Poseyville, Indiana 47633  
 Tel. 800.772.2040  
 Fax 812.867.0247  
 www.nagreen.com

**Erosion Control Materials Design Software  
 Version 5.0**

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: East Perimeter Ditch**

PERMANENT LINING

Discharge	19.5
Peak Flow Period	1
Channel Slope	0.035
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Clay Loam

<u>DITCH</u>	<u>Q<sub>25</sub></u>	<u>SLOPE</u>
EPD-1	19.5	0.0075
EPD-2	1.9	0.0157
EPD-3	17.6	0.0167
EPD-4	1.6	0.0191
EPD-5	7.7	0.035
EPD-6	16.9	0.0056

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	19.5 cfs	3.91 ft/s	1.16 ft	0.056	4.2 lbs/ft <sup>2</sup>	2.52 lbs/ft <sup>2</sup>	1.66	STABLE	-- ✓
Underlying Substrate	Straight	19.5 cfs	3.91 ft/s	1.16 ft	--	0.05 lbs/ft <sup>2</sup>	0.049 lbs/ft <sup>2</sup>	1.01	STABLE	-- ✓

GRASS LINED OKAY FOR PERMANENT LINING



Tensar International Corporation  
 5401 St. Wendel-Cynthiana Road  
 Poseyville, Indiana 47633  
 Tel. 800.772.2040  
 Fax 812.867.0247  
 www.nagreen.com

**Erosion Control Materials Design Software  
 Version 5.0**

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: East Perimeter Ditch**

- TEMP. LINING

Discharge	5
Peak Flow Period	1
Channel Slope	0.035
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	
Vegetation Type	
Vegetation Density	
Soil Type	

<u>DITCH</u>	<u>Q<sub>2</sub></u>	<u>SLOPE</u>
EPD-1	5.0	0.0075
EPD-2	0.5	0.0157
EPD-3	4.5	0.0167
EPD-4	0.4	0.0191
EPD-5	2.0	0.035
EPD-6	4.4	0.0056

S75

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75 Unvegetated	Straight	5 cfs	2.79 ft/s	0.57 ft	0.053	1.55 lbs/ft <sup>2</sup>	1.24 lbs/ft <sup>2</sup>	1.25	STABLE	D ✓

∴ S75 w/ STAPLE PATTERN D





Tensar International Corporation  
 5401 St. Wendel-Cynthiana Road  
 Poseyville, Indiana 47633  
 Tel. 800.772.2040  
 Fax 812.867.0247  
 www.nagreen.com

**Erosion Control Materials Design Software  
 Version 5.0**

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: DP-10 Ditch**

PERMANENT LINING

Discharge	19.0
Peak Flow Period	1
Channel Slope	0.0362
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Clay Loam

DITCH	Q <sub>25</sub>	SLOPE	
DP10-1	19.0	0.0079	} GRASS
DP-10-2	18.7	0.0362	
DP-10-3	33.82	0.0462	} RIPRAP

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	19 cfs	3.92 ft/s	1.13 ft	0.056	4.2 lbs/ft <sup>2</sup>	2.56 lbs/ft <sup>2</sup>	1.64	STABLE	-- ✓
Underlying Substrate	Straight	19 cfs	3.92 ft/s	1.13 ft	--	0.05 lbs/ft <sup>2</sup>	0.05 lbs/ft <sup>2</sup>	1.01	STABLE	-- ✓

GRASS LINED OKAY FOR PERMANENT LINING OF SEGMENTS 1 & 2



Tensar International Corporation  
 5401 St. Wendel-Cynthiana Road  
 Poseyville, Indiana 47633  
 Tel. 800.772.2040  
 Fax 812.867.0247  
 www.nagreen.com

**Erosion Control Materials Design Software  
 Version 5.0**

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: DP-10 Ditch**

TEMP. LINING

Discharge	4.9
Peak Flow Period	1
Channel Slope	0.0362
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	
Vegetation Type	
Vegetation Density	
Soil Type	

DITCH      Q<sub>2</sub>      SLOPE

DP-10-1      4.9      0.0079

DP-10-2      4.9      0.0362

DP-10-3      8.68      0.0462

GRASS

RIPRAP

S75

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Stable Pattern
S75 Unvegetated	Straight	4.9 cfs	2.8 ft/s	0.56 ft	0.054	1.55 lbs/ft <sup>2</sup>	1.27 lbs/ft <sup>2</sup>	1.23	STABLE	D ✓

∴ S75 w/ STABLE PATTERN D FOR SEGMENTS 1 & 2

# Tensar

## NORTH AMERICAN GREEN®

Tensar International Corporation  
5401 St. Wendel-Cynthiana Road  
Poseyville, Indiana 47633  
Tel. 800.772.2040  
Fax 812.867.0247  
www.nagreen.com

### Erosion Control Materials Design Software Version 5.0

**Project Name: Juniper Ridge Landfill**

**Project Number: 60548**

**Channel Name: Ditch 4B-1**

PERMANENT LINING

Discharge	16.3
Peak Flow Period	1
Channel Slope	0.0085
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Clay Loam

DITCH

Q<sub>25</sub>

SLOPE

4B-1

16.3

0.0085

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	16.3 cfs	1.93 ft/s	1.61 ft	0.067	4.2 lbs/ft <sup>2</sup>	0.86 lbs/ft <sup>2</sup>	4.9	STABLE	-- ✓
Underlying Substrate	Straight	16.3 cfs	1.93 ft/s	1.61 ft	--	0.05 lbs/ft <sup>2</sup>	0.012 lbs/ft <sup>2</sup>	4.29	STABLE	-- ✓

∴ GRASS LINED OKAY FOR PERMANENT LINING





Tensar International Corporation  
 5401 St. Wendel-Cynthiana Road  
 Poseyville, Indiana 47633  
 Tel. 800.772.2040  
 Fax 812.867.0247  
 www.nagreen.com

**Erosion Control Materials Design Software  
 Version 5.0**

**Project Name: Juniper Ridge Landfill**

**Project Number: 60548**

**Channel Name: Ditch 4B-1**

TEMP. LINING

Discharge	4.2
Peak Flow Period	1
Channel Slope	0.0085
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	
Vegetation Type	
Vegetation Density	
Soil Type	

DITCH      Q<sub>2</sub>      SLOPE  
 4B-1      4.2      0.0085

S75

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75 Unvegetated	Straight	4.2 cfs	1.68 ft/s	0.73 ft	0.05	1.55 lbs/ft <sup>2</sup>	0.38 lbs/ft <sup>2</sup>	4.03	STABLE	D ✓

∴ S75 w/ STABLE PATTERN D

# Tensar

## NORTH AMERICAN GREEN®

Tensar International Corporation  
5401 St. Wendel-Cynthiana Road  
Poseyville, Indiana 47633  
Tel. 800.772.2040  
Fax 812.867.0247  
www.nagreen.com

### Erosion Control Materials Design Software Version 5.0

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: Maintenance Road Ditch**

- PERMANENT LINING

Discharge	19.65
Peak Flow Period	1
Channel Slope	0.0194
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	C
Vegetation Type	Mix (Sod & Bunch)
Vegetation Density	Good 75-95%
Soil Type	Clay Loam

Unreinforced Vegetation - Class C - Mix (Sod & Bunch) - Good 75-95%

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
Unreinforced Vegetation	Straight	19.65 cfs	3.04 ft/s	1.37 ft	0.059	4.2 lbs/ft <sup>2</sup>	1.65 lbs/ft <sup>2</sup>	2.54	STABLE	-- ✓
Underlying Substrate	Straight	19.65 cfs	3.04 ft/s	1.37 ft	--	0.05 lbs/ft <sup>2</sup>	0.029 lbs/ft <sup>2</sup>	1.7	STABLE	-- ✓

∅∅ Grass lined OKAY for PERMANENT LINING



**NORTH  
AMERICAN  
GREEN®**

Tensar International Corporation  
5401 St. Wendel-Cynthiana Road  
Poseyville, Indiana 47633  
Tel. 800.772.2040  
Fax 812.867.0247  
www.nagreen.com

**Erosion Control Materials Design Software  
Version 5.0**

**Project Name: Juniper Ridge Landfill**  
**Project Number: 60548**  
**Channel Name: Maintenance Road Ditch**

*- TEMP. LINING*

Discharge	5.14
Peak Flow Period	1
Channel Slope	0.0194
Channel Bottom Width	2
Left Side Slope	2
Right Side Slope	2
Low Flow Liner	
Retardance Class	
Vegetation Type	
Vegetation Density	
Soil Type	

S75

Phase	Reach	Discharge	Velocity	Normal Depth	Mannings N	Permissible Shear Stress	Calculated Shear Stress	Safety Factor	Remarks	Staple Pattern
S75 Unvegetated	Straight	5.14 cfs	2.34 ft/s	0.66 ft	0.051	1.55 lbs/ft <sup>2</sup>	0.8 lbs/ft <sup>2</sup>	1.94	STABLE	D ✓

*∴ S75 w/ STAPLE PATTERN D*



**APPENDIX B-2**

**RIPRAP DITCH LINING DESIGN**

**RIPRAP  
CHANNEL  
DESIGN**

Project Name: Juniper Ridge  
 Project Location: Old Town, ME  
 Project No: 14101.00  
 Comp By: MNA  
 Date: 2/11/2015  
 Chk. By: *AM*

**OBJECTIVE:** Design channel with adequate lining to convey stormwater flows from 25-year, 24-hour storm event assuming full grass cover.

**REFERENCES:**

1. Applied Microcomputer Systems, HydroCAD Stormwater Modeling System, Version 7.0, Chocorua, New Hampshire, 2001
2. Channel Design Program HYCHL Version 6.1
3. Maine Erosion and Sedimentation Control BMP's, MEDEP, March 2003.

**DESIGN PROCEDURE:**

1. Determine peak stormwater flows for 25-year, 24-hour storm event using TR-20. (See Attached Hydrocad Printouts). Evaluate permanent channel lining using maximum flow rate.

**SUMMARY OF RESULTS:**

RIPRAP DITCH	FLOW FROM	SLOPE (MAX.) (ft/ft)	Q <sub>2</sub> (cfs)	Q <sub>25</sub> (cfs)	Bottom Width (feet)	Side Slopes (H:1V)	Riprap	
							D <sub>50</sub> (inches)	Thickness (inches)
DP-10-3	DITCH DP-10 SECTION 3	0.0462	9.3	35.4	2	2	4	9
Emerg Spillway	DP-10	0.33	NA	8.0	10	2	4	9

Commands Read From File: C:\HCHL\D-1B.CHL

JOB DP-10-3  
 UNI 0  
 \*\* UNITS PARAMETER = 0 (ENGLISH)  
 CHL 0.0462 35.4  
 TRP 2 2 2  
 \*\* LEFT SIDE SLOPE 2.0 AND RIGHT SIDE SLOPE 2.0  
 \*\* THE BASE WIDTH OF THE TRAPEZOID (ft) 2.00  
 LRR 0.33 2 42 2.65 .15  
 \*\* D50 (ft) .33  
 \*\* ANGLE OF REPOSE (DEGREES) 42.00  
 \*\* SPECIFIC GRAVITY 2.65  
 \*\* SHIELDS PARAMETER .150  
 END

*D50 = 4"*

\*\*\*\*\*END OF COMMAND FILE\*\*\*\*\*

DP-10-3

-----  
 INPUT REVIEW  
 -----

DESIGN PARAMETERS:

DESIGN DISCHARGE (ft<sup>3</sup>/s): 35.40  
 CHANNEL SHAPE: TRAPEZOIDAL  
 CHANNEL SLOPE (ft/ft): .046

-----  
 HYDRAULIC CALCULATIONS USING NORMAL DEPTH  
 -----

	DESIGN	MAXIMUM
FLOW (cfs)	35.40	27.31
DEPTH (ft)	1.46	1.32
AREA (ft <sup>2</sup> )	7.21	6.09
WETTED PERIMETER (ft)	8.54	7.88
HYDRAULIC RADIUS (ft)	.84	.77
VELOCITY (ft/s)	4.91	4.49
MANNINGS N (LOW FLOW)	.058	.060
REYNOLDS NUMBER (10 <sup>5</sup> )	.43	

-----  
 STABILITY ANALYSIS  
 -----

CONDITION	LINING TYPE	PERMIS SHR (LB/FT <sup>2</sup> )	CALC. SHR (LB/FT <sup>2</sup> )	STAB. FACTOR	REMARKS
BOTTOM; STRAIGHT	RIPRAP	5.10	4.22	1.21	STABLE
SIDE; STRAIGHT	RIPRAP	3.79	3.12	1.21	STABLE

\*\*\* NORMAL END OF HYCHL \*\*\*

*D50 = 4" OK*



**Post Expansion**

Prepared by Sevee and Maher Engineers, Inc.

HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Type III 24-hr 100-yr Storm Rainfall=5.80"

Printed 2/26/2015

Page 1

**Summary for Pond DP-10: DETENTION POND 10**

[62] Hint: Exceeded Reach 4R OUTLET depth by 0.72' @ 12.85 hrs

Inflow Area = 28.280 ac, 4.24% Impervious, Inflow Depth = 2.84" for 100-yr Storm event  
 Inflow = 59.36 cfs @ 12.35 hrs, Volume= 6.692 af  
 Outflow = 27.71 cfs @ 12.72 hrs, Volume= 6.274 af, Atten= 53%, Lag= 22.0 min  
 Primary = 18.03 cfs @ 12.72 hrs, Volume= 3.582 af  
 Secondary = 1.74 cfs @ 12.72 hrs, Volume= 2.452 af  
 Tertiary = 7.94 cfs @ 12.72 hrs, Volume= 0.240 af

Routing by Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs  
 Starting Elev= 170.00' Surf.Area= 0 sf Storage= 0 cf  
 Peak Elev= 180.44' @ 12.72 hrs Surf.Area= 27,104 sf Storage= 112,674 cf  
 Flood Elev= 181.00' Surf.Area= 28,500 sf Storage= 128,200 cf

100 year storm flow into riprap channel

Plug-Flow detention time= 439.2 min calculated for 6.272 af (94% of inflow)  
 Center-of-Mass det. time= 408.3 min ( 1,259.2 - 850.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	157,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	7,900	0	0
176.00	18,000	12,950	12,950
178.00	22,000	40,000	52,950
180.00	26,000	48,000	100,950
182.00	31,000	57,000	157,950

Device	Routing	Invert	Outlet Devices
#1	Device 3	179.00'	<b>48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 3	178.00'	<b>6.0" Vert. 6-in Orifice</b> C= 0.600
#3	Primary	175.20'	<b>18.0" Round 18-in Primary Culvert</b> L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.20' / 172.00' S= 0.0615 ' / Cc= 0.900 n= 0.011, Flow Area= 1.77 sf
#4	Secondary	173.50'	<b>5.8" Round 6-in Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 173.50' / 172.30' S= 0.0200 ' / Cc= 0.900 n= 0.011, Flow Area= 0.18 sf
#5	Device 4	177.00'	<b>5.8" Horiz. Orifice Top</b> C= 0.600 Limited to weir flow at low heads
#6	Device 4	176.20'	<b>1.5" Vert. Orifice Side</b> C= 0.600
#7	Tertiary	180.00'	<b>10.0' long x 22.0' breadth E-Spillway Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

## Post Expansion

Type III 24-hr 100-yr Storm Rainfall=5.80"

Prepared by Sevee and Maher Engineers, Inc.

Printed 2/26/2015

HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Page 2

---

Primary OutFlow Max=18.03 cfs @ 12.72 hrs HW=180.44' (Free Discharge)

↳ 3=18-in Primary Culvert (Inlet Controls 18.03 cfs @ 10.20 fps)

↳ 1=Orifice/Grate (Passes < 70.84 cfs potential flow)

↳ 2=6-in Orifice (Passes < 1.40 cfs potential flow)

Secondary OutFlow Max=1.74 cfs @ 12.72 hrs HW=180.44' (Free Discharge)

↳ 4=6-in Culvert (Barrel Controls 1.74 cfs @ 9.51 fps)

↳ 5=Orifice Top (Passes < 1.64 cfs potential flow)

↳ 6=Orifice Side (Passes < 0.12 cfs potential flow)

Tertiary OutFlow Max=7.82 cfs @ 12.72 hrs HW=180.44' (Free Discharge)

↳ 7=E-Spillway Weir (Weir Controls 7.82 cfs @ 1.79 fps)

DETENTION POND #10 **EMERGENCY** SPILLWAY RIPRAP CHANNEL

Commands Read From File: C:\HCHL\DP-10.CHL

```

JOB DP-10 SPILLWAY
UNI 0
** UNITS PARAMETER = 0 (ENGLISH)
   CHL 0.33  8
   TRP 10    3    3
** LEFT SIDE SLOPE    3.0 AND RIGHT SIDE SLOPE    3.0
** THE BASE WIDTH OF THE TRAPEZOID (ft)    10.00
   LRR 0.33  2 0 2.65  0.15
** D50 (ft)    .33
** SPECIFIC GRAVITY    2.65
** SHIELDS PARAMETER    .150
END
*****END OF COMMAND FILE*****
    
```

D50 = 4 INCHES

DP-10 SPILLWAY

-----  
INPUT REVIEW  
-----

DEFAULT ANGLE OF REPOSE (degrees): 40.95

DESIGN PARAMETERS:

DESIGN DISCHARGE (ft<sup>3</sup>/s): 8.00

CHANNEL SHAPE: TRAPEZOIDAL  
CHANNEL SLOPE (ft/ft): .330

-----  
HYDRAULIC CALCULATIONS USING BATHURST  
-----

```

FLOW (cfs)                8.00
MAX DEPTH (ft)             .09
AREA (ft^2)                1.20
WETTED PERIMETER (ft)     10.73
HYDRAULIC RADIUS (ft)     .11
AVG VELOCITY (ft/s)       6.69
MANNINGS EQUIVALENT       .127
Davg / D50                 .34
FROUDE NUMBER              3.87
REYNOLDS NUMBER (10^5)    .43
    
```

-----  
STABILITY ANALYSIS  
-----

CONDITION	LINING TYPE	PERMIS SHR (LB/FT <sup>2</sup> )	CALC. SHR (LB/FT <sup>2</sup> )	STAB. FACTOR	REMARKS
BOTTOM; STRAIGHT	RIPRAP	5.10	1.91	2.67	STABLE
SIDE; STRAIGHT	RIPRAP	4.46	1.62	2.76	STABLE
*** NORMAL END OF HYCHL ***					



***DOWNSPOUT RIPRAP SIZING:***

<u>SUBCATCHMENT</u>	<u>DOWNSPOUT SLOPE</u>	<u>25-YEAR Q (CFS)</u>
1B	0.33	21.2
1D	0.33	18.84
1E	0.33	20.23
1G	0.33	21.25
1I	0.33	15.23
2B	0.33	22.49
4G	0.33	20.62
4H	0.33	6.34
4I	0.33	16.02
4J	0.33	19.91
4K	0.33	17.14
4L	0.33	13.11
<b>MAX =</b>	<b>0.33</b>	<b>22.49</b>

Commands Read From File: C:\CHANNEL.CHL

```

JOB DOWNSPOUT
UNI 0
** UNITS PARAMETER = 0 (ENGLISH)
   CHL 0.33 22.49
*** WARNING: DATA IS OUT OF REASONABLE RANGE
   TRP 4 2 2
** LEFT SIDE SLOPE 2.0 AND RIGHT SIDE SLOPE 2.0
** THE BASE WIDTH OF THE TRAPEZOID (ft) 4.00
   LRR 0.67 2 42 2.65 0.15
** D50 (ft) .67
** ANGLE OF REPOSE (DEGREES) 42.00
** SPECIFIC GRAVITY 2.65
** SHIELDS PARAMETER .150
END

```

MAX DOWNSPOT Q25

D50 = 8-INCHES

\*\*\*\*\*END OF COMMAND FILE\*\*\*\*\*

DOWNSPOUT

INPUT REVIEW

```

DESIGN PARAMETERS:
  DESIGN DISCHARGE (ft^3/s):          22.49
  CHANNEL SHAPE:                      TRAPEZOIDAL
  CHANNEL SLOPE (ft/ft):              .330

```

HYDRAULIC CALCULATIONS USING BATHURST

```

FLOW (cfs)          22.49
MAX DEPTH (ft)      .42
AREA (ft^2)         2.05
WETTED PERIMETER (ft) 5.89
HYDRAULIC RADIUS (ft) .35
AVG VELOCITY (ft/s) 10.98
MANNINGS EQUIVALENT .039
Davg / D50          .54
FROUDE NUMBER       2.98
REYNOLDS NUMBER (10^5) 1.25

```

STABILITY ANALYSIS

CONDITION	LINING TYPE	PERMIS SHR (LB/FT^2)	CALC. SHR (LB/FT^2)	STAB. FACTOR	REMARKS
BOTTOM; STRAIGHT	RIPRAP	10.35	8.68	1.19	STABLE ✓
SIDE; STRAIGHT	RIPRAP	7.70	6.68	1.15	STABLE ✓

\*\*\* NORMAL END OF HYCHL \*\*\*

D50 = 8-INCHES OKAY FOR ALL DOWNSPOUTS

**APPENDIX B-3**

**CULVERT INLET/OUTLET DESIGN**



## RIPRAP APRON DESIGN

Project Name: Juniper Ridge Landfill  
 Project Location: Old Town, ME  
 Project No: 14101.00  
 Comp By: MNA  
 Date: 2/11/2015  
 Chk. By: *PLM*

**OBJECTIVE:** Design culvert outlet protection to protect the outlet of culverts from scour and deterioration.

**REFERENCES:**

1. Maine Department of Environmental Protection, Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, March 2003
2. Applied Microcomputer Systems, HydroCAD Stormwater Modeling System, Version 7.0, Chocorua, New Hampshire, 2001

**DESIGN PROCEDURE:**

1. Use design flows for 25-year, 24-hour storm event and attached Outlet Protection table to determine apron dimensions and riprap size.

**SUMMARY OF RESULTS:**

Riprap Apron Designation	Flow From	Q <sub>25</sub> (cfs)	Culvert Dia. (in)	D <sub>50</sub> (in)	Thickness (in)	Length (ft)	Width (ft)
2BA	Culvert 2BA	22	24	8	18	18	20
2BB	Culvert 2BB	22	24	6	14	18	20
4BA	Culvert 4BA	15	24	5	12	12	14
4BB	Culvert 4BB	15	24	5	12	12	14
4F	Culvert 4F	5	18	4	9	10	12
4G	Culvert 4G	20	24	5	12	12	14
4HA	Culvert 4HA	2	18	4	9	10	12
4HB	Culvert 4HB	7	18	4	9	10	12
4I	Culvert 4I	17	18	10	23	18	20
4IA	Culvert 4IA	2	18	4	9	10	12
4JA	Culvert 4JA	19	18	10	23	18	20
4JB	Culvert 4JB	9	24	5	12	12	14
4JC	Culvert 4JC	9	24	5	12	12	14
4K	Culvert 4K	17	24	5	12	12	14
4L	Culvert 4L	12	18	8	18	14	16
4N	Culvert 4N	2	18	4	9	10	12

## OUTLET PROTECTION FOR A PIPE FLOWING FULL WITH LOW TAILWATER

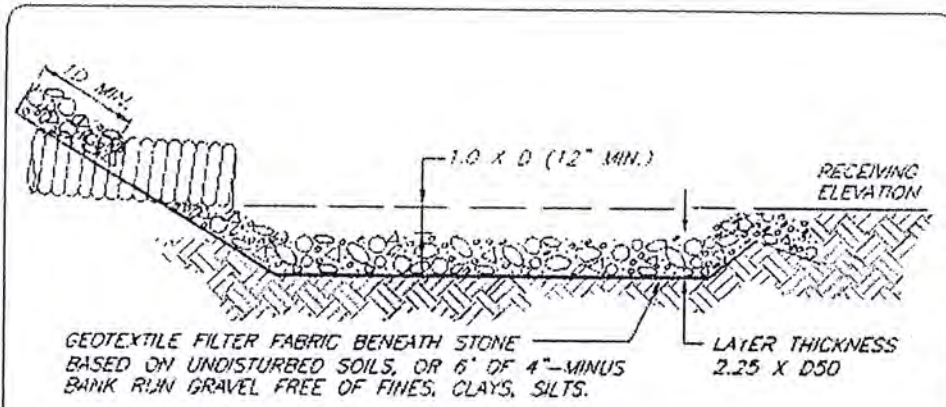
**RIPRAP SIZE - D50 (Inches)**  
**PIPE DIAMETER**

DISCHARGE	12"	15"	18"	21"	24"	27"	30"	36"	42"	48"	54"	60"
3cfs	4											
5cfs	4											
8cfs	5	4										
10cfs	6	5	4									
12cfs	8	6	6									
15cfs	8	6	8	5								
17cfs		8	8	5								
20cfs		10	10	6	5							
25cfs		12	12	6	6							
30cfs				8	8	6						
40cfs				12	10	8	6					
50cfs				16	12	10	8	6				
60cfs				18	16	12	10	8				
70cfs					18	15	12	8				
80cfs					20	16	15	10	8			
90cfs						18	16	12	10			
100cfs						20	18	12	10			
125cfs						24	20	16	12	10		
150cfs							24	20	16	12	10	
200cfs								24	20	18	15	12

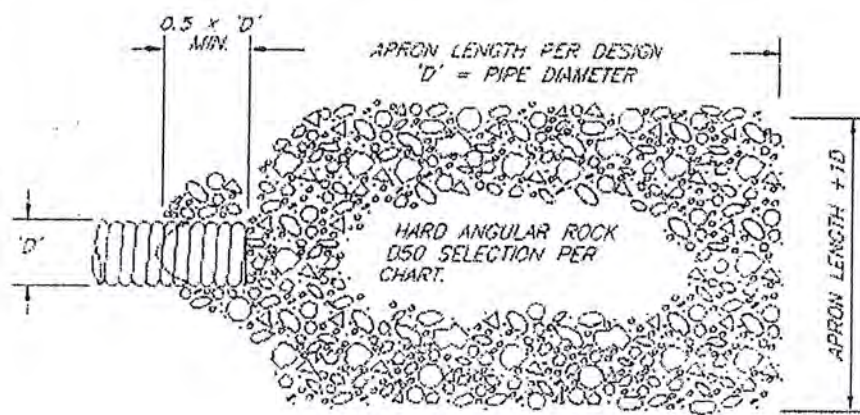
**MINIMUM LENGTH OF APRON (FEET)**  
**PIPE DIAMETER**

DISCHARGE	12"	15"	18"	21"	24"	27"	30"	36"	42"	48"	54"	60"
3cfs	8											
5cfs	8											
8cfs	11	10										
10cfs	14	12	10									
15cfs	18	16	14	12								
20cfs		18	18	16	12							
30cfs			22	20	18	16						
40cfs			26	24	24	20	18					
50cfs				26	26	24	22	18				
70cfs					30	30	28	25				
100cfs						36	36	33	27			
150cfs						42	42	42	38	33	28	
200cfs								48	45	42	37	32

From USDA Solid Conservation Service



SECTION



PLAN

NOTES:

1. CONSULT WITH IF&W IF FISH PASSAGE WILL BE INHIBITED DURING LOW FLOWS.
2. REFER TO DESIGN NOTES AND LIMITATIONS IN TEXT ON PIPE OUTLET PROTECTION.
3. IN DEFINED CHANNELS, APRON SHALL EXTEND FULL WIDTH OF BOTTOM AND ONE FOOT ABOVE MAX. TAILWATER OR UP TO BANK FULL, WHICHEVER IS LESS.

**PIPE OUTLET  
PROTECTION**

1994 JOHN MCQUILLAN ME DEP 7003

FILE: OUTLETAPRON



**APPENDIX B-4**

**LEVEL LIP SPREADER DESIGN**

**Standard Level Spreader Design**

Project Name: Juniper Ridge  
 Project Location: Old Town, ME  
 Project No: 14101.00  
 Comp By: MNA  
 Date: 2/10/2015  
 Chk. By: *[Signature]*

**OBJECTIVE:** Design level spreaders in accordance with Erosion and Sediment Control Standards.

**DESIGN CRITERIA**

- Level Spreader Length shall be such that flow from the spreader during the 10-year storm event does not exceed 0.25 cfs per linear foot of spreader. Minimum length = 15'

**DESIGN ANALYSIS**



Level Spreader Designation	Discharge From	Q <sub>10</sub> (cfs)	Rqd Rate (cfs/ft)	Min. Rqd. Length (ft)	Specified Length (ft)
10	Pond DP-10	4.9	0.25	19.8	20
11	Pond DP-11	1.2	0.25	4.7	15
12	Pond DP-12	1.3	0.25	5.4	15

**APPENDIX B-5**  
**PLUNGE POOL DESIGN**



## PLUNGE POOL DESIGN

Project Name: Juniper Ridge  
 Project Location: Old Town, ME  
 Project No: 14101.00  
 Comp By: MNA  
 Date: 2/3/2015  
 Chk. By: Pcm

**OBJECTIVE:** Design plunge pool to protect the outlet of culverts from scour and deterioration.

**REFERENCES:**

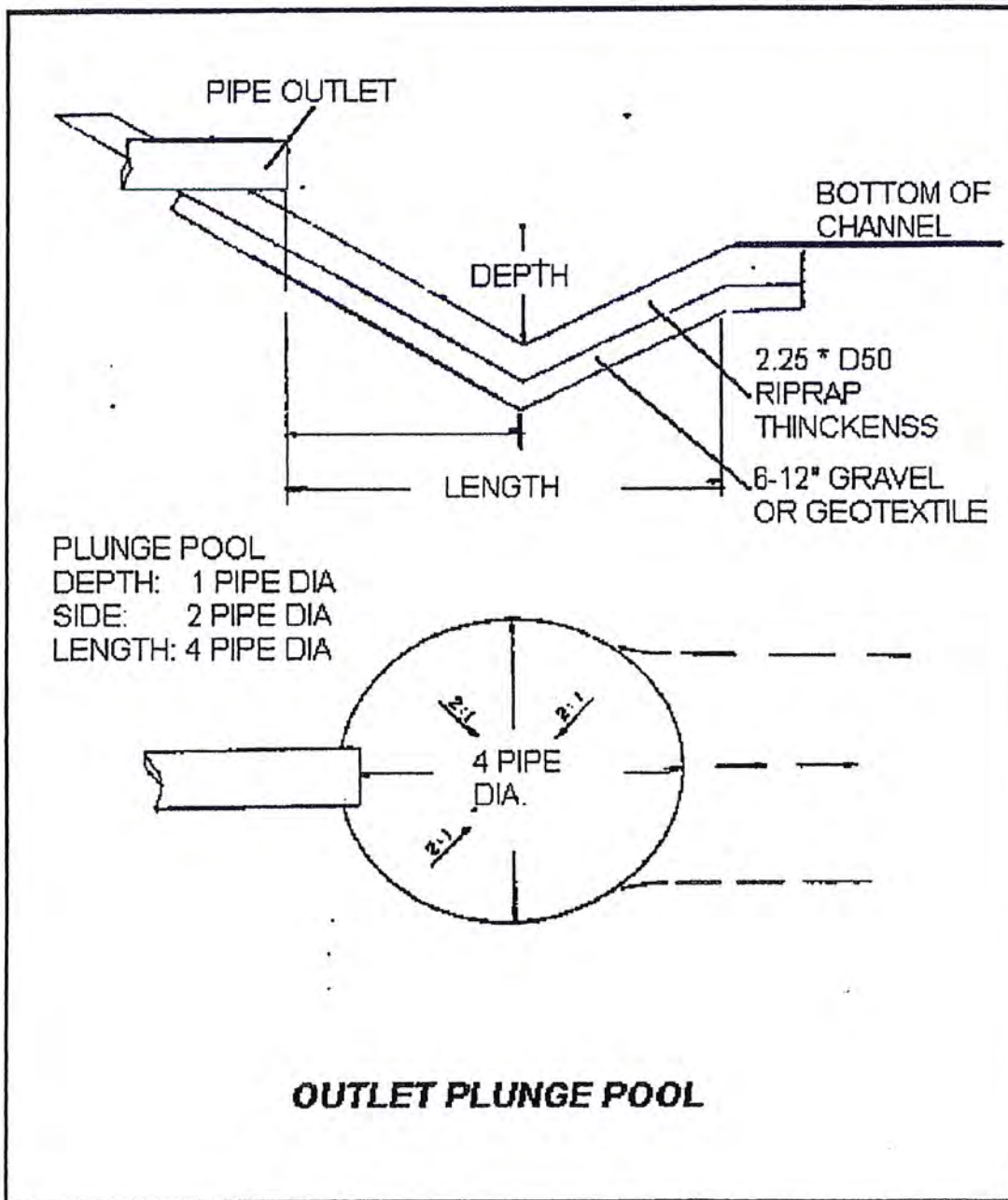
1. Maine Department of Environmental Protection, Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, March 2003
2. Applied Microcomputer Systems, HydroCAD Stormwater Modeling System, Version 7.0, Chocorua, New Hampshire, 2001

**DESIGN PROCEDURE:**

1. Use design flows for 25-year, 24-hour storm event and attached Outlet Plunge Pool table to determine plunge pool dimensions and riprap size.

**SUMMARY OF RESULTS:**

Plunge Pool Designation	Flow From	Q <sub>25</sub> (cfs)	Culvert Dia. (in)	Riprap		Length (ft)	Width (ft)
				D <sub>50</sub> (in)	Thickness (in)		
10	Pond DP-10	16.9	18	8	18	6	6
11	Pond DP-11	1.4	18	4	9	6	6
12	Pond DP-12	2.4	18	4	9	6	6



## OUTLET PROTECTION FOR A PIPE FLOWING FULL WITH LOW TAILWATER

**RIPRAP SIZE - D50 (Inches)**  
**PIPE DIAMETER**

DISCHARGE	12"	15"	18"	21"	24"	27"	30"	36"	42"	48"	54"	60"
3cfs	4											
5cfs	4											
8cfs	5	4										
10cfs	6	5	4									
12cfs	8	6	6									
15cfs	8	6	8	5								
17cfs		8	8	5								
20cfs		10	10	6	5							
25cfs		12	12	6	6							
30cfs				8	8	6						
40cfs				12	10	8	6					
50cfs				16	12	10	8	6				
60cfs				18	16	12	10	8				
70cfs					18	15	12	8				
80cfs					20	16	15	10	8			
90cfs						18	16	12	10			
100cfs						20	18	12	10			
125cfs						24	20	16	12	10		
150cfs							24	20	16	12	10	
200cfs								24	20	18	15	12

**MINIMUM LENGTH OF APRON (FEET)**  
**PIPE DIAMETER**

DISCHARGE	12"	15"	18"	21"	24"	27"	30"	36"	42"	48"	54"	60"
3cfs	8											
5cfs	8											
8cfs	11	10										
10cfs	14	12	10									
15cfs	18	16	14	12								
20cfs		18	18	16	12							
30cfs			22	20	18	16						
40cfs			26	24	24	20	18					
50cfs				26	26	24	22	18				
70cfs					30	30	28	25				
100cfs						36	36	33	27			
150cfs						42	42	42	38	33	28	
200cfs								48	45	42	37	32

From USDA Solid Conservation Service



**APPENDIX B-6**

**EMERGENCY SPILLWAY DESIGN**

**EMERGENCY SPILLWAY EVALUATION  
EXPANDED POND 9**

**Post Expansion**

Type III 24-hr 100-yr Storm Rainfall=5.80"

Prepared by Sevee and Maher Engineers, Inc.

Printed 2/26/2015

HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Page 5

**Summary for Pond DP-9: DETENTION POND 9**

Inflow Area = 33.165 ac, 8.08% Impervious, Inflow Depth = 3.25" for 100-yr Storm event  
 Inflow = 64.87 cfs @ 12.43 hrs, Volume= 8.970 af  
 Outflow = 4.63 cfs @ 16.13 hrs, Volume= 6.741 af, Atten= 93%, Lag= 222.2 min  
 Primary = 2.32 cfs @ 16.13 hrs, Volume= 2.271 af  
 Secondary = 1.40 cfs @ 16.13 hrs, Volume= 4.277 af  
 Tertiary = 0.91 cfs @ 16.13 hrs, Volume= 0.193 af

Routing by Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 190.60' @ 16.13 hrs Surf.Area= 89,426 sf Storage= 276,765 cf  
 Flood Elev= 191.00' Surf.Area= 91,210 sf Storage= 312,840 cf

Plug-Flow detention time= 1,283.3 min calculated for 6.741 af (75% of inflow)  
 Center-of-Mass det. time= 1,194.6 min ( 2,034.4 - 839.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	187.00'	404,050 cf	<b>Detention Pond (Prismatic)</b> Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
187.00	35,200	0	0
188.00	78,220	56,710	56,710
190.00	86,700	164,920	221,630
192.00	95,720	182,420	404,050

Device	Routing	Invert	Outlet Devices
#1	Primary	189.50'	<b>12.0" Round 12-In Outlet Culvert</b> L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 189.50' / 180.50' S= 0.1875 ' /' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#2	Secondary	184.21'	<b>5.8" Round 6-In Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 184.21' / 180.50' S= 0.0618 ' /' Cc= 0.900 n= 0.011, Flow Area= 0.18 sf
#3	Device 2	188.70'	<b>5.8" Horiz. Orifice</b> C= 0.600 Limited to weir flow at low heads
#4	Device 2	188.30'	<b>1.5" Vert. Orifice X 2.00</b> C= 0.600
#5	Tertiary	190.50'	<b>10.0' long x 22.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

192.0 = TOP OF BERM  
 190.6 = 100 YR PEAK  
 1.4' = FREEBOARD

**Primary OutFlow** Max=2.32 cfs @ 16.13 hrs HW=190.60' (Free Discharge)  
 1=12-In Outlet Culvert (Inlet Controls 2.32 cfs @ 2.96 fps)

**Secondary OutFlow** Max=1.40 cfs @ 16.13 hrs HW=190.60' (Free Discharge)  
 2=6-In Culvert (Passes 1.40 cfs of 1.73 cfs potential flow)  
 3=Orifice (Orifice Controls 1.22 cfs @ 6.64 fps)  
 4=Orifice (Orifice Controls 0.18 cfs @ 7.21 fps)

**Tertiary OutFlow** Max=0.90 cfs @ 16.13 hrs HW=190.60' (Free Discharge)  
 5=Broad-Crested Rectangular Weir (Weir Controls 0.90 cfs @ 0.87 fps)

**EMERGENCY SPILLWAY EVALUATION  
POND 10**

**Post Expansion**

Prepared by Sevee and Maher Engineers, Inc.  
HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Type III 24-hr 100-yr Storm Rainfall=5.80"

Printed 2/26/2015

Page 1

**Summary for Pond DP-10: DETENTION POND 10**

Inflow Area = 28.280 ac, 4.24% Impervious, Inflow Depth = 2.84" for 100-yr Storm event  
 Inflow = 59.36 cfs @ 12.35 hrs, Volume= 6.692 af  
 Outflow = 27.71 cfs @ 12.72 hrs, Volume= 6.274 af, Atten= 53%, Lag= 22.0 min  
 Primary = 18.03 cfs @ 12.72 hrs, Volume= 3.582 af  
 Secondary = 1.74 cfs @ 12.72 hrs, Volume= 2.452 af  
 Tertiary = 7.94 cfs @ 12.72 hrs, Volume= 0.240 af

Routing by Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs  
 Starting Elev= 170.00' Surf.Area= 0 sf Storage= 0 cf  
 Peak Elev= 180.44' @ 12.72 hrs Surf.Area= 27,104 sf Storage= 112,674 cf  
 Flood Elev= 181.00' Surf.Area= 28,500 sf Storage= 128,200 cf

Plug-Flow detention time= 439.2 min calculated for 6.272 af (94% of inflow)  
 Center-of-Mass det. time= 408.3 min ( 1,259.2 - 850.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	157,950 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	7,900	0	0
176.00	18,000	12,950	12,950
178.00	22,000	40,000	52,950
180.00	26,000	48,000	100,950
182.00	31,000	57,000	157,950

Device	Routing	Invert	Outlet Devices
#1	Device 3	179.00'	<b>48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 3	178.00'	<b>6.0" Vert. 6-in Orifice</b> C= 0.600
#3	Primary	175.20'	<b>18.0" Round 18-in Primary Culvert</b> L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.20' / 172.00' S= 0.0615 ' /' Cc= 0.900 n= 0.011, Flow Area= 1.77 sf
#4	Secondary	173.50'	<b>5.8" Round 6-in Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 173.50' / 172.30' S= 0.0200 ' /' Cc= 0.900 n= 0.011, Flow Area= 0.18 sf
#5	Device 4	177.00'	<b>5.8" Horiz. Orifice Top</b> C= 0.600 Limited to weir flow at low heads
#6	Device 4	176.20'	<b>1.5" Vert. Orifice Side</b> C= 0.600
#7	Tertiary	180.00'	<b>10.0' long x 22.0' breadth E-Spillway Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

182.0 = TOP OF BERM
180.4 = 100 YR PEAK
1.6' = FREEBOARD



**Post Expansion**

Type III 24-hr 100-yr Storm Rainfall=5.80"

Prepared by Sevee and Maher Engineers, Inc.

Printed 2/26/2015

HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Page 2

---

**Primary OutFlow** Max=18.03 cfs @ 12.72 hrs HW=180.44' (Free Discharge)

↳ **3=18-in Primary Culvert** (Inlet Controls 18.03 cfs @ 10.20 fps)

↳ **1=Orifice/Grate** (Passes < 70.84 cfs potential flow)

↳ **2=6-in Orifice** (Passes < 1.40 cfs potential flow)

**Secondary OutFlow** Max=1.74 cfs @ 12.72 hrs HW=180.44' (Free Discharge)

↳ **4=6-in Culvert** (Barrel Controls 1.74 cfs @ 9.51 fps)

↳ **5=Orifice Top** (Passes < 1.64 cfs potential flow)

↳ **6=Orifice Side** (Passes < 0.12 cfs potential flow)

**Tertiary OutFlow** Max=7.82 cfs @ 12.72 hrs HW=180.44' (Free Discharge)

↳ **7=E-Spillway Weir** (Weir Controls 7.82 cfs @ 1.79 fps)

**EMERGENCY SPILLWAY EVALUATION**  
**POND 11**

**Post Expansion**

Type III 24-hr 100-yr Storm Rainfall=5.80"

Prepared by Sevee and Maher Engineers, Inc.

Printed 2/26/2015

HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Page 3

**Summary for Pond DP-11: Detention Pond 11**

Inflow Area = 22.282 ac, 4.04% Impervious, Inflow Depth = 2.83" for 100-yr Storm event  
 Inflow = 42.15 cfs @ 12.30 hrs, Volume= 5.252 af  
 Outflow = 3.99 cfs @ 15.24 hrs, Volume= 5.094 af, Atten= 91%, Lag= 176.4 min  
 Primary = 2.67 cfs @ 15.24 hrs, Volume= 1.081 af  
 Secondary = 1.32 cfs @ 15.24 hrs, Volume= 4.013 af

Routing by Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs / 2  
 Peak Elev= 168.53' @ 15.24 hrs Surf.Area= 41,482 sf Storage= 147,109 cf

Plug-Flow detention time= 1,111.8 min calculated for 5.093 af (97% of inflow)  
 Center-of-Mass det. time= 1,096.9 min ( 1,954.3 - 857.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	163.00'	211,750 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
163.00	2,000	0	0
164.00	10,900	6,450	6,450
166.00	34,300	45,200	51,650
168.00	39,800	74,100	125,750
170.00	46,200	86,000	211,750

Device	Routing	Invert	Outlet Devices
#1	Device 3	167.50'	<b>6.0" Vert. 6-In Orifice Side (Riser) C= 0.600</b>
#2	Device 3	168.40'	<b>48.0" Horiz. Grate Top (Riser) C= 0.600</b> Limited to weir flow at low heads
#3	Primary	164.30'	<b>18.0" Round 18-In Culvert</b> L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet invert= 164.30' / 162.00' S= 0.0250 ' /' Cc= 0.900 n= 0.011, Flow Area= 1.77 sf
#4	Secondary	161.50'	<b>5.8" Round 6-In Culvert</b> L= 137.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet invert= 161.50' / 160.00' S= 0.0109 ' /' Cc= 0.900 n= 0.011, Flow Area= 0.18 sf
#5	Device 4	165.10'	<b>5.8" Horiz. Orifice Top (6-in Culv) C= 0.600</b> Limited to weir flow at low heads
#6	Device 4	164.00'	<b>1.5" Vert. Orifice Side (6-in Culv) X 1.50 C= 0.600</b>

**Primary OutFlow Max=2.66 cfs @ 15.24 hrs HW=168.53' (Free Discharge)**  
 3=18-In Culvert (Passes 2.66 cfs of 12.52 cfs potential flow)  
 1=6-In Orifice Side (Riser) (Orifice Controls 0.83 cfs @ 4.24 fps)  
 2=Grate Top (Riser) (Weir Controls 1.83 cfs @ 1.16 fps)

170. = TOP OF ROAD
168.5 = 100 YR PEAK
1.5' = FREEBOARD

**Secondary OutFlow Max=1.32 cfs @ 15.24 hrs HW=168.53' (Free Discharge)**  
 4=6-In Culvert (Barrel Controls 1.32 cfs @ 7.19 fps)  
 5=Orifice Top (6-in Culv) (Passes < 1.64 cfs potential flow)  
 6=Orifice Side (6-in Culv) (Passes < 0.19 cfs potential flow)

EMERGENCY SPILLWAY EVALUATION  
POND 12

**Post Expansion**

Prepared by Sevee and Maher Engineers, Inc.

HydroCAD® 10.00 s/n 01260 © 2012 HydroCAD Software Solutions LLC

Type III 24-hr 100-yr Storm Rainfall=5.80"

Printed 2/26/2015

Page 4

**Summary for Pond DP-12: DETENTION POND 12**

Inflow Area = 20.177 ac, 3.27% Impervious, Inflow Depth = 2.80" for 100-yr Storm event  
 Inflow = 32.91 cfs @ 12.35 hrs, Volume= 4.700 af  
 Outflow = 5.20 cfs @ 14.55 hrs, Volume= 4.540 af, Atten= 84%, Lag= 132.4 min  
 Primary = 3.54 cfs @ 14.55 hrs, Volume= 1.439 af  
 Secondary = 1.65 cfs @ 14.55 hrs, Volume= 3.101 af

Routing by Stor-Ind method, Time Span= 0.00-168.00 hrs, dt= 0.05 hrs  
 Peak Elev= 188.13' @ 14.55 hrs Surf.Area= 41,214 sf Storage= 113,928 cf

Plug-Flow detention time= 756.5 min calculated for 4.538 af (97% of inflow)  
 Center-of-Mass det. time= 739.3 min ( 1,611.6 - 872.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	184.00'	205,300 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
184.00	11,200	0	0
186.00	28,700	39,900	39,900
188.00	40,200	68,900	108,800
190.00	56,300	96,500	205,300

Device	Routing	Invert	Outlet Devices
#1	Device 3	188.00'	<b>48.0" Horiz. Grate Top (Riser)</b> C= 0.600 Limited to weir flow at low heads
#2	Device 3	186.80'	<b>8.0" Vert. 8-In Orifice (Riser Side)</b> C= 0.600
#3	Primary	184.50'	<b>18.0" Round 18- In Culvert</b> L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 184.50' / 180.00' S= 0.0563 ' /' Cc= 0.900 n= 0.011, Flow Area= 1.77 sf
#4	Device 6	185.50'	<b>5.8" Horiz. Orifice Top (6-in Pipe)</b> C= 0.600 Limited to weir flow at low heads
#5	Device 6	184.50'	<b>1.5" Vert. Orifice (Side of 6-in) X 2.00</b> C= 0.600
#6	Secondary	181.50'	<b>6.0" Round 6-In Culvert</b> L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 181.50' / 180.00' S= 0.0234 ' /' Cc= 0.900 n= 0.011, Flow Area= 0.20 sf

**Primary OutFlow** Max=3.51 cfs @ 14.55 hrs HW=188.13' (Free Discharge)  
 3=18- In Culvert (Passes 3.51 cfs of 11.39 cfs potential flow)  
 1=Grate Top (Riser) (Weir Controls 1.84 cfs @ 1.16 fps)  
 2=8-In Orifice (Riser Side) (Orifice Controls 1.67 cfs @ 4.80 fps)

190.0 = TOP OF ROAD
188.1 = 100 YR PEAK
1.9' = FREEBOARD

**Secondary OutFlow** Max=1.65 cfs @ 14.55 hrs HW=188.13' (Free Discharge)  
 6=6-In Culvert (Passes 1.65 cfs of 1.85 cfs potential flow)  
 4=Orifice Top (6-in Pipe) (Orifice Controls 1.43 cfs @ 7.80 fps)  
 5=Orifice (Side of 6-in) (Orifice Controls 0.22 cfs @ 9.09 fps)



**APPENDIX C**

**TYPICAL CONSTRUCTION EROSION AND SEDIMENTATION  
CONTROL SPECIFICATIONS AND DRAWING C-308**

## SECTION 02220

### EROSION CONTROL

#### PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS: Drawings and General Terms and Conditions as outlined in Section 1 of the Construction Agreement and Division-1 Specification sections, apply to work of this section. The Juniper Ridge Landfill, MEDEP approved Erosion and Sedimentation Control Plan.
- 1.02 RELATED WORK SPECIFIED ELSEWHERE:
- A. Site Preparation: Section 02100
  - B. Earthwork: Section 02200
  - C. Seeding and Mulching: Section 02800
- 1.03 DESCRIPTION OF WORK:
- A. The Contractor shall provide all materials, equipment, and labor necessary for the dewatering of excavations and the removal and/or diversion of surface water from the construction area, and installation of siltation and erosion control structures as shown on the plans and according to these Specifications, and in accordance with the MEDEP "Best Management Practices" – March 2003 for erosion and sedimentation control.
  - B. The Contractor shall provide all materials, equipment, and labor necessary (for the duration of the Contract) for the dewatering of excavations and the removal and/or diversion of surface water from the construction area, and installation of siltation and erosion control structures as shown on the plans and according to these Specifications, and in accordance with the MEDEP "Best Management Practices" – March 2003 for erosion and sedimentation control. The Contractor shall maintain a dewatering and stormwater control system so that no sediment impacted waters are discharged west of the access road at the southwestern end of the site.
  - C. The Contractor shall build all drains and do all ditching, pumping, bailing, and all other work necessary to keep the excavation clear of groundwater, or storm water during the progress of the work and until the finished work is safe from damage. The Contractor shall make provisions on the site to detain and filter water from the excavation operation so that sediments from the dewatering operation are contained. In no case will direct discharge from the dewatering operations to off-site drainage facilities be allowed.
  - D. The Contractor shall perform all inspections and documentation required by the project's MEDEP Maine General Construction Permit.
  - E. The Contractor shall provide temporary seeding, mulching, or other protective coverings to exposed earth surfaces and stockpiles which will be exposed to rain or wind elements for a period of greater than seven days.

- F. The Contractor shall provide siltation fences, riprap, and/or stone check dams in the newly constructed drainage ditches for temporary sediment control as shown on the Contract Drawings.
- G. At the completion of landfill construction activities, the Contractor shall provide permanent seeding, mulching, or other protective landscape coverings to exposed earth surfaces effected by construction activities, and a shown on the Contact Drawings, and as specified in Section 02800.
- H. The Contractor shall be responsible for inspection, maintenance, and/or repair of all temporary erosion and sedimentation control measures during construction, including temporary erosion and sedimentation control measures installed by others and used during this project. Inspections will be undertaken by qualified personnel to ensure that controls are correctly functioning, and that additional erosion control measures are in installed if needed. Such inspections will occur bi-weekly and after each significant rain fall event (1 inch or more within a 24 hour period) during construction until permanent erosion control measures have been properly installed and the site is stabilized. Trapped sediment shall be removed when the height of the sediment is greater than one-half the depth of the erosion control measure.

#### 1.04 SEDIMENT CONTROL GUIDELINES:

- A. Maine Erosion and Sedimentation Control BMPs, January 2006.
- B. State of Maine Department of Environmental Protection Natural Resources Protection Act Permit by Rule Standards Chapter 305 (effective February 1989, revised April 1992).
- C. MEDEP - Maine Construction General Permit requirements.

#### 1.05 SUBMITTALS:

- A. The Contractor shall furnish to the Engineer, in writing, his plan for dewatering excavations and diverting surface water before beginning the construction work for which the dewatering or diversion is required. Acceptance of this plan will not relieve the Contractor of responsibility for completing the work as specified.
- B. Manufacturer's product data sheets, material certifications, and standard manufacturing quality control test data for products listed in Part 2 of this specification.

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Handle material in accordance with manufacturer's recommendations. Protect materials from deterioration during delivery, and while stored at the site.

### PART 2 - PRODUCTS

#### 2.01 SILTATION FENCE:

- A. Siltation fence shall be preassembled fence consisting of synthetic filter fabric reinforced with a supporting mesh and mounted on wood or metal stakes.

02220-2



- B. The fence shall be Envirofence as manufactured by Mirafi, Spun Bond as manufactured by Trevira, or Propex Silt Stop as manufactured by Amoco or approved equivalent.

#### 2.02 EROSION CONTROL BLANKET:

- A. Shall be placed on newly topsoiled and seeded areas as indicated on the Contract Drawings. The matting type shall be that which is specified on the contract drawings, or an approved equal.

#### 2.03 RIPRAP STONE:

1. Riprap shall be a graded mixture of angular stones such that 50 percent of the mixture by volume shall be greater than the stated  $D_{50}$  size as indicated on the Contract Drawings.

Stones used for riprap shall consist of sound durable angular rock which will not become disintegrated by exposure to the action of water or weather. Either field stone or rough unhewn quarry stone may be used. Stones shall weigh from 10 lbs to 200 lbs except that when available suitable stones weighing more than 200 lbs may be used. Approximately 50 percent of the stones by volume shall exceed a unit weight of 25 lbs. Stone particle size may not be greater than 1.5 times the stated  $D_{50}$  size.

2. Exposed Stone: The exposed stones for riprap shall be angular and as nearly rectangular in cross-section as practicable. Rounded boulders or cobbles will not be permitted.
3. Bedding Stone: Material for bedding shall be aggregate base material conforming to Specification 02200, Earthwork; Section 2.01A.2.
4. Riprap Geotextile Filter: The geotextile used in the construction of riprap ditches, spillways, aprons, and plunge pools shall meet Specification 02272 Part 2.01.A (5a).

#### 2.04 STONE CHECK DAMS:

- A. Stone for check dams shall consist of a mixture of angular stones having a particle size of between 2 inch and 3 inch. The check dams shall be installed at locations as indicated on the drawings and shall be constructed as detailed on the drawings.
- B. Exposed Stone: The exposed stones for the check dams shall be angular and as nearly rectangular in cross-section as practicable. Rounded stone will not be permitted. The stone shall consist of durable stones that will not disintegrate by exposure to the action of water or weather.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. The Contractor shall provide for the diversion of clean surface water from uncapped open areas of the landfill for the duration of the construction project.



- B. The Contractor shall provide all materials, equipment, and labor necessary (for the duration of the Contract) for the dewatering of excavations and the removal and/or diversion of surface water from the construction area, and installation of siltation and erosion control structures as shown on the plans and according to these Specifications, and in accordance with the MEDEP "Best Management Practices" – January 2006 for erosion and sedimentation control. The Contractor shall maintain a dewatering and stormwater control system so that no sediment impacted waters are discharged west of the access road at the southwestern end of the site.
- C. The Contractor shall provide for the dewatering of excavations and the diversion of surface water from the construction areas and install siltation and erosion control measures as necessary in accordance with MEDEP BMPs.
- D. The Contractor shall build all drains, dikes, and sediment basins, install all siltation fencing, mulches, grasses, seeding, ditches, channels, riprap, grading, and all other work necessary to control water pollution, surface runoff, and soil erosion.
- E. The Contractor shall provide temporary seeding, mulching, or other protective coverings to exposed earth surfaces or stockpiles which will be exposed to rain or wind elements through the fall and winter seasons.
- F. The Contractor shall maintain all facilities necessary to control water pollution, surface runoff, and soil erosion until permission is given by the Engineer to discontinue the use of the facilities.

### 3.02 EROSION CONTROL PROVISIONS:

- A. The discharge from pumping operations during dewatering operations shall be contained by a dike so constructed as to prevent siltation and the area of the outlet pipe shall be protected against erosion by flowing water by the construction of a rock or timber apron.
- B. Prior to removal of sediment control dikes all retained silt or other materials shall be removed and placed within landfill limits in areas not susceptible to erosion, at no additional cost to the Owner.

### 3.03 REMOVAL OF TEMPORARY WORKS:

- A. After the temporary works have served their purposes, the Contractor shall remove them or level and grade them to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

### 3.04 PLACEMENT OF EROSION CONTROL BLANKET: Erosion control blanket shall be placed at locations indicated on Contract Drawings. The anchoring of the blanket shall be in accordance with manufacturer's recommendations or as directed by the Engineer or Owner's Representative.

### 3.05 PLACEMENT OF RIPRAP: Riprap shall be placed full depth in one operation without special handwork, shall be approximately true to the required slope line and grade, and be uniform in appearance. Larger stones shall be placed at the base of the slope. The stones shall be placed on close contact with the longer axis perpendicular to the plane of the slope and so as to stagger joints. The openings between the stones shall be filled

with spall, or gravel and rocks securely rammed into place. Placement of riprap shall include the placement of all bedding materials and geotextiles required as shown on the Contract Drawings.

3.06 MAINTENANCE AND ACCEPTANCE:

- A. The Contractor shall be responsible for inspection and maintenance of all temporary erosion and sedimentation control measures during construction. Inspections will be undertaken by qualified personnel to ensure that controls are correctly functioning, and that additional erosion control measures are installed if needed. Such inspections will occur bi-weekly and after each significant rain fall event (1 inch or more within a 24 hour period) during construction until permanent erosion control measures have been properly installed and the site is stabilized. Trapped sediment shall be removed when the height of the sediment is greater than one-half the depth of the erosion control measure.

END OF SECTION



## SECTION 02800

### SEEDING AND MULCHING

#### PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS: Drawings and General Terms and Conditions as outlined in Section 1 of the Construction Agreement and Division-1 Specification sections, apply to work of this section. All work performed under this specification shall be performed in accordance with the Maine Department of Environmental Protection (MEDEP) Maine Erosion and Sedimentation Control Plan: Best Management Practices (BMPs) (March 2003).
- 1.02 RELATED WORK SPECIFIED ELSEWHERE:
- A. Earthwork: Section 02200
  - B. Erosion Control: Section 02220
  - C. Erosion and Sedimentation Control Details Drawings C-308
- 1.03 DESCRIPTION OF WORK: Work specified in this section shall consist of furnishing all labor, materials, and equipment to perform seeding and mulching work in conformity with the contract drawings and as specified herein. Excavation, filling, and grading required to achieve elevations shown on the Drawings are not specified in this Section. Refer to Section 02200, Earthwork. Topsoil shall be placed to a compacted depth of 4 inches over exterior cell containment dikes and all disturbed areas (excluding the landfill's access road). Topsoil shall receive seed, fertilizer, lime, and mulch per these specifications. Only work described in Section 01010 "Summary of Work" or specifically identified by the Owner's Representative should be considered part of this Contract.
- 1.04 QUALITY ASSURANCE: If subcontracted, subcontract the seeding work to a single firm specializing in landscape work.
- A. Source Quality Control:
    - 1. General: Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.
    - 2. Analysis and Standards: Package standard products with manufacturers certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agricultural Chemists, wherever applicable or as further specified.
    - 3. Topsoil: Before delivery of topsoil, furnish written statement giving location of properties from which topsoil is to be obtained, names and addresses of owners, depth to be stripped, and crops grown during past 2 years, if requested by the Engineer.
    - 4. Grass Seed: All seed shall be certified as to mixture, germination, and purity, as being in conformity with the following requirements:



- a. Each variety of seed shall have a percentage of germination of not less than 80, a percentage of purity of not less than 85, and shall have not more than one percent of weed content.
  - b. All seed shall be from the same or previous year's crop unless recent tests by an approved testing agency demonstrate that older seed meets the above requirements.
5. Inspection: The Engineer reserves the right to inspect any plant materials either at the place of growth or at the site before planting, for compliance with requirements for name, variety, size, and quality.

#### 1.05 SUBMITTALS

- A. Certification: For information only, submit 2 copies of certificates of inspection as required by governmental authorities, and manufacturer's or vendors analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements at the request of the Engineer.

Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages of purity, germination, and weed seed for each grass seed species at the request of the Engineer.

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery, and while stored at the site.

- 1.07 JOB CONDITIONS: Contractor must examine the subgrade, verify the elevations, observe the conditions under which work is to be performed and notify the Engineer's of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

Proceed with and complete the landscape work as rapidly as portions of the site become available, working within the required seasonal limitations.

- A. Seeding Seasons: Unless variance is requested in writing and approved by the Engineer, seeding shall be done within the following dates:

Seeding: April 1 - September 15

### PART 2 - PRODUCTS

- 2.01 TOPSOIL (STRIPPINGS): Loam or approved topsoil removed within the confines of the project area shall be segregated into piles, cleaned sufficiently and reused in accordance with Section 02200, Earthwork. If quantity of stockpiled topsoil is insufficient, or quality is not in accordance with the requirements for new topsoil, the Contractor shall provide additional new topsoil from approved sources off the site as required to complete landscape work.

Provide new topsoil as required which is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free or roots,

02800-2

stumps, stones larger than 2" in any dimension, and other extraneous or toxic matter harmful to plant growth. Mulch peat or other excessively acidic soil shall not be used. Sand, silt, and clay contents comprising existing or new topsoil shall fall within the following ranges.

Sand	50%-70%
Silt	2%-40%
Clay	10%-28%

Submit representative soil samples of topsoil from offsite sources to qualified soil testing laboratory to ascertain what amendments may be necessary to obtain proper tilth, nutrient characteristics, and pH balance in accordance with the following. Provide amendments as necessary at rates indicated on the soil test in accordance with the following criteria:

Organic Matter: Greater than 3% organic matter (by weight)

pH range: 6.0 to 7.5. If pH is less than 6.0, lime shall be added in accordance with soil test results and seed requirements.

Phosphorus/Potassium: Low to medium range

Soluble Salt: Not greater than 500 ppm

Obtain topsoil from local sources or from areas having similar soil characteristics to that found at project site. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth of not less than 4"; do not obtain from bogs or marshes.

A. Soil Amendments:

1. Lime: Natural limestone containing not less than 90% of total carbonates, ground so that not less than 100% passes a 10-mesh sieve, not less than 90% passes a 20 mesh sieve, and not less than 50% passes a 100 mesh sieve.
2. Fertilizer: Fertilizer shall contain available elements in conformity with the standards of the Association of Official Agricultural Chemists. The fertilizer shall indicate the weight, contents and guarantee analysis shown thereon or on a securely attached tag, as applicable. The selection of fertilizer shall be based on the minimum phosphorus required by the soil as determined by the chemical analysis of soil samples. The Contractor shall be responsible for sampling and testing topsoil to determine amount of phosphorus required for growing of grass.
  - a. Granular fertilizer shall be a commercial grade fertilizer containing the following percentages of available nutrients by weight:

Nitrogen	10 percent
Phosphoric Acid	10 percent
Potash	10 percent
  - b. Water soluble fertilizer shall be completely soluble in water and contain the following percentages of available nutrients by weight. It shall contain a coloring agent.



Nitrogen	16 percent
Phosphoric Acid	To Be Determined by Contractor
Potash	16 percent

The Engineer may approve the use of other fertilizers providing they contain an equivalent amount of nutrients in an acceptable form.

2.02 GRASS MATERIAL:

- A. Grass Seed: Provide fresh, clean, new-crop seed complying with the tolerance for purity and germination established by the Official Seed Analysts of North America. Provide seed of the grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified. Apply seed at the rate of 120 lbs/acre.

The seed mixtures shall consist of seeds proportioned by weight as follows:

Tall Fescue	54 lbs/acre
Creeping Red Fescue	25 lbs/acre
Red Top	5 lbs/acre
Ladino Clover	13 lbs/acre
Annual Ryegrass	8 lbs/acre
Birdsfoot Trefoil	5 lbs/acre
Timothy	10 lbs/acre

2.03 MISCELLANEOUS LANDSCAPE MATERIALS:

- A. Mulch for Seeded Areas:

1. Hay or straw mulch shall consist of long fibered hay or straw, reasonably free from noxious weeds and other undesirable material. No material shall be used which is too wet, decayed, or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings or other short fibered material shall be used unless directed.
2. Cellulose fiber mulch shall consist of natural wood, recycled paper or humus cellulose fiber containing no materials which will inhibit seed germination or plant growth. Sufficient non-toxic water soluble green dye shall be added to provide a definite color contrast to the ground surface to aid in even distribution. Cellulose fiber mulch shall be supplied in moisture resistant, sealed bags marked with the manufacturer's name, the air dry weight, and composition of the contents.

- B. Mulch Binder: Material for mulch binder may be binder or tackifier of a type acceptable to the Engineer and may be diluted with water to assure even distribution. Other types of approved mulch binders may be used when authorized by the Engineer.

PART 3 - EXECUTION

- 3.01 TOPSOIL PLACEMENT: Placement of topsoil shall be performed in a uniform manner, with no clumps or clods. It shall be the Contractor's responsibility to restore to the line, grade, and surface all eroded areas with approved material and to keep topsoiled areas in acceptable condition until turf is established and accepted by the Engineer.



- A. Grading: Previously established grades on the areas to be topsoiled shall be maintained according to the approved plan.
- B. Liming: Where the pH of subsoil is 6.0 or less, ground agricultural limestone shall be spread in accordance with the soil texture or the vegetative establishment practice being used.
- C. Bonding: After the areas to be topsoiled have been brought to grade, and immediately prior to spreading the topsoil, the subgrade shall be loosened by discing or scarifying to a depth of at least 2 inches to ensure bonding with subsoil.
- D. Placement: Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed sodding or seeding. The topsoil shall be uniformly distributed to a minimum compacted depth of 4 inches. Any irregularities in the surface resulting from topsoil placement or other operations shall be corrected in order to prevent the formation of depressions and/or water pockets. It is necessary to compact the topsoil enough to ensure good contact with the underlying soil and to obtain a uniform firm seedbed for the establishment of a high maintenance turf. However, undue compaction is to be avoided as it increases runoff velocity and volume, and prevents seed germination.

### 3.02 SEEDING:

- A. Do not use wet seed or seed which is moldy or otherwise damaged in transit or storage.
- B. Rates of Application: Rates of application for limestone, fertilizer, and grass seed shall be in accordance with Drawing C-308 of the Construction Drawings.
- C. The hydraulic spray method shall be used for seeding all areas unless alternative methods are approved by the Engineer.
- D. Application Procedure:
  - 1. Hydraulic Spray Method: The hydraulic spray method of sowing seed shall be done with an approved machine operated by a competent crew. Seed and fertilizing materials shall be mixed with water in the tank of the machine and kept thoroughly agitated so the materials are uniformly mixed and suspended in the water at all times during operation. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates. If the Engineer finds the application uneven or otherwise unsatisfactory, he may require the hydraulic spray method to be abandoned and the balance of the work done as specified under another method.
- E. Mulching:
  - 1. Cellulose fiber mulch shall be applied as waterborne slurry. The cellulose fiber and water shall be thoroughly mixed and sprayed on the area to be covered so as to form a uniform mat of mulch at the rate of not less than 60 pounds of mulch material per 1,000 square feet unit of area.



Cellulose fiber mulch may be mixed with the proper quantities of seed, fertilizer, and agricultural limestone as required, or may be applied separately the next day after seeding.

2. Hay or straw mulch shall be spread evenly and uniformly over any designated areas or as directed by the Engineer in the field so to avoid damage to seeded areas. Unless otherwise directed, mulch shall be applied at the rate of 2 to 3 tons per acre or 3 bales (90 to 130 lbs) per 1,000 square feet. Too heavy application of mulch shall be avoided. Lumps and thick mulch material shall be thinned.

Unless otherwise authorized, the mulch shall be anchored in place by uniformly applying an acceptable mulch binder at a rate of 10 to 13 gallons per 1000 sq. ft. Application of a concentrated stream of mulch binder will not be allowed. Asphalt mulch binder may be omitted when authorized and when there is a danger of the asphalt defacing the surface of nearby structures, houses, vehicles or other objects. Other methods of anchoring mulch may be used subject to the approval.

### 3.03 MAINTENANCE AND ACCEPTANCE:

#### A. Seeded Areas:

1. Maintain seeded areas by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable grass growth, free or eroded or bare areas.
2. Seeding, April 1 to September 15, Inclusive: The Contractor shall maintain each seeded area until acceptance of the individual area. Maintenance shall consist of providing protection by erecting necessary signs and barriers and by repairing damaged areas as directed. Damaged areas and areas which do not produce a satisfactory stand of grass shall be repaired to re-establish the condition and grade of the area prior to the original seeding and then refertilized, reseeded and remulched as specified to produce satisfactory results.

Areas fertilized and seeded by the hydraulic method will be accepted only upon attainment of a reasonable thick uniform stand of not less than 80 percent coverage of permanent grasses, free from sizeable thin or bare spots.

3. Seeding, September 16 to March 31, Inclusive: Areas not seeded or which do not obtain satisfactory growth by October 1, will be seeded with Aroostook Rye or mulched at rates previously specified herein. After November 1, or the first killing frost, disturbed areas shall receive dormant seeding (at double the regular seeding rate) in accordance with MEDEP BMPs and Drawing C-308.
4. Seeded areas will be accepted only upon attainment of a reasonably thick, uniform stand of not less than 90 percent coverage of permanent grasses, free from sizable thin or bare spots.

- 3.04 CLEANUP AND PROTECTION: During landscape work, store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.



Protect landscape work and materials from damage due to landscape operation, operations by other contractors, and trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

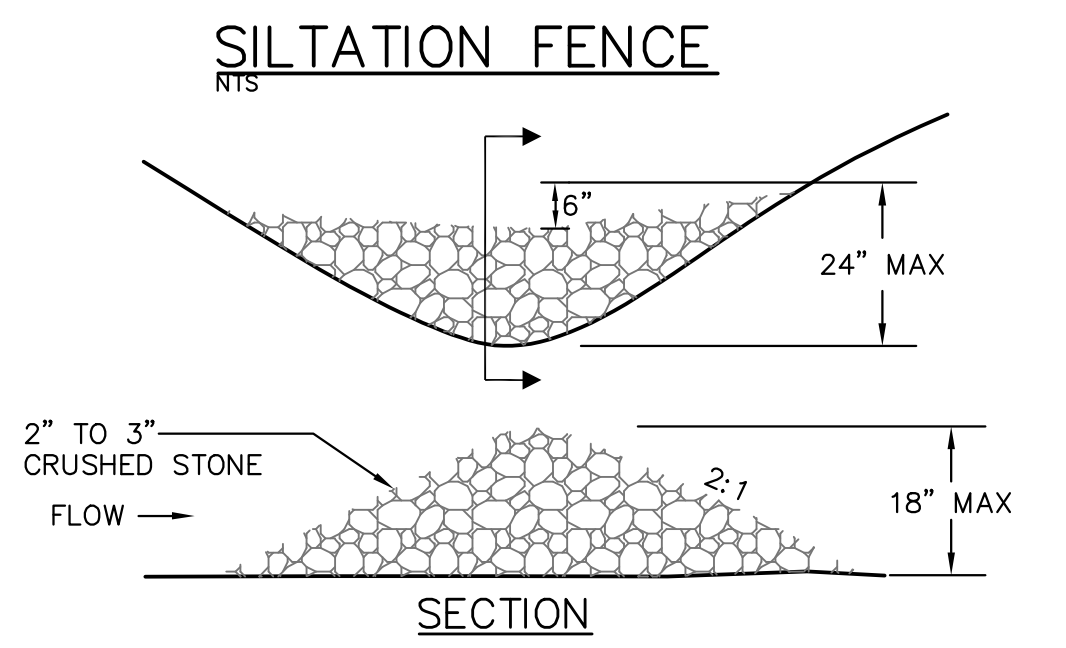
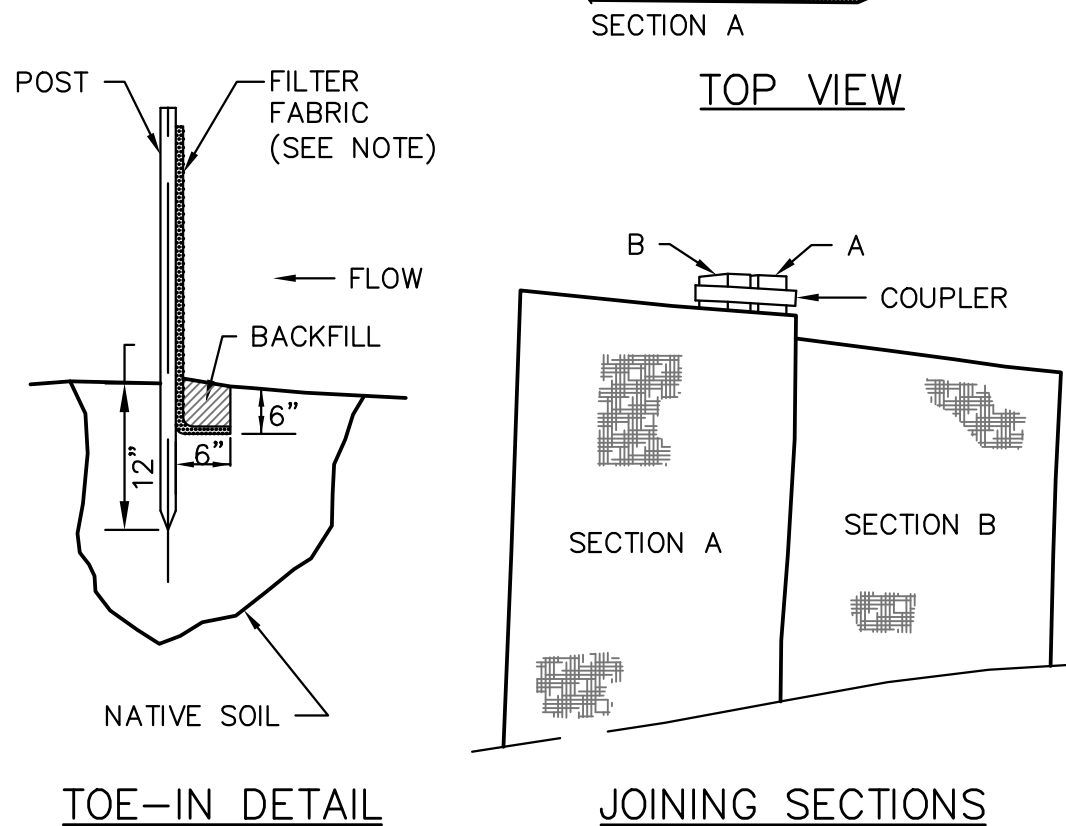
- 3.05 RESTORATION: All paved, sod covered, or planted areas, structures, and substructures not specifically provided for in the contract disturbed by the Contractor during the execution of the work shall be restored by the Contractor, in a manner satisfactory to the Engineer, to their original conditions at no additional cost to the Owner.

END OF SECTION

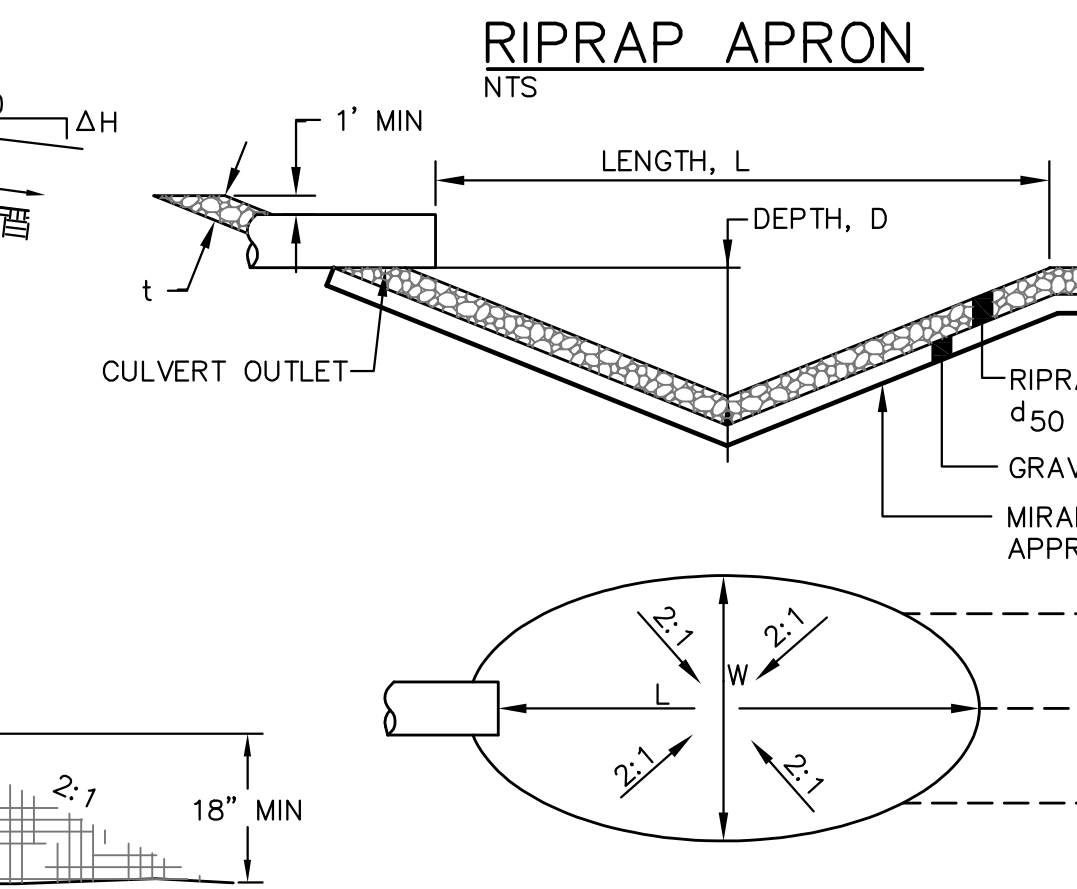
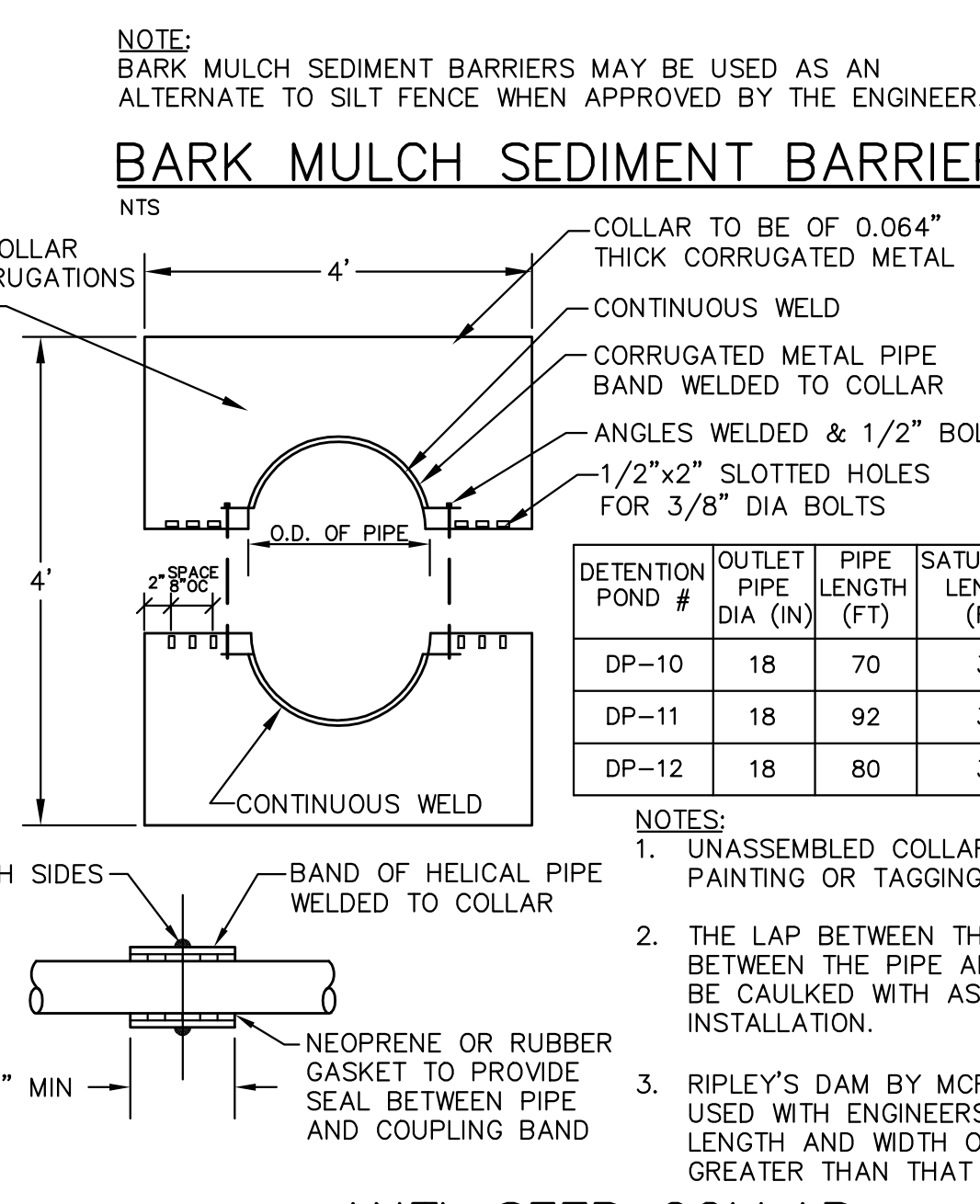
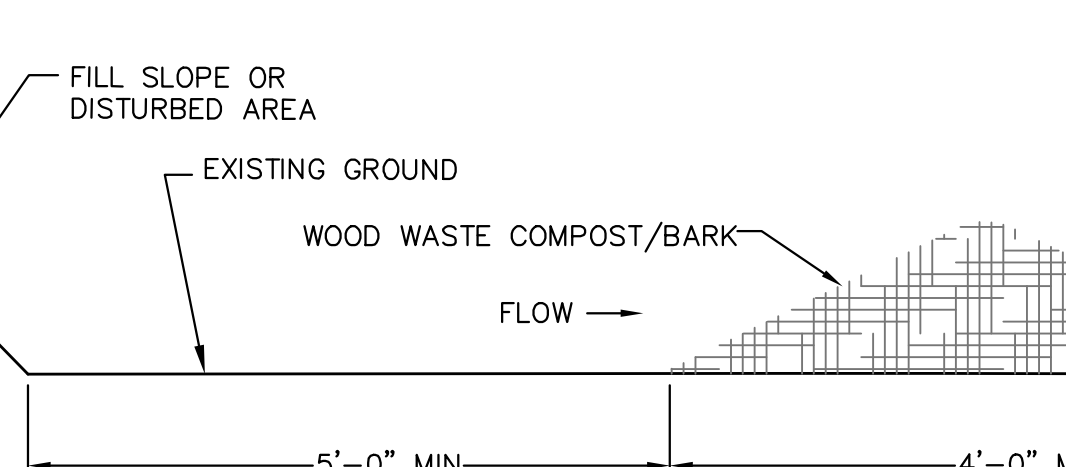
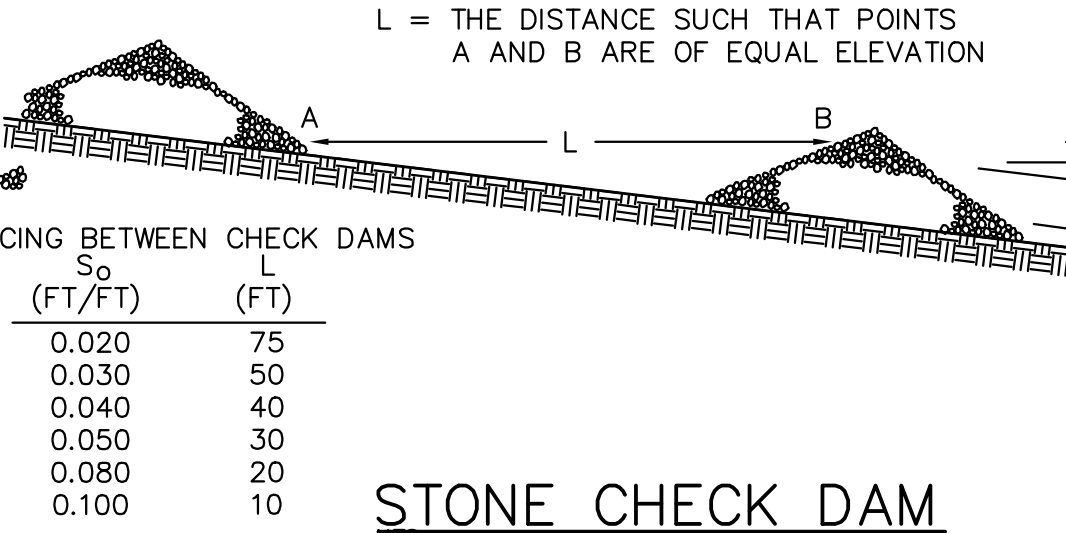
02800-7



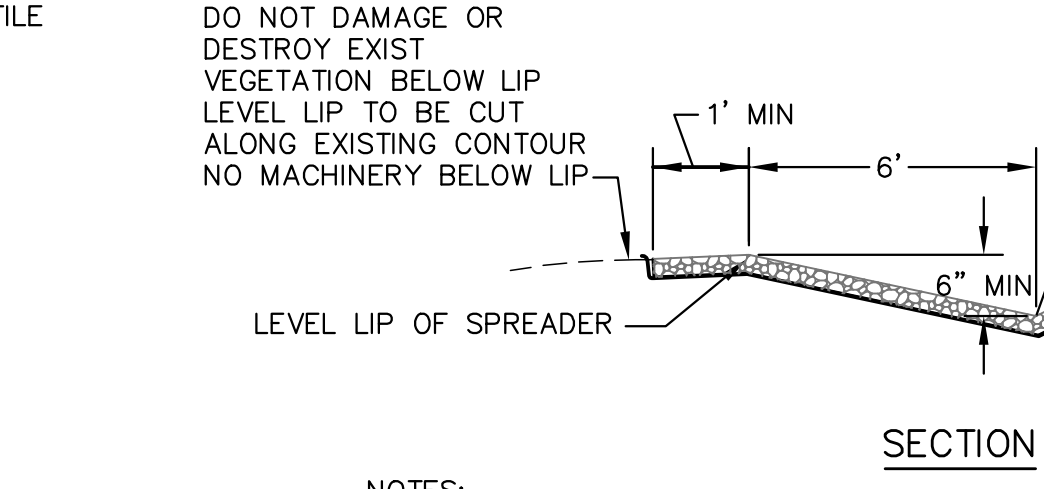
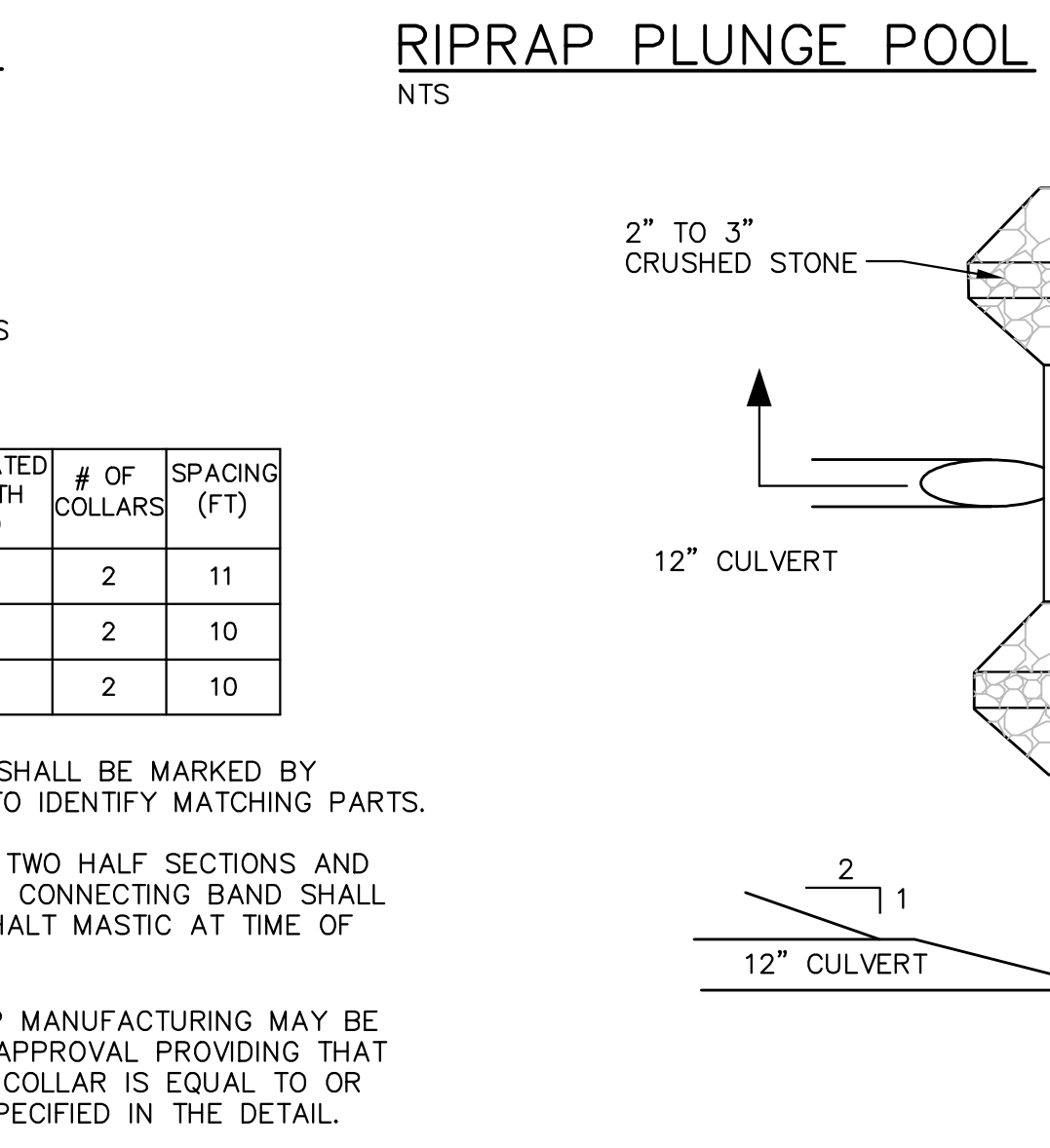
NOTE: SILTATION FENCE SHALL BE ENVIRONMENTAL AS MANF. BY MIRAFI INC., PROPEX SILT STOP AS MANF. BY AMOCO FABRICS CO. OR EQUAL



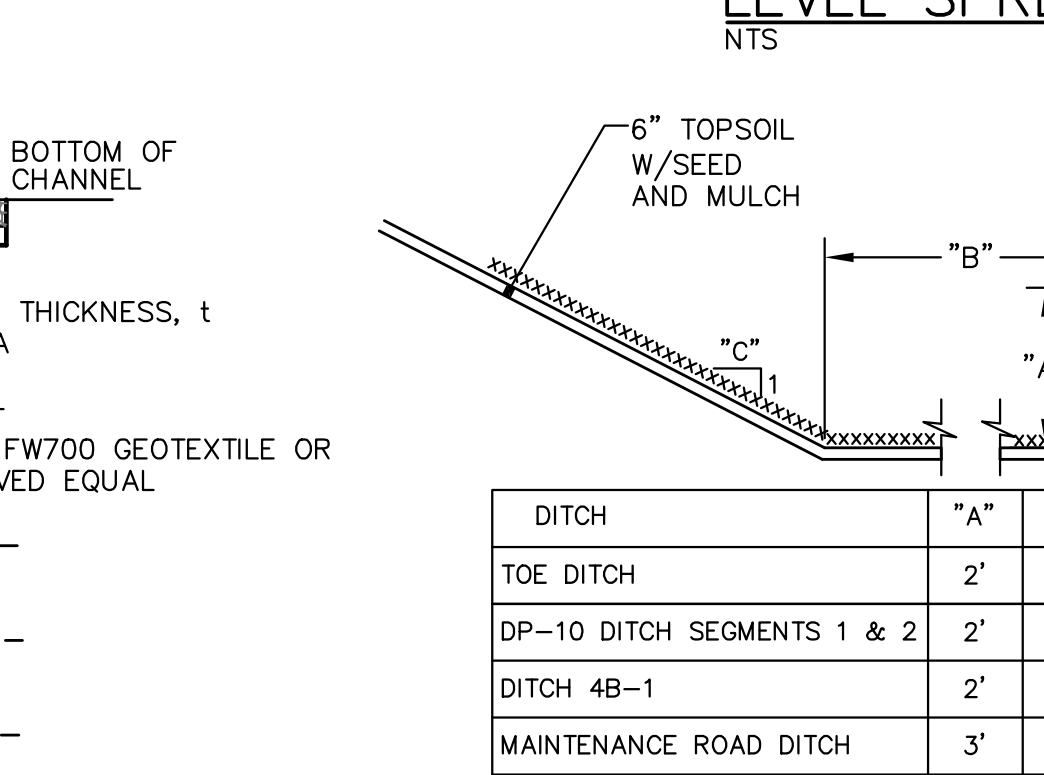
CULVERT OUTLET	L (FT)	W (FT)	A (d <sub>50</sub> ) IN.	t (IN)
2BA	18	20	8	18
2BB	18	20	6	14
4BA	12	14	5	12
4BB	12	14	5	12
4F	10	12	4	9
4G	12	14	5	12
4HA	10	12	4	9
4HB	10	12	4	9
4I	18	20	10	23
4IA	10	12	4	9
4JA	18	20	10	23
4JB	12	14	5	12
4JC	12	14	5	12
4K	12	14	5	12
4L	14	16	8	18
4N	10	12	4	9



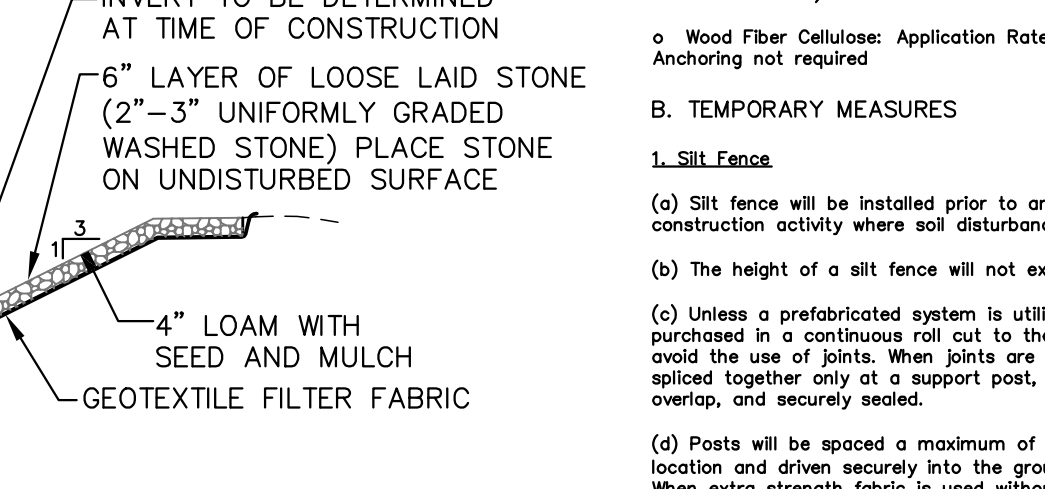
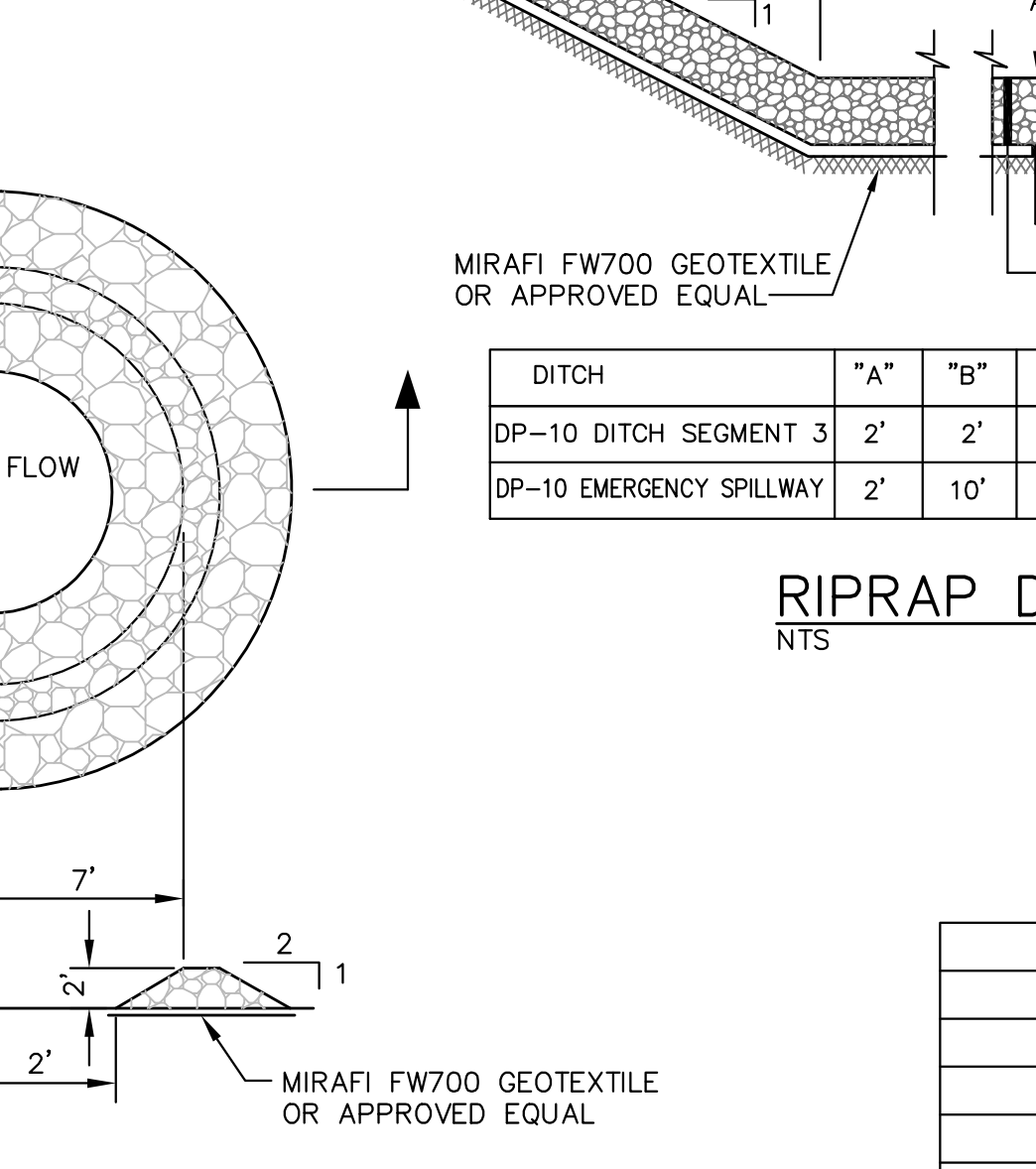
CULVERT OUTLET	L (FT)	W (FT)	A (d <sub>50</sub> ) IN.	t (IN)	D (FT)
DP-10	6	6	8	18	1.5
DP-11	6	6	4	9	1.5
DP-12	6	6	4	9	1.5



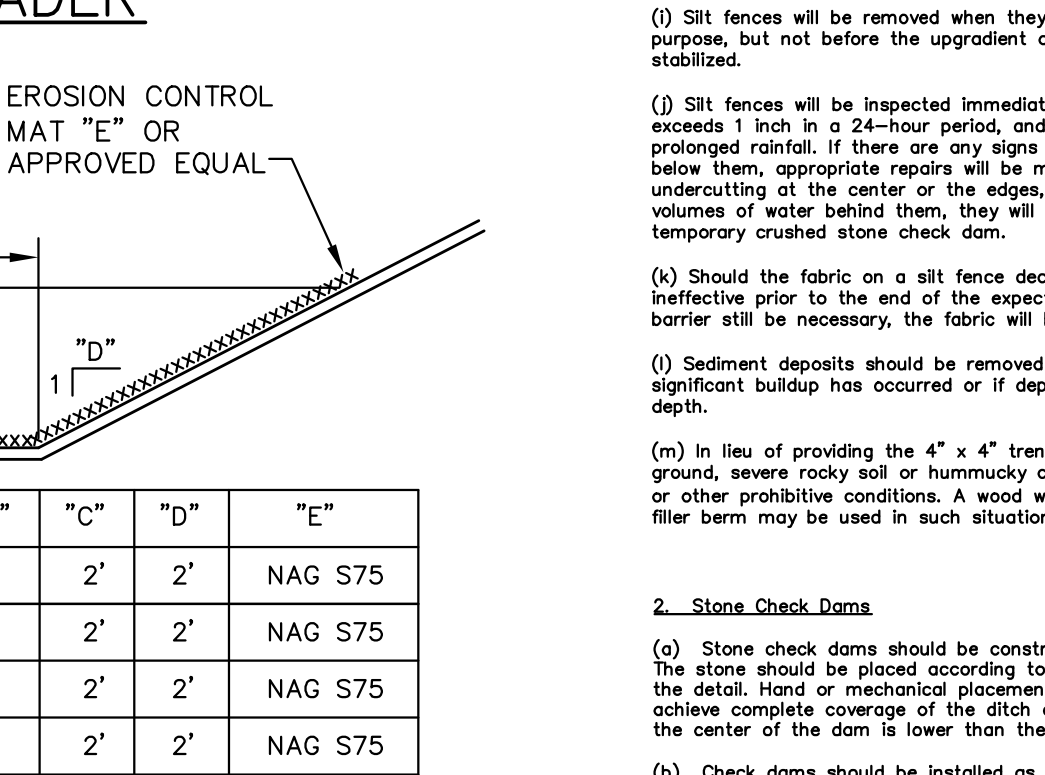
LEVEL SPREADER	LENGTH, L (FT)
DP-10	20
DP-11	15
DP-12	15



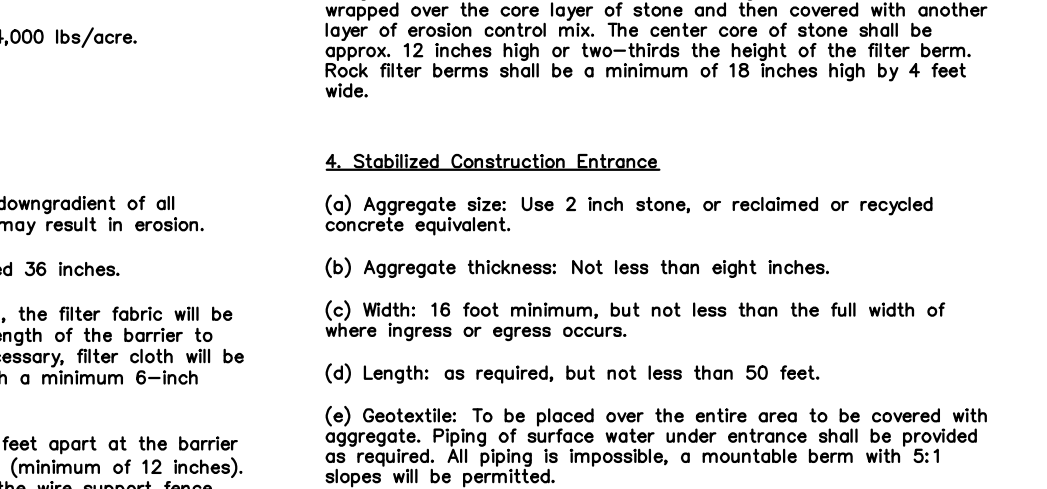
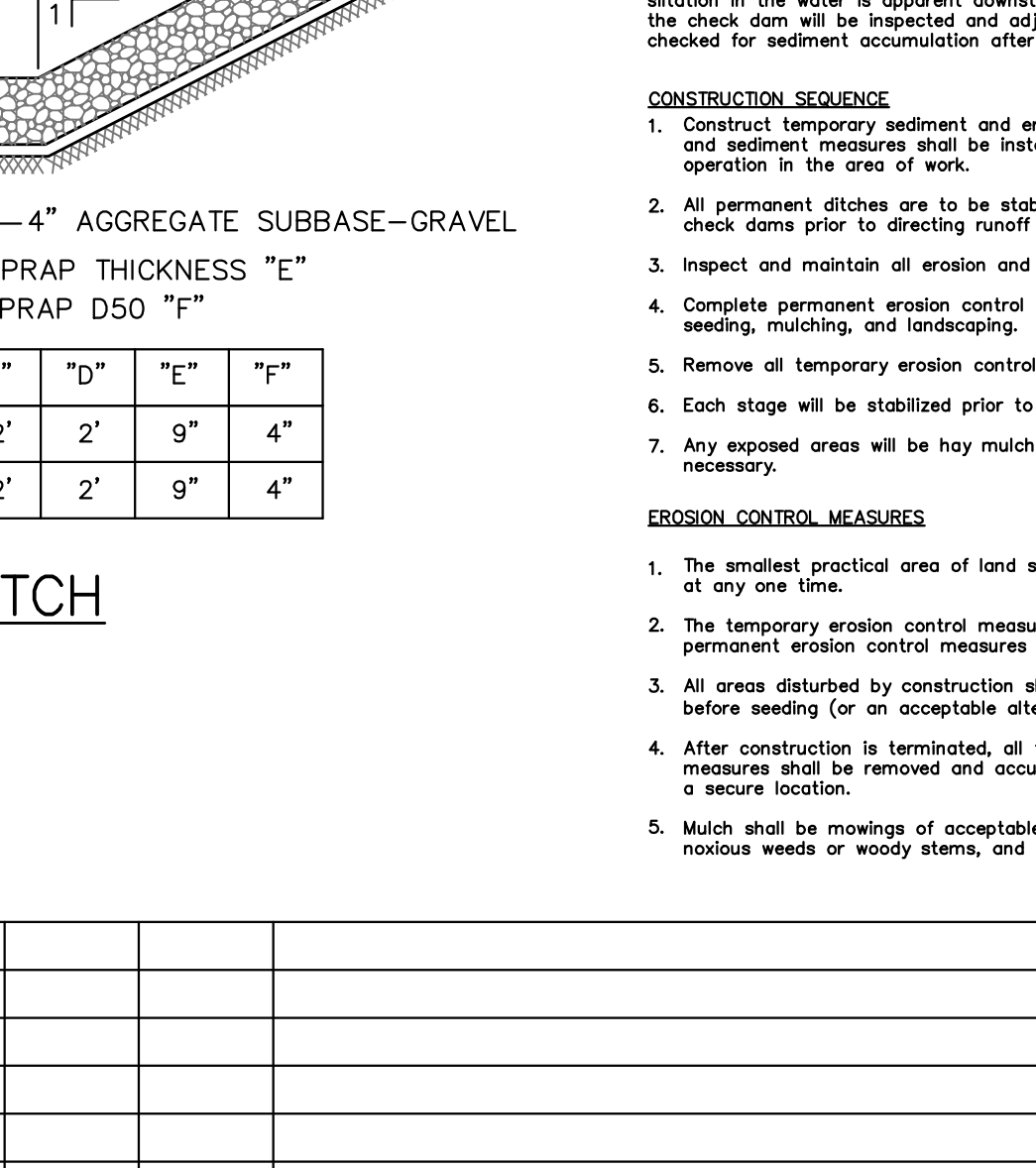
DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'



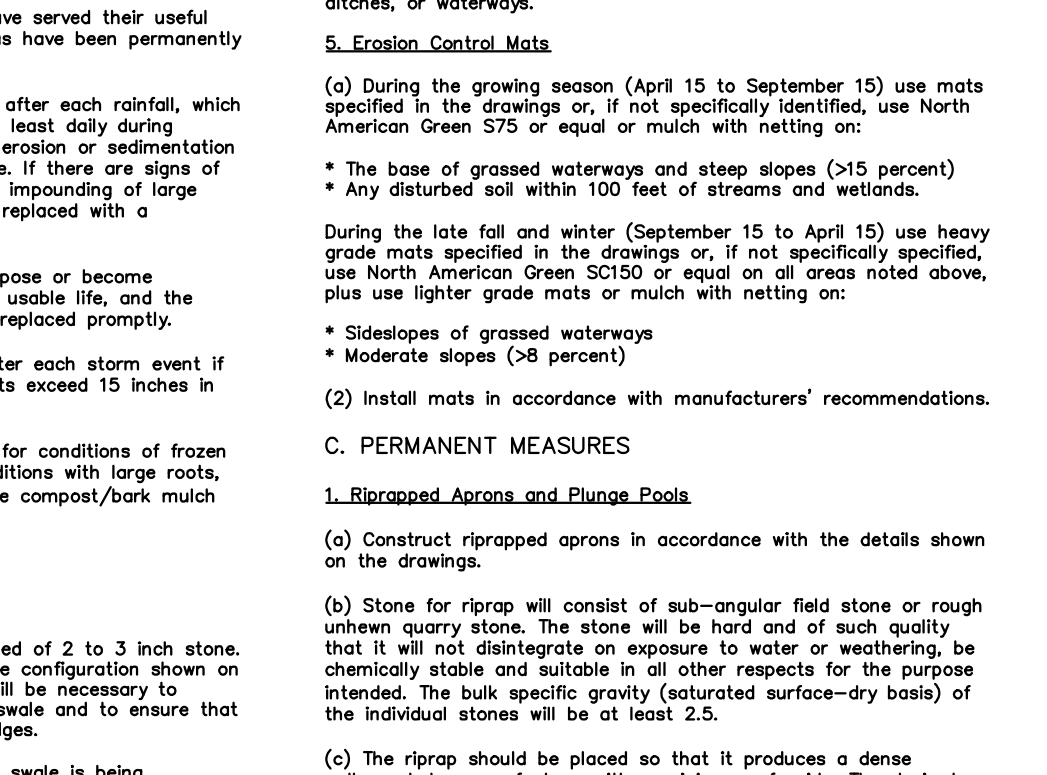
DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'



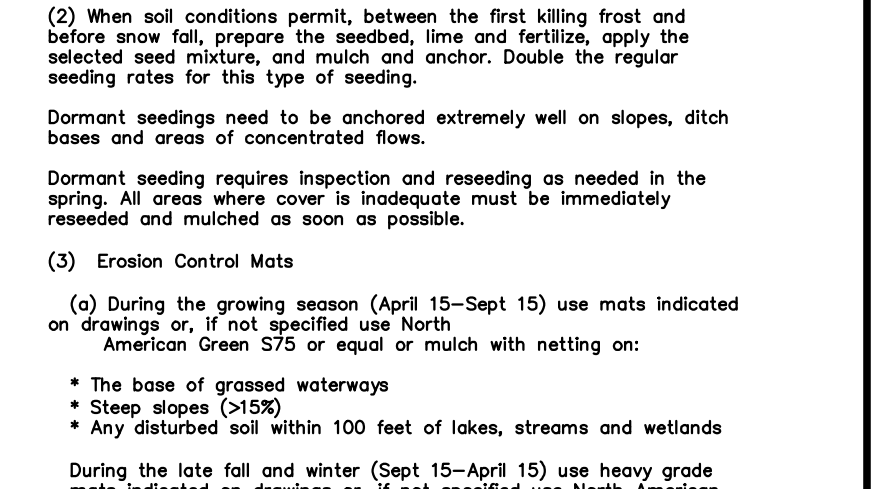
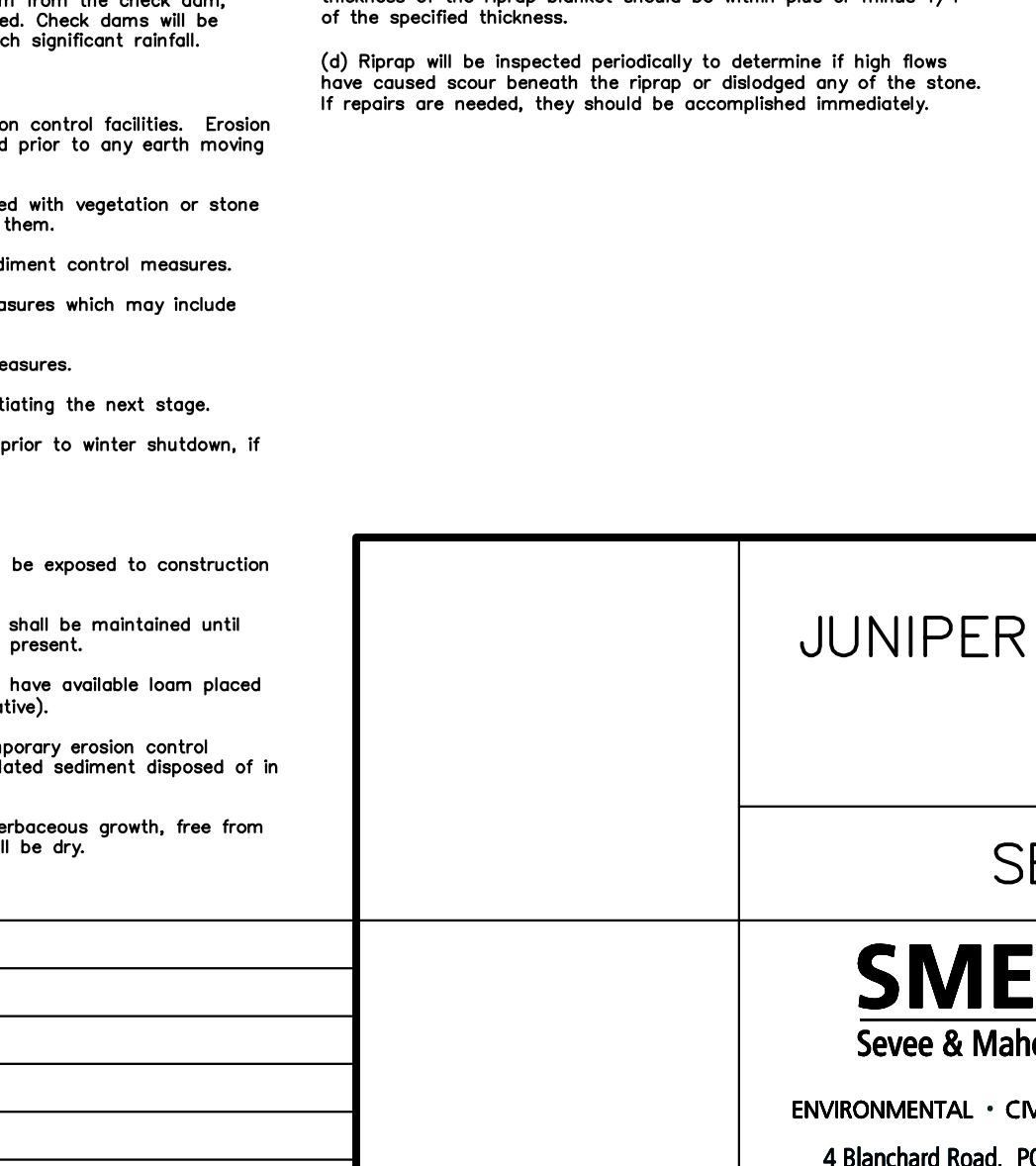
DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'



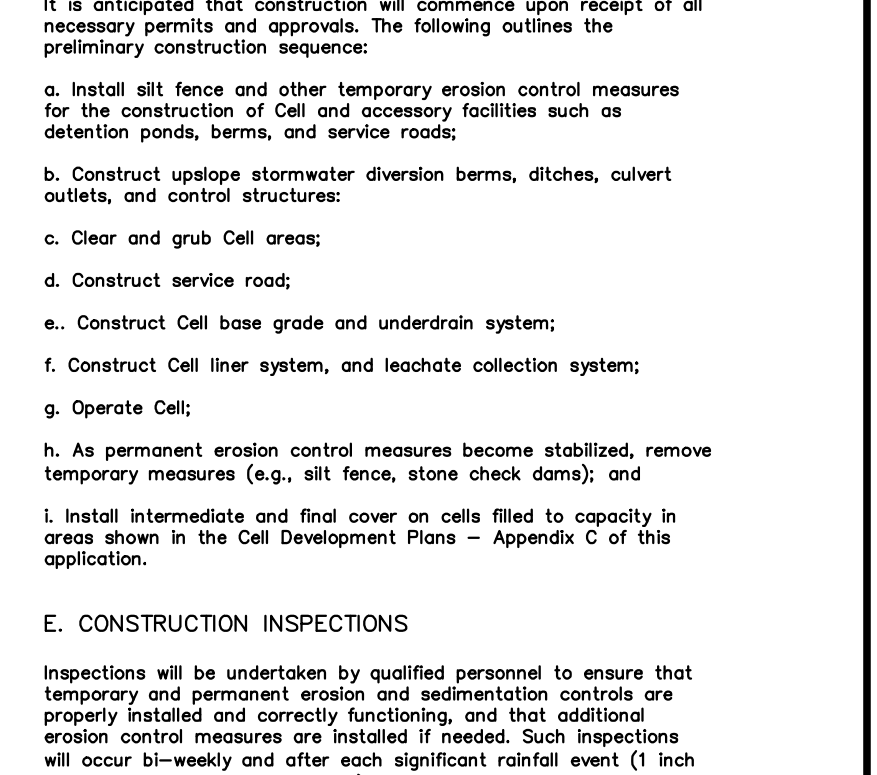
DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'



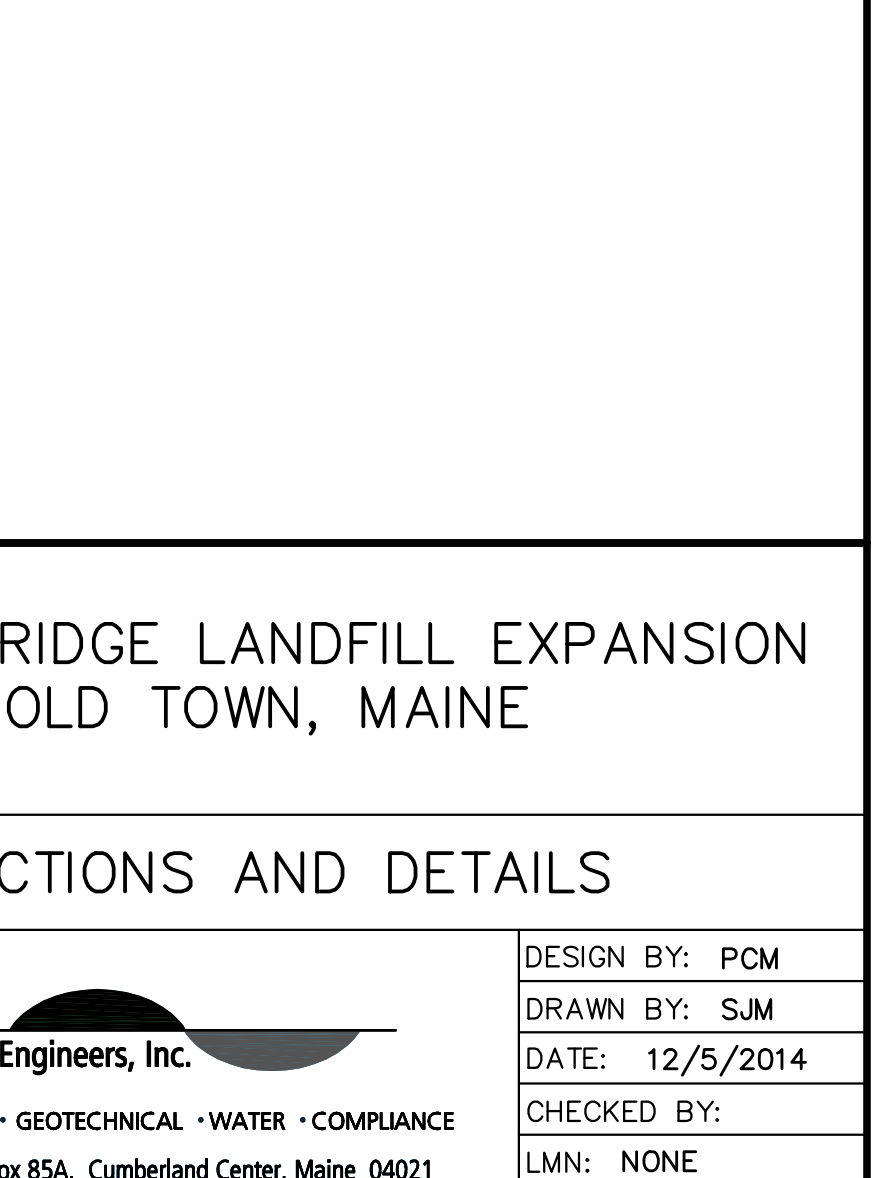
DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'



DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'



DITCH	"A"	"B"	"C"	"D"	"E"	"F"
DP-10 DITCH SEGMENT 3	2'	2'	2'	2'	9'	4'
DP-10 EMERGENCY SPILLWAY	2'	10'	2'	2'	9'	4'





**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 9  
SITE CONDITIONS (WETLAND DELINEATION REPORT)**



**Juniper Ridge Landfill  
Expansion Project: Wetland  
and Waterbody Delineation  
and Vernal Pool Survey Report**

Juniper Ridge Landfill  
Old Town, Maine



Prepared for:  
Bureau of General Services  
77 State House Station  
Augusta, ME 04333

And

NEWSME Landfill Operations LLC  
358 Emerson Mill Road  
Hampden, ME 04444

Prepared by:  
Stantec Consulting Services Inc.  
30 Park Drive  
Topsham, ME 04086

July 2, 2015

**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT**

**Table of Contents**

**1.0 INTRODUCTION ..... 1**

**2.0 SURVEY METHODS ..... 1**

2.1 WETLAND DELINEATION METHODS ..... 1

2.2 VERNAL POOL SURVEY METHODS ..... 2

**3.0 SURVEY RESULTS ..... 3**

3.1 GENERAL SITE DESCRIPTION ..... 3

3.2 WETLAND DELINEATION RESULTS ..... 4

    3.2.1 Wetland 01TTA ..... 4

    3.2.2 Wetland 01TTB ..... 4

    3.2.3 Wetland 01TTC ..... 4

    3.2.4 Wetland 01TTD ..... 5

    3.2.5 Wetland 01RKB ..... 5

    3.2.6 Wetland 01BEE ..... 5

    3.2.7 Wetland 01BEA ..... 6

    3.2.8 Wetland 01BED ..... 6

3.3 VERNAL POOL SURVEY RESULTS ..... 6

**LIST OF APPENDICES**

**APPENDIX A FIGURES ..... A.1**

**APPENDIX B REPRESENTATIVE SITE PHOTOGRAPHS ..... B.1**

**APPENDIX C CORPS WETLAND DETERMINATION DATA FORMS ..... C.1**

**APPENDIX D MAINE STATE VERNAL POOL ASSESSMENT FORMS ..... D.1**

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015

## 1.0 INTRODUCTION

Stantec Consulting Service Inc. (Stantec) is working with Sevee & Maher Engineers (SME) on behalf of NEWSME Landfill Operations LLC (NEWSME), as operator, and The State of Maine Bureau of General Services, as owner, to provide environmental permitting support for the proposed expansion of the Juniper Ridge Landfill located in Old Town, Maine (Figure 1). The facility site will encompass about 74 acres including new landfill cells and site infrastructure (e.g., roadways, stormwater ponds, scale house, and administrative buildings). The proposed expansion area includes the facility site and the relocated electrical line and perimeter fence (Figure 1). To support state and federal permitting requirements pursuant to the Maine Natural Resources Protection Act (NRPA), the U.S. Clean Water Act (CWA), and the Maine Solid Waste Management Act, Stantec completed a wetland and waterbody delineation and vernal pool survey within the 2014/2015 survey area (Figure 1).

The proposed expansion area is located within a 780-acre parcel that contains wetlands and vernal pools that were identified during previous wetland delineations and vernal pool surveys conducted in 2004 and 2008, along with additional vernal pool surveys conducted in 2015. The following summarizes the methods and results of the 2014 and 2015 field investigations completed to update the previous surveys conducted within the proposed expansion area.

## 2.0 SURVEY METHODS

### 2.1 WETLAND DELINEATION METHODS

Surveys for regulated wetland and waterbody resources within the 2014/2015 survey area were conducted on September 25 and October 9, 2014, and on May 5, 6, and 14, 2015. Surveys were performed by walking transects across the proposed expansion area. The proposed electrical line and exterior fence line, as well as areas immediately adjacent to the proposed scale house and administrative building site in the northeast corner of the proposed expansion area, were also surveyed. Wetland boundaries under federal and state jurisdiction were determined and verified using the technical criteria described in the U.S. Army Corps of Engineers (Corps) *1987 Wetlands Delineation Manual*<sup>1</sup> and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regional Supplement*<sup>2</sup>. Wetland boundaries were marked with pink, alphanumeric-coded flags. Wetland boundary flags were located using Trimble® Global Positioning System (GPS) receivers.

---

<sup>1</sup> Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

<sup>2</sup> U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.



# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015

## 2.2 VERNAL POOL SURVEY METHODS

Stantec conducted updated vernal pool surveys on May 5, 6, and 14, 2015, within the 2014/2015 survey area. Vernal pool surveys were conducted in accordance with the protocols outlined in the *Maine Association of Wetland Scientists (MAWS) Vernal Pool Survey Protocol*<sup>3</sup>. The results of these surveys were derived using standard field techniques and represent observations made during the 2015 amphibian breeding season. The presence, absence, and number of egg masses presented in this report reflect the results of these surveys. Vernal pools are dynamic habitats that vary in water level, vegetative cover, and other physical characteristics during the course of a year, as well as from year to year. In addition, the breeding activity of amphibians, particularly the initiation of breeding, depends upon seasonal environmental parameters such as temperature and precipitation. Due to this variability, the presence and number of egg masses may differ between breeding seasons and during the course of a given breeding season. Based on observed field conditions, Stantec determined that the field surveys in 2015 were conducted at an appropriate time of year.

The surveys involved searching for amphibian breeding activity, primarily the presence of egg masses, and use by other vernal pool-dependent species. Information was collected on the physical characteristics of the pool such as the likely hydro-period (i.e., how long surface water will remain in the pool) and the presence and/or type of inlet and outlet. Information on the biological and physical characteristics of the pool then was used to determine if the vernal pool met the criteria of a Significant Vernal Pool (SVP) as defined in Chapter 335 of the NRPA. According to this rule, a vernal pool is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanently flowing inlet or outlet and no viable populations of predatory fish. In addition, an SVP contains one or any combination of the following:

- 40 or more wood frog (*Lithobates sylvatica*) egg masses;
- 20 or more spotted salamander (*Ambystoma maculatum*) egg masses;
- 10 or more blue spotted salamander (*Ambystoma laterale*) egg masses;
- Presence of fairy shrimp (*Eubbranchipus* spp.); and/or
- Documented use by a state-listed rare, threatened or endangered species that commonly require a vernal pool to complete a critical portion of their life-history such as Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), ringed boghaunter dragonfly (*Williamsonia lintneri*), wood turtles (*Clemmys insculpta*), ribbon snakes (*Thamnophis sauritus*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*).

The characteristics of the pools were also compared to the regulatory definition of a vernal pool used by the Corps. In Maine, vernal pools are regulated by the Corps according to the Maine General Permit (GP), which provides the following definition for vernal pools:

---

<sup>3</sup> Maine Association of Wetland Scientists Vernal Pool Technical Committee. 2014. Vernal Pool Survey Protocol. April 2014.

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015

“A vernal pool, also referred to as a seasonal forest pool, is a temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish.

A vernal pool may provide the primary breeding habitat for wood frogs (*Lithobates sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition. For the purposes of this GP, the presence of any of the following species in any life stage in any abundance level/quantity would designate the waterbody as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs.”

## 3.0 SURVEY RESULTS

### 3.1 GENERAL SITE DESCRIPTION

The 2014/2015 survey area encompasses the facility site (land fill cells, a proposed area for scale and administration buildings, two access roads on the east and west sides of the proposed expansion area) and a relocated electrical line and perimeter fence. The survey area consists of second-growth hardwood and mixed forested uplands and forested wetlands. Also included in the survey area are paved and gravel roads, a scale house, and administrative buildings associated with the existing landfill. Topography within the survey area is generally flat to gently sloping.

Wooded uplands in the survey area are relatively uniform in composition. These areas exhibit evidence of recent and historic timber harvesting. This disturbance is evident from skidder trails and areas of regenerating vegetation. Dominant canopy species include eastern hemlock (*Tsuga canadensis*), eastern white pine (*Pinus strobus*), quaking aspen (*Populus tremuloides*), red spruce (*Picea rubens*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), balsam fir (*Abies balsamea*), paper birch (*Betula papyrifera*), yellow birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), and northern red oak (*Quercus rubra*). Shrubs include the aforementioned tree species and beaked hazelnut (*Corylus cornuta*), American witch-hazel (*Hamamelis virginiana*), and Alleghany blackberry (*Rubus allegheniensis*). Wild sarsaparilla (*Aralia nudicaulis*), maystar (*Trientalis borealis*), Canadian bunchberry (*Cornus canadensis*), false lily-of-the-valley (*Maianthemum canadense*), northern bracken fern (*Pteridium aquilinum*), and whorled nodding-aster (*Oclemea acuminata*) are present in the herbaceous layer.

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015

## 3.2 WETLAND DELINEATION RESULTS

A total of 8 wetlands were identified within the 2014/2015 survey area. Each wetland is described below and shown on Figure 1. Corps Wetland Determination Data Forms are provided in Appendix C.

### 3.2.1 Wetland 01TTA

Wetland 01TTA is located between the existing scale and the western edge of the proposed expansion area. It is a palustrine forested wetland<sup>4</sup> mixed with palustrine emergent wetland areas (Photo 1). Wetland 01TTA was likely created by past timber harvest disturbance and recent construction of adjacent stormwater infrastructure and was not identified as a wetland during previous wetland delineations in the proposed expansion area. Hydrology in the wetland is influenced by the stormwater pond outlet located near the southwestern edge of the wetland (Photo 2). Dominant tree species include red maple, balsam fir, and white ash. Shrubs include balsam fir, gray birch, and red maple. Bluejoint (*Calamagrostis canadensis*), sensitive fern (*Onoclea sensibilis*), fowl manna grass (*Glyceria striata*), and woodland horsetail (*Equisetum sylvaticum*) dominate the herbaceous layer. Hydric soils are predominately a depleted silt loam with 5 to 10 percent redoximorphic concentrations. Hydrology indicators present in the wetland included saturation, water-stained leaves, surface water, and drainage patterns. Wetland 01TTA contained 1 man-made vernal pool that was identified during the 2015 vernal pool survey.

### 3.2.2 Wetland 01TTB

Wetland 01TTB is a small, forested wetland located just north of the existing administration building (Photo 3). Balsam fir is the dominant tree species. Shrubs include gray birch, balsam fir, white meadowsweet (*Spiraea alba*), and common winterberry (*Ilex verticillata*). Royal fern (*Osmunda spectabilis*), interrupted fern (*Osmunda claytoniana*), northern water-horehound (*Lycopus uniflorus*), and greater bladder sedge (*Carex intumescens*) dominate the herbaceous layer. Hydric soil is a depleted silt loam with 2 to 4 percent redoximorphic concentrations. At the time of the site visit, water-stained leaves were the primary indicator of hydrology.

### 3.2.3 Wetland 01TTC

Wetland 01TTC is primarily forested (Photo 4) with an emergent area at the southern end resulting from past timber harvesting (Photo 5). The wetland is located in the center of the proposed expansion area and parallel to the existing access road. Dominant tree species include red maple, balsam fir, eastern hemlock, and yellow birch). Shrubs include speckled alder (*Alnus incana*), white meadowsweet, steplebush (*Spiraea tomentosa*), red maple, winterberry, and beaked hazelnut (*Corylus cornuta*). Bluejoint, cottongrass bulrush (*Scirpus cyperinus*), sensitive fern, fowl manna grass, woodland horsetail, cinnamon fern (*Osmundastrum*

---

<sup>4</sup> Wetland classifications per: Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, U.S. Fish and Wildlife Service. FWS/OBS-79/31.



# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015

*cinnamomeum*), and interrupted fern dominate the herbaceous layer. Hydric soils predominately had a dark mineral or organic layer at the surface over a depleted silt loam matrix with 5 to 10 percent redoximorphic concentrations. Hydrology indicators included saturation, water-stained leaves, and small areas of surface water. Wetland 01TTC contained 4 man-made vernal pools that were identified during the 2015 vernal pool survey.

## 3.2.4 Wetland 01TTD

Wetland 01TTD is primarily forested and located adjacent to the existing access road (Photo 6) near the proposed location of the scale house and administrative building. The southern portion of the wetland is an emergent wetland along the access road. Dominant tree species include red maple, gray birch, and balsam fir. Shrubs include those species observed in the tree layer, as well as quaking aspen (*Populus tremuloides*), and white meadowsweet. Bluejoint, interrupted fern, northern water-horehound, northern lady fern (*Athyrium angustum*), dwarf red raspberry (*Rubus pubescens*), and rattlesnake manna grass (*Glyceria canadensis*) dominate the herbaceous layer. Hydric soils had a depleted silt loam matrix with 10 percent redoximorphic concentrations. At the time of the site visit, water-stained leaves were the primary indicator of hydrology.

## 3.2.5 Wetland 01RKB

Wetland 01RKB is located adjacent to an open gravel area east of the proposed expansion area (Photo 7). It is forested and interspersed with areas of scrub-shrub wetland. The wetland consists of two parts that are separated by a narrow section of upland. Dominant tree species include gray birch and balsam fir. Gray willow (*Salix bebbiana*) dominates the shrub layer. Sensitive fern, dwarf red raspberry, water horsetail (*Equisetum fluviatile*), and fringed sedge (*Carex crinita*) dominate the herbaceous layer. Hydric soils predominately are a depleted silt loam matrix with redoximorphic concentrations. At the time of the site visit, hydrology indicators included water-stained leaves, presence of reduced iron, and drainage patterns. This wetland extends off-site to the east, where it contains a Significant Vernal Pool (SVP). The portion of the wetland containing the SVP and the 250-foot critical terrestrial habitat would be considered a Wetland of Special Significance.

## 3.2.6 Wetland 01BEE

Wetland 8 is a forested and emergent wetland located adjacent to the existing access road at the north end of the proposed new electrical line. The emergent portion of the wetland is located at the proposed crossing of the new electrical line. Dominant canopy species include red maple, balsam fir, green ash (*Fraxinus pensylvanica*), and yellow birch. The shrub layer consists of white meadowsweet, speckled alder, steplebush, and those species observed in the canopy. Hydric soils predominantly had a depleted silt loam matrix with 10 percent redoximorphic concentrations. Hydrology indicators included saturation, water-stained leaves, areas of surface water, and drainage patterns. Wetland 01BEE contained 4 man-made vernal

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015

pools near the proposed electrical line crossing that were identified during the 2008 and 2015 vernal pool surveys.

## 3.2.7 Wetland 01BEA

Wetland 01BEA is a small, isolated forested wetland located at the western edge of the proposed expansion area. The canopy is dominated by balsam fir with cinnamon fern, three-leaved goldthread (*Coptis trifolia*) and peat moss (*Sphagnum* sp.) present. Soils were disturbed but consisted of a depleted silt loam matrix with redoximorphic concentrations. Indicators of hydrology included areas of inundation and saturation at the soil surface. Wetland 01BEA contained 1 man-made vernal pool that was identified during the 2015 vernal pool surveys.

## 3.2.8 Wetland 01BED

Wetland 01BED is a small emergent wetland located in an historic woods road at the southern end of the proposed fence line. The wetland is dominated by emergent species such as sensitive fern, cinnamon fern, northern lady fern, and cottongrass bulrush. Soils were disturbed, but consisted of a depleted silt loam matrix with redoximorphic concentrations. Indicators of hydrology included areas of inundation, saturation at the soil surface, and wetland drainage patterns. *Wetland 01BED contained 1 man-made vernal pool that was identified during the 2015 vernal pool surveys.*

## 3.3 VERNAL POOL SURVEY RESULTS

A total of 14 vernal pools were identified within the survey area. There were 45 other vernal pools surveyed in 2015 within the whole 780-acre parcel that are discussed in the Wetland Compensation Plan (Attachment 13). Of the 14 vernal pools identified in the survey area, 1 vernal pool met the criteria to be considered a Significant Vernal Pool (SVP), 03KW. This SVP will not be directly impacted by the proposed landfill expansion, but clearing for the proposed electrical line and fence line will occur within the 250-foot critical terrestrial habitat surrounding this pool. Of the 14 total vernal pools, 12 met the definition of a vernal pool as provided in the Corps' Maine GP. Two of the vernal pools were small depressions that were located in upland areas. Because these vernal pools were not located in jurisdictional wetlands, they are not regulated by the Corps. Information for each vernal pool is provided in Table 1 below and is shown on Figure 1. Maine State Vernal Pool Assessment Forms with photos for the vernal pools being impacted by the proposed expansion are included in Appendix D. The first visit and second visit vernal pool surveys were conducted on May 5, 6, and 14, 2015.

**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT**

July 2, 2015

**Table 1. Vernal Pool Survey Results for Juniper Ridge Landfill Proposed Expansion**

Vernal Pool ID	Associated Wetland ID	Origin	MDEP SVP	Corps vernal pool	Wood Frog		Spotted Salamander		Blue-Spotted Salamander		Notes
					1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	
03KW	Off-site	Natural	X	X	10	0	40	49	0	0	
01BE	01TTA	Man-made		X	0	0	18	18	0	0	
02BE	01BEA	Man-made		X	0	0	4	4	0	0	
04BE	Not in wetland	Natural			0	0	1	1	0	0	Isolated depression in upland
05BE	01TTC	Natural		X	0	0	1	1	0	0	natural-modified
VP 15	01TTC	Man-made		X	3	hatched	47	41	0	0	wood frog tadpoles observed on second visit
06BE	01TTC	Man-made		X	0	0	1	1	0	0	
02JR	01TTC	Man-made		X	1	hatched	0	0	0	0	wood frog tadpoles observed on second visit
06SD	01BEE	Man-made		X	0	0	8	7	0	0	
05SD	01BEE	Man-made		X	6	hatched	22	23	0	0	wood frog tadpoles observed on second visit
VP 06	01BEE	Man-made		X	0	0	9	9	0	0	
VP 07	01BEE	Man-made		X	0	0	25	19	0	0	
01JR	Not in wetland	Natural			0	0	2	4	0	0	Isolated depression in upland
17JR	01BED	Man-made		X	0	--	1	--	0	--	

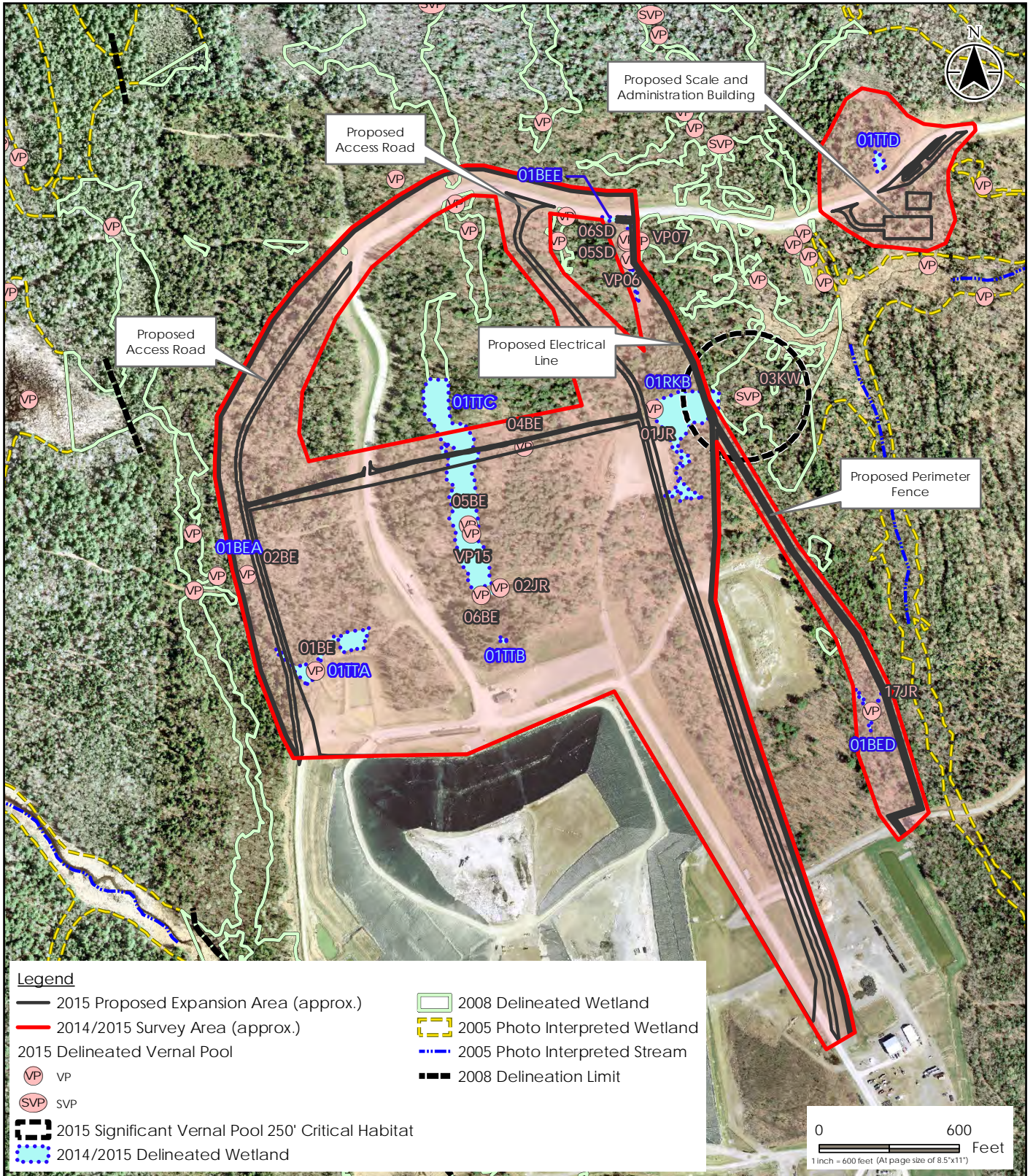


JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND  
VERNAL POOL SURVEY REPORT

July 2, 2015

## Appendix A FIGURES





**Stantec**  
 30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

Prepared by KWH on 2015-06-03  
 Reviewed by BPE on 2015-06-05

00983\_01\_JuniperRidge\_WetMap.mxd

- Notes
1. Wetland boundaries delineated in accordance with USACE Wetland Delineation Manual (1987) or subsequent versions.
  2. Vernal pools surveyed in accordance with Maine Association of Wetland Scientists Vernal Pool Technical Committee Vernal Pool Survey Protocol, April 2014.
  3. Wetland and vernal pool boundaries were located utilizing a Trimble Geo-XH GeoExplorer 6000 Series Receiver. Expected accuracy of GPS data is within 1 meter of actual position.
  4. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
  5. Orthophotography from 2013 provided by Maine Office of GIS.

Client/Project 195600983  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine  
 Figure No. 1  
 Title  
 2014/2015 Wetland Survey  
 6/29/2015



JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND  
VERNAL POOL SURVEY REPORT

July 2, 2015

## Appendix B REPRESENTATIVE SITE PHOTOGRAPHS



# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT

July 2, 2015



**Photo 1.** Forested wetland with emergent wetland area in Wetland 01TTA. Stantec, September 25, 2014.



**Photo 2.** Stormwater pond outlet pipe draining into Wetland 01TTA. Stantec, September 25, 2014.



**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT**

July 2, 2015



**Photo 3.** Forested Wetland 01TTB. Stantec, September 25, 2014.



**Photo 4.** Forested portion of Wetland 01TTC. Stantec, September 25, 2014.



**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT**

July 2, 2015



**Photo 5.** Emergent wetland at southern end of Wetland 01TTC. Stantec, September 25, 2014.



**Photo 6.** Forested Wetland 01TTD looking towards existing access road. Stantec, September 25, 2014.



**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT**

July 2, 2015



**Photo 7.** Mixed forested and scrub-shrub Wetland 01RKB. Stantec, October 9, 2014.



**Photo 8.** Emergent wetland portion of Wetland 01BEE. Stantec, May 14, 2015.



**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND VERNAL POOL SURVEY REPORT**

July 2, 2015



**Photo 9.** Forested Wetland 01BEA, containing vernal pool 02BE. Stantec, May 5, 2015.



**Photo 10.** Emergent Wetland 01BED in old woods road. Stantec, May 14, 2015.

**JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND  
VERNAL POOL SURVEY REPORT**

July 2, 2015

**Appendix C CORPS WETLAND DETERMINATION DATA FORMS**



Project/Site: <b>Juniper Ridge Landfill</b>	Stantec Project #: <b>195600983</b>	Date: <b>05/06/15</b>
Applicant: <b>NEWSME Landfill Operations and State of Maine BGS</b>		County: <b>Penobscot</b>
Investigator #1: <b>Bryan Emerson</b>	Investigator #2:	State: <b>Maine</b>
Soil Unit: <b>Howland very stony loam</b>	NWI/WWI Classification: <b>PFO</b>	Wetland ID: <b>01TTC</b>
Landform: <b>Depression</b>	Local Relief: <b>Linear</b>	Sample Point: <b>wet1</b>
Slope (%): <b>2-5</b>	Latitude: <b>44.983886</b>	Community ID: <b>PFO</b>
	Longitude: <b>-68.724885</b>	Datum: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?	Are normal circumstances present?	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Section: <b>--</b>		Township: <b>--</b>
Range: <b>--</b>		Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present)

<p><u>Primary:</u></p> <input checked="" type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input checked="" type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input checked="" type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B15 - Marl Deposits <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> B16 - Moss Trim Lines <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D3 - Shallow Aquitard <input type="checkbox"/> D4 - Microtopographic Relief <input type="checkbox"/> D5 - FAC-Neutral Test
---	--	--

**Field Observations:**

Surface Water Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>2-6</b> (in.)	<b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	
Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>0</b> (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

**SOILS**

Map Unit Name: **Howland very stony loam** Series Drainage Class: **[E.g. moderately well, poorly, etc]**

Taxonomy (Subgroup):

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Mottles			Type	Location	Texture (e.g. clay, sand, loam)
			Color (Moist)	%		Color (Moist)	%				
0	6	1	10YR	5/1	95	10YR	4/6	5	C	M	silt loam
6	14	2	2.5Y	5/2	80	7.5YR	4/4	20	C	M	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> S7 - Dark Surface (LRR R, MLRA 149B)	<input type="checkbox"/> S8 - Polyvalue Below Surface (LRR R, MLRA 149B) <input type="checkbox"/> S9 - Thin Dark Surface (LRR R, MLRA 149B) <input type="checkbox"/> F1 - Loamy Mucky Mineral (LRR K, L) <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> A10 - 2 cm Muck (LRR K, L, MLRA 149B) <input type="checkbox"/> A16 - Coast Prairie Redox (LRR K, L, R) <input type="checkbox"/> S3 - 5cm Mucky Peat of Peat (LRR K, L, R) <input type="checkbox"/> S7 - Dark Surface (LRR K, L, M) <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR K, L) <input type="checkbox"/> S9 - Thin Dark Surface (LRR K, L) <input type="checkbox"/> F12 - Iron-Manganese Masses (LRR K, L, R) <input type="checkbox"/> F19 - Piedmont Floodplain Soils (MLRA 149B) <input type="checkbox"/> TA6 - Mesic Spodic (MLRA 144A, 145, 149B) <input type="checkbox"/> TF2 - Red Parent Material <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
---	---	---

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>Rock</b>	Depth: <b>14"</b>	<b>Hydric Soil Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---	-------------------	---

Remarks:

Project/Site: **Juniper Ridge Landfill** Wetland ID: **01TTC** Sample Point **wet1**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 10 meter radius)</b>				
	<i>Species Name</i>	<i>% Cover</i>	<i>Dominant</i>	<i>Ind. Status</i>
1.	<i>Acer rubrum</i>	50	Y	FAC
2.	<i>Abies balsamea</i>	30	Y	FAC
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		80		
<b>Sapling/Shrub Stratum (Plot size: 5 meter radius)</b>				
1.	<i>Abies balsamea</i>	20	Y	FAC
2.	<i>Acer rubrum</i>	20	Y	FAC
3.	<i>Alnus incana</i>	10	N	FACW
4.	<i>Spiraea alba</i>	5	N	FACW
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		55		
<b>Herb Stratum (Plot size: 2 meter radius)</b>				
1.	<i>Onoclea sensibilis</i>	25	Y	FACW
2.	<i>Calamagrostis canadensis</i>	20	Y	OBL
3.	<i>Osmundastrum cinnamomeum</i>	20	Y	FACW
4.	<i>Osmunda spectabilis</i>	5	N	OBL
5.	<i>Juncus effusus</i>	5	N	OBL
6.	<i>Rubus hispidus</i>	5	N	FACW
7.	<i>Glyceria striata</i>	2	N	OBL
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		82		
<b>Woody Vine Stratum (Plot size: 10 meter radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	<u>32</u>	x 1 =	<u>32</u>
FACW spp.	<u>65</u>	x 2 =	<u>130</u>
FAC spp.	<u>120</u>	x 3 =	<u>360</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>217</u> (A)	<u>522</u> (B)
Prevalence Index = B/A =		<u>2.406</u>	

**Hydrophytic Vegetation Indicators:**

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Dominance Test is > 50%
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

**Woody Vines** - All woody vines greater than 3.28 ft. in height.

**Hydrophytic Vegetation Present**  Yes  No

Project/Site: <b>Juniper Ridge Landfill</b>		Stantec Project #: <b>195600983</b>	Date: <b>05/06/15</b>
Applicant: <b>NEWSME Landfill Operations and State of Maine BGS</b>			County: <b>Penobscot</b>
Investigator #1: <b>Bryan Emerson</b>	Investigator #2:		State: <b>Maine</b>
Soil Unit: <b>Howland very stony loam</b>	NWI/WWI Classification: <b>n/a</b>		Wetland ID: <b>01TTC</b>
Landform: <b>Depression</b>	Local Relief: <b>Linear</b>		Sample Point: <b>up1</b>
Slope (%): <b>2-5</b>	Latitude: <b>44.984225</b>	Longitude: <b>-68.724885</b>	Community ID: <b>n/a</b>
Datum: <b>--</b>			Section: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Township: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input checked="" type="checkbox"/> significantly disturbed?		Are normal circumstances present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input checked="" type="checkbox"/> naturally problematic?		Range: <b>--</b> Dir: <b>--</b>	

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present)

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B15 - Marl Deposits <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> B16 - Moss Trim Lines <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D3 - Shallow Aquitard <input type="checkbox"/> D4 - Microtopographic Relief <input type="checkbox"/> D5 - FAC-Neutral Test
---	---	--

**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: **N/A**

Remarks:

**SOILS**

Map Unit Name: **Howland very stony loam** Series Drainage Class: **[E.g. moderately well, poorly, etc]**

Taxonomy (Subgroup):

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Mottles				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	4	1	10YR	3/2	100	--	--	--	--	--	silt loam
4	8	2	10YR	4/4	95	7.5YR	4/6	5	C	M	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input checked="" type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> S7 - Dark Surface (LRR R, MLRA 149B)	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR R, MLRA 149B) <input type="checkbox"/> S9 - Thin Dark Surface (LRR R, MLRA 149B) <input type="checkbox"/> F1 - Loamy Mucky Mineral (LRR K, L) <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> A10 - 2 cm Muck (LRR K, L, MLRA 149B) <input type="checkbox"/> A16 - Coast Prairie Redox (LRR K, L, R) <input type="checkbox"/> S3 - 5cm Mucky Peat of Peat (LRR K, L, R) <input type="checkbox"/> S7 - Dark Surface (LRR K, L, M) <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR K, L) <input type="checkbox"/> S9 - Thin Dark Surface (LRR K, L) <input type="checkbox"/> F12 - Iron-Manganese Masses (LRR K, L, R) <input type="checkbox"/> F19 - Piedmont Floodplain Soils (MLRA 149B) <input type="checkbox"/> TA6 - Mesc Spodic (MLRA 144A, 145, 149B) <input type="checkbox"/> TF2 - Red Parent Material <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
--	--

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>Rock/till</b> Depth: <b>8"</b>	<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	---

Remarks:



Project/Site: **Juniper Ridge Landfill** Wetland ID: **01TTC** Sample Point **up1**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 10 meter radius)</b>				
	<i>Species Name</i>	<i>% Cover</i>	<i>Dominant</i>	<i>Ind. Status</i>
1.	<i>Abies balsamea</i>	40	Y	FAC
2.	<i>Tsuga canadensis</i>	40	Y	FACU
3.	<i>Acer rubrum</i>	5	N	FAC
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		85		
<b>Sapling/Shrub Stratum (Plot size: 5 meter radius)</b>				
1.	<i>Abies balsamea</i>	30	Y	FAC
2.	<i>Tsuga canadensis</i>	25	Y	FACU
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		55		
<b>Herb Stratum (Plot size: 2 meter radius)</b>				
1.	<i>Pteridium aquilinum</i>	10	Y	FACU
2.	<i>Dryopteris intermedia</i>	8	Y	FAC
3.	<i>Maianthemum canadense</i>	5	N	FACU
4.	<i>Gaultheria procumbens</i>	5	N	FACU
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		28		
<b>Woody Vine Stratum (Plot size: 10 meter radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>0</u>	x 2 =	<u>0</u>
FAC spp.	<u>83</u>	x 3 =	<u>249</u>
FACU spp.	<u>85</u>	x 4 =	<u>340</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>
Total		<u>168</u> (A)	<u>589</u> (B)
Prevalence Index = B/A =		<u>3.506</u>	

**Hydrophytic Vegetation Indicators:**

Yes  No Rapid Test for Hydrophytic Vegetation

Yes  No Dominance Test is > 50%

Yes  No Prevalence Index is ≤ 3.0 \*

Yes  No Morphological Adaptations (Explain) \*

Yes  No Problem Hydrophytic Vegetation (Explain) \*

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

**Woody Vines** - All woody vines greater than 3.28 ft. in height.

**Hydrophytic Vegetation Present**  Yes  No

Project/Site: <b>Juniper Ridge Landfill</b>		Stantec Project #: <b>195600983</b>	Date: <b>09/25/14</b>
Applicant: <b>NEWSME Landfill Operations and State of Maine BGS</b>			County: <b>Penobscot</b>
Investigator #1: <b>Thomas Tetreau</b>	Investigator #2:		State: <b>Maine</b>
Soil Unit: <b>Howland very stony loam</b>	NWI/WWI Classification: <b>PFO</b>		Wetland ID: <b>01TTA</b>
Landform: <b>Depression</b>	Local Relief: <b>Linear</b>		Sample Point: <b>wet1</b>
Slope (%): <b>2-5</b>	Latitude: <b>44.982380</b>	Longitude: <b>-68.727613</b>	Community ID: <b>PFO</b>
Datum: <b>--</b>			Section: <b>--</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			Township: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input checked="" type="checkbox"/> significantly disturbed?		Are normal circumstances present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input checked="" type="checkbox"/> naturally problematic?		Range: <b>--</b> Dir: <b>--</b>	

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is This Sampling Point Within A Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Remarks: **Wetland hydrology influenced by stormwater outfall discharging water. Wetland is newly created after construction of adjacent stormwater pond and associated outlet.**

**HYDROLOGY**

Wetland Hydrology Indicators (Check here if indicators are not present)

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input checked="" type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input checked="" type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B15 - Marl Deposits <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> B16 - Moss Trim Lines <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D3 - Shallow Aquitard <input type="checkbox"/> D4 - Microtopographic Relief <input type="checkbox"/> D5 - FAC-Neutral Test
--	--	--

**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	<b>Wetland Hydrology Present?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	
Saturation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Depth: <b>12</b> (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: **N/A**

Remarks:

**SOILS**

Map Unit Name: **Howland very stony loam** Series Drainage Class: **[E.g. moderately well, poorly, etc]**

Taxonomy (Subgroup):

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Mottles			Type	Location	Texture (e.g. clay, sand, loam)
			Color (Moist)	%		Color (Moist)	%				
0	7	1	10YR	5/1	80	10YR	4/6	20	C	M	silt loam
7	16	2	2.5Y	5/2	75	7.5YR	4/4	25	C	M	silt loam
16	22	3	2.5Y	5/1	98	10YR	4/4	2	C	M	sandy loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

**NRCS Hydric Soil Field Indicators** (check here if indicators are not present)

<input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> S7 - Dark Surface (LRR R, MLRA 149B)	<input type="checkbox"/> S8 - Polyvalue Below Surface (LRR R, MLRA 149B) <input type="checkbox"/> S9 - Thin Dark Surface (LRR R, MLRA 149B) <input type="checkbox"/> F1 - Loamy Mucky Mineral (LRR K, L) <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils<sup>1</sup></b></p> <input type="checkbox"/> A10 - 2 cm Muck (LRR K, L, MLRA 149B) <input type="checkbox"/> A16 - Coast Prairie Redox (LRR K, L, R) <input type="checkbox"/> S3 - 5cm Mucky Peat of Peat (LRR K, L, R) <input type="checkbox"/> S7 - Dark Surface (LRR K, L, M) <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR K, L) <input type="checkbox"/> S9 - Thin Dark Surface (LRR K, L) <input type="checkbox"/> F12 - Iron-Manganese Masses (LRR K, L, R) <input type="checkbox"/> F19 - Piedmont Floodplain Soils (MLRA 149B) <input type="checkbox"/> TA6 - Mescic Spodic (MLRA 144A, 145, 149B) <input type="checkbox"/> TF2 - Red Parent Material <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
---	---	--

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer** (If Observed) Type: **Hard pack** Depth: **22"**

**Hydric Soil Present?**  Yes  No

Remarks:

Project/Site: **Juniper Ridge Landfill** Wetland ID: **01TTA** Sample Point **wet1**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 10 meter radius)</b>				
	<i>Species Name</i>	<i>% Cover</i>	<i>Dominant</i>	<i>Ind. Status</i>
1.	<i>Acer rubrum</i>	30	Y	FAC
2.	<i>Abies balsamea</i>	25	Y	FAC
3.	<i>Fraxinus nigra</i>	5	N	FACW
4.	<i>Fraxinus americana</i>	5	N	FACU
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		65		
<b>Sapling/Shrub Stratum (Plot size: 5 meter radius)</b>				
1.	<i>Abies balsamea</i>	30	Y	FAC
2.	<i>Acer rubrum</i>	10	Y	FAC
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		40		
<b>Herb Stratum (Plot size: 2 meter radius)</b>				
1.	<i>Onoclea sensibilis</i>	30	Y	FACW
2.	<i>Calamagrostis canadensis</i>	25	Y	OBL
3.	<i>Glyceria striata</i>	20	Y	OBL
4.	<i>Equisetum sylvaticum</i>	10	N	FACW
5.	<i>Rubus hispida</i>	15	N	FACW
6.	<i>Acer rubrum</i>	8	N	FAC
7.	<i>Symphotrichum novae-angliae</i>	5	N	FACW
8.	<i>Juncus effusus</i>	5	N	OBL
9.	<i>Abies balsamea</i>	2	N	FAC
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		120		
<b>Woody Vine Stratum (Plot size: 10 meter radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Additional Remarks:**

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:		Multiply by:	
OBL spp.	50	x 1 =	50
FACW spp.	65	x 2 =	130
FAC spp.	105	x 3 =	315
FACU spp.	5	x 4 =	20
UPL spp.	0	x 5 =	0
Total		225 (A)	515 (B)
Prevalence Index = B/A =		<u>2.289</u>	

**Hydrophytic Vegetation Indicators:**

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Dominance Test is > 50%
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

**Woody Vines** - All woody vines greater than 3.28 ft. in height.

**Hydrophytic Vegetation Present**  Yes  No



Project/Site: <b>Juniper Ridge Landfill</b>	Stantec Project #: <b>195600983</b>	Date: <b>09/25/14</b>
Applicant: <b>NEWSME Landfill Operations and State of Maine BGS</b>		County: <b>Penobscot</b>
Investigator #1: <b>Thomas Tetreau</b>	Investigator #2:	State: <b>Maine</b>
Soil Unit: <b>Howland very stony loam</b>	NWI/WWI Classification: <b>n/a</b>	Wetland ID: <b>01TTA</b>
Landform: <b>Depression</b>	Local Relief: <b>Linear</b>	Sample Point: <b>up1</b>
Slope (%): <b>2-5</b>	Latitude: <b>44.982380</b>	Longitude: <b>-68.727613</b>
	Datum: <b>--</b>	Community ID: <b>n/a</b>
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Section: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input checked="" type="checkbox"/> significantly disturbed?	Are normal circumstances present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Township: <b>--</b>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input checked="" type="checkbox"/> naturally problematic?		Range: <b>--</b> Dir: <b>--</b>

**SUMMARY OF FINDINGS**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is This Sampling Point Within A Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</b>

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators** (Check here if indicators are not present)

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface	<input type="checkbox"/> B9 - Water-Stained Leaves <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> B15 - Marl Deposits <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C6 - Recent Iron Reduction in Tilled Soils <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> B16 - Moss Trim Lines <input type="checkbox"/> C2 - Dry-Season Water Table <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D1 - Stunted or Stressed Plants <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D3 - Shallow Aquitard <input type="checkbox"/> D4 - Microtopographic Relief <input type="checkbox"/> D5 - FAC-Neutral Test
---	---	--

**Field Observations:**

Surface Water Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	<b>Wetland Hydrology Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water Table Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	
Saturation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Depth: <b>n/a</b> (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: **N/A**

Remarks:

**SOILS**

Map Unit Name: **Howland very stony loam** Series Drainage Class: **[E.g. moderately well, poorly, etc]**

Taxonomy (Subgroup):

**Profile Description** (Describe to the depth needed to document the indicator or confirm the absence of indicators.) (Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Top Depth	Bottom Depth	Horizon	Matrix			Mottles				Texture (e.g. clay, sand, loam)	
			Color (Moist)	%		Color (Moist)	%	Type	Location		
0	1	1	10YR	3/2	100	--	--	--	--	--	silt loam
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--

<p><b>NRCS Hydric Soil Field Indicators</b> (check here if indicators are not present) <input checked="" type="checkbox"/></p> <input type="checkbox"/> A1 - Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S4 - Sandy Gleyed Matrix <input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> S7 - Dark Surface (LRR R, MLRA 149B)	<input type="checkbox"/> S8 - Polyvalue Below Surface (LRR R, MLRA 149B) <input type="checkbox"/> S9 - Thin Dark Surface (LRR R, MLRA 149B) <input type="checkbox"/> F1 - Loamy Mucky Mineral (LRR K, L) <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions	<p><b>Indicators for Problematic Soils</b><sup>1</sup></p> <input type="checkbox"/> A10 - 2 cm Muck (LRR K, L, MLRA 149B) <input type="checkbox"/> A16 - Coast Prairie Redox (LRR K, L, R) <input type="checkbox"/> S3 - 5cm Mucky Peat of Peat (LRR K, L, R) <input type="checkbox"/> S7 - Dark Surface (LRR K, L, M) <input type="checkbox"/> S8 - Polyvalue Below Surface (LRR K, L) <input type="checkbox"/> S9 - Thin Dark Surface (LRR K, L) <input type="checkbox"/> F12 - Iron-Manganese Masses (LRR K, L, R) <input type="checkbox"/> F19 - Piedmont Floodplain Soils (MLRA 149B) <input type="checkbox"/> TA6 - Mesc Spodic (MLRA 144A, 145, 149B) <input type="checkbox"/> TF2 - Red Parent Material <input type="checkbox"/> TF12 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
--	--	--

<sup>1</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If Observed) Type: <b>Rock</b>	Depth: <b>1"</b>	<b>Hydric Soil Present?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	------------------	---

Remarks:

Project/Site: **Juniper Ridge Landfill** Wetland ID: **01TTA** Sample Point **up1**

VEGETATION (Species identified in all uppercase are non-native species.)				
<b>Tree Stratum (Plot size: 10 meter radius)</b>				
	<i>Species Name</i>	<i>% Cover</i>	<i>Dominant</i>	<i>Ind. Status</i>
1.	<i>Acer rubrum</i>	50	Y	FAC
2.	<i>Abies balsamea</i>	40	Y	FAC
3.	<i>Fraxinus americana</i>	10	N	FACU
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		100		
<b>Sapling/Shrub Stratum (Plot size: 5 meter radius)</b>				
1.	<i>Abies balsamea</i>	50	Y	FAC
2.	<i>Acer rubrum</i>	5	Y	FAC
3.	<i>Ulmus americana</i>	5	N	FACW
4.	--	--	--	--
5.	--	--	--	--
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
Total Cover =		60		
<b>Herb Stratum (Plot size: 2 meter radius)</b>				
1.	<i>Dryopteris intermedia</i>	5	Y	FAC
2.	<i>Pteridium aquilinum</i>	3	Y	FACU
3.	<i>Maianthemum canadense</i>	2	N	FACU
4.	<i>Aralia nudicaulis</i>	2	N	FACU
5.	<i>Trientalis borealis</i>	1	N	FAC
6.	--	--	--	--
7.	--	--	--	--
8.	--	--	--	--
9.	--	--	--	--
10.	--	--	--	--
11.	--	--	--	--
12.	--	--	--	--
13.	--	--	--	--
14.	--	--	--	--
15.	--	--	--	--
Total Cover =		13		
<b>Woody Vine Stratum (Plot size: 10 meter radius)</b>				
1.	--	--	--	--
2.	--	--	--	--
3.	--	--	--	--
4.	--	--	--	--
5.	--	--	--	--
Total Cover =		0		
Remarks:				

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

---

**Prevalence Index Worksheet**

Total % Cover of:	Multiply by:
OBL spp. <u>0</u>	x 1 = <u>0</u>
FACW spp. <u>5</u>	x 2 = <u>10</u>
FAC spp. <u>151</u>	x 3 = <u>453</u>
FACU spp. <u>17</u>	x 4 = <u>68</u>
UPL spp. <u>0</u>	x 5 = <u>0</u>
<b>Total <u>173</u> (A)</b>	<b><u>531</u> (B)</b>
Prevalence Index = B/A = <u>3.069</u>	

---

**Hydrophytic Vegetation Indicators:**

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Rapid Test for Hydrophytic Vegetation
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Dominance Test is > 50%
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Prevalence Index is ≤ 3.0 *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Morphological Adaptations (Explain) *
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Problem Hydrophytic Vegetation (Explain) *

\* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/Shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft. tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft. tall.

**Woody Vines** - All woody vines greater than 3.28 ft. in height.

---

**Hydrophytic Vegetation Present**  Yes  No

**Additional Remarks:**

JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND AND WATERBODY DELINEATION AND  
VERNAL POOL SURVEY REPORT

July 2, 2015

**Appendix D MAINE STATE VERNAL POOL ASSESSMENT  
FORMS**





# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 03KW MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

#### GPS location of vernal pool

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

- Check one:  GIS shapefile  
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)
- The pool perimeter is delineated by multiple GPS points. (excellent)  
- Include map or spreadsheet with coordinates.
  - The above GPS point is at the center of the pool. (good)
  - The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Shrub swamp  
 Peatland (fen or bog)  
 Emergent marsh  
 Wet meadow  
 Lake or Pond Cove  
 Abandoned beaver flowage  
 Active beaver flowage  
 Slow stream  
 Floodplain  
 Isolated pool  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Natural depression in wetland

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Shallow water depth, terrestrial vegetation in pool

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 30  m  ft Length: 50  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: Adult wood frog in pool

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	10	0	3	3	A	H	N	Y			3	3
Spotted Salamander	40	49	3	3	M	A	N	N			3	3
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N			3	3
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:



Juniper Ridge Landfill Expansion Project



**Photo 1:** SVP\_03KW\_N.  
Date: May 5, 2015. Stantec.



**Photo 2:** SVP\_03KW\_N.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 01BE MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
- Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Shrub swamp  
 Peatland (fen or bog)  
 Emergent marsh  
 Wet meadow  
 Lake or Pond Cove  
 Abandoned beaver flowage  
 Active beaver flowage  
 Slow stream  
 Floodplain  
 Isolated pool  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Pool located behind erosion control berm and impounded, hydrology from stormwater outfall

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Shallow water depth, terrestrial vegetation in pool

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 5  m  ft Length: 15  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: adult wood frog in pool

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): stormwater outfall acts as ephemeral inlet, no outlet



# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	18	18	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Hydrology of pool influenced by stormwater outfall, wetland is newly present after construction of adjacent stormwater pond and associated outlet.

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments: \_\_\_\_\_

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_01BE\_M.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_01BE\_M.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 01JR MDIFW Pool ID: \_\_\_\_\_

## 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Jake Riley
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

## 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

## 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

## 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)



# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  Pool associated with larger wetland complex  
 Floodplain depression  Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  Wet meadow  Slow stream  
 Shrub swamp  Lake or Pond Cove  Floodplain  
 Peatland (fen or bog)  Abandoned beaver flowage  Isolated pool  
 Emergent marsh  Active beaver flowage  Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Upland depression next to boulder in upland

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  Semi-permanent (drying partially in all years and completely in drought years)  Ephemeral (drying out completely in most years)  Unknown

Explain:

Shallow water depth and small size

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 3  m  ft Length: 6  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  Organic matter (peat/muck) shallow or restricted to deepest portion  
 Mineral soil (sphagnum moss present)  Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  Wet site ferns (e.g. royal fern, marsh fern)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Sphagnum moss (anchored or suspended)  Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Intermittent inlet or outlet  Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	2	4	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

#### For MDIFW use only

Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_01JR\_N.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_01JR\_N.  
Date: May 20, 2015. Stantec.





# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 02BE MDIFW Pool ID: \_\_\_\_\_

## 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

## 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

## 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

## 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
- Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  Pool associated with larger wetland complex  
 Floodplain depression  Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  Wet meadow  Slow stream  
 Shrub swamp  Lake or Pond Cove  Floodplain  
 Peatland (fen or bog)  Abandoned beaver flowage  Isolated pool  
 Emergent marsh  Active beaver flowage  Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Pool in skidder rut

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  Semi-permanent (drying partially in all years and completely in drought years)  Ephemeral (drying out completely in most years)  Unknown

Explain:

Shallow water depth, firm mineral substrate

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 3  m  ft Length: 15  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  Organic matter (peat/muck) shallow or restricted to deepest portion  
 Mineral soil (sphagnum moss present)  Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  Wet site ferns (e.g. royal fern, marsh fern)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Sphagnum moss (anchored or suspended)  Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Intermittent inlet or outlet  Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed		Confidence Level <sup>1</sup>			
Wood Frog	0	0	3	3	n/a	n/a	N	N	3	3		
Spotted Salamander	4	4	3	3	M	A	N	N	3	3		
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N	3	3		
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:



Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_02BE\_M.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_02BE\_M.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 02JR MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Jake Riley
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Wet meadow  
 Slow stream  
 Shrub swamp  
 Lake or Pond Cove  
 Floodplain  
 Peatland (fen or bog)  
 Abandoned beaver flowage  
 Isolated pool  
 Emergent marsh  
 Active beaver flowage  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Skidder rut in wetland

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Shallow water depth

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 2  m  ft Length: 12  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_



# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	1	0	3	3	M	n/a	N	Y	3	3		
Spotted Salamander	0	0	3	3	n/a	n/a	N	N	3	3		
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N	3	3		
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_02JR\_M.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_02JR\_M.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 04BE MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)



# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  Pool associated with larger wetland complex  
 Floodplain depression  Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  Wet meadow  Slow stream  
 Shrub swamp  Lake or Pond Cove  Floodplain  
 Peatland (fen or bog)  Abandoned beaver flowage  Isolated pool  
 Emergent marsh  Active beaver flowage  Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Upland depression in tree tip-up

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  Semi-permanent (drying partially in all years and completely in drought years)  Ephemeral (drying out completely in most years)  Unknown

Explain:

Shallow water depth, mineral soil substrate

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 5  m  ft Length: 15  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  Organic matter (peat/muck) shallow or restricted to deepest portion  
 Mineral soil (sphagnum moss present)  Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  Wet site ferns (e.g. royal fern, marsh fern)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Sphagnum moss (anchored or suspended)  Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Intermittent inlet or outlet  Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	1	1	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

#### For MDIFW use only

Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_04BE\_N.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_04BE\_N.  
Date: May 20, 2015. Stantec.





# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 05BE MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  Pool associated with larger wetland complex  
 Floodplain depression  Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  Wet meadow  Slow stream  
 Shrub swamp  Lake or Pond Cove  Floodplain  
 Peatland (fen or bog)  Abandoned beaver flowage  Isolated pool  
 Emergent marsh  Active beaver flowage  Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Skidder ruts through pit and mound wetland

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  Semi-permanent (drying partially in all years and completely in drought years)  Ephemeral (drying out completely in most years)  Unknown

Explain:

Shallow water depth, mineral substrate

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 5  m  ft Length: 15  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  Organic matter (peat/muck) shallow or restricted to deepest portion  
 Mineral soil (sphagnum moss present)  Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  Wet site ferns (e.g. royal fern, marsh fern)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Sphagnum moss (anchored or suspended)  Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Intermittent inlet or outlet  Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	1	1	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

#### For MDIFW use only

Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:



Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_05BE\_N.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_05BE\_N.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 05SD MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
- Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Shrub swamp  
 Peatland (fen or bog)  
 Emergent marsh  
 Wet meadow  
 Lake or Pond Cove  
 Abandoned beaver flowage  
 Active beaver flowage  
 Slow stream  
 Floodplain  
 Isolated pool  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Borrow pit along old road

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Deep water, little vegetation in pool

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10  m  ft Length: 15  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_



# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/6/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	6	0	3	3	H	n/a	N	Y		3	3	
Spotted Salamander	22	23	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_05SD\_M.  
Date: May 6, 2015. Stantec.



**Photo 2:** VP\_05SD\_M – In photo background.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: VP06 MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

#### GPS location of vernal pool

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

- Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)
- The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.
- The above GPS point is at the center of the pool. (good)
- The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)



# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Wet meadow  
 Slow stream  
 Shrub swamp  
 Lake or Pond Cove  
 Floodplain  
 Peatland (fen or bog)  
 Abandoned beaver flowage  
 Isolated pool  
 Emergent marsh  
 Active beaver flowage  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Ditch along old road

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Deep water, little vegetation in pool

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 8  m  ft Length: 100  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: Adult green frog and wood frog in pool

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/6/15, 5/20/15 \_\_\_\_\_

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	9	14	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_06\_M.  
Date: May 6, 2015. Stantec.



**Photo 2:** VP\_06\_M.  
Date: May 20, 2015. Stantec.





# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 06BE MDIFW Pool ID: \_\_\_\_\_

## 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

## 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

## 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

## 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

### GPS location of vernal pool

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

- Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)
- The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.
  - The above GPS point is at the center of the pool. (good)
  - The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Wet meadow  
 Slow stream  
 Shrub swamp  
 Lake or Pond Cove  
 Floodplain  
 Peatland (fen or bog)  
 Abandoned beaver flowage  
 Isolated pool  
 Emergent marsh  
 Active beaver flowage  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Skidder ruts through wetland

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Shallow water depth, vegetation in pool

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10  m  ft Length: 50  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	1	1	3	3	M	H	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:



Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_06BE\_M.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_06BE\_M.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 06SD MDIFW Pool ID: \_\_\_\_\_

## 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

## 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

## 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

## 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
- Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Shrub swamp  
 Peatland (fen or bog)  
 Emergent marsh  
 Wet meadow  
 Lake or Pond Cove  
 Abandoned beaver flowage  
 Active beaver flowage  
 Slow stream  
 Floodplain  
 Isolated pool  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Borrow pit along old road

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Deep water, no vegetation in pool

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10  m  ft Length: 15  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_



# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/6/15, 5/20/15 \_\_\_\_\_

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	8	7	3	3	A	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_06SD\_M.  
Date: May 6, 2015. Stantec.



**Photo 2:** VP\_06SD\_M – In photo foreground.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: VP07 MDIFW Pool ID: \_\_\_\_\_

## 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

## 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

## 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

## 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)



# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  Pool associated with larger wetland complex  
 Floodplain depression  Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  Wet meadow  Slow stream  
 Shrub swamp  Lake or Pond Cove  Floodplain  
 Peatland (fen or bog)  Abandoned beaver flowage  Isolated pool  
 Emergent marsh  Active beaver flowage  Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Ditch along old road

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  Semi-permanent (drying partially in all years and completely in drought years)  Ephemeral (drying out completely in most years)  Unknown

Explain:

Deep water, portions of pool may dry but deepest sections likely hold water year round

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 30  m  ft Length: 150  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  Organic matter (peat/muck) shallow or restricted to deepest portion  
 Mineral soil (sphagnum moss present)  Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  Wet site ferns (e.g. royal fern, marsh fern)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Sphagnum moss (anchored or suspended)  Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: Adult green frog on second visit

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Intermittent inlet or outlet  Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/6/15, 5/20/15 \_\_\_\_\_

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0	0	3	3	n/a	n/a	N	N		3	3	
Spotted Salamander	25	19	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_07\_M.  
Date: May 6, 2015. Stantec.



**Photo 2:** VP\_07\_M.  
Date: May 20, 2015. Stantec.





# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: VP15 MDIFW Pool ID: \_\_\_\_\_

### 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

### 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other \_\_\_\_\_
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

### 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

### 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
- Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Shrub swamp  
 Peatland (fen or bog)  
 Emergent marsh  
 Wet meadow  
 Lake or Pond Cove  
 Abandoned beaver flowage  
 Active beaver flowage  
 Slow stream  
 Floodplain  
 Isolated pool  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Pool in old woods road

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Shallow water depth, past visits in 2008 documented dry-out in mid-summer

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 10  m  ft Length: 75  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: \_\_\_\_\_

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_

# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

**a. Indicator survey dates:** 5/5/15, 5/20/15

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	3	0	3	3	n/a	n/a	N	Y		3	3	
Spotted Salamander	47	41	3	3	M	A	N	N		3	3	
Blue-spotted Salamander	0	0	3	3	n/a	n/a	N	N		3	3	
Fairy Shrimp <sup>3</sup>	0	0	3	3								

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:



Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_15\_M.  
Date: May 5, 2015. Stantec.



**Photo 2:** VP\_15\_M.  
Date: May 20, 2015. Stantec.



# Maine State Vernal Pool Assessment Form



**INSTRUCTIONS:** Complete all 3 pages of form as thoroughly as possible. Most fields are required for pool registration.

Observer's Pool ID: 17JR MDIFW Pool ID: \_\_\_\_\_

## 1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Jake Riley
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes

## 2. PROJECT CONTACT INFORMATION

- a. Contact name:  same as observer  other Bryan Emerson
- b. Contact and credentials previously provided?  No (submit Addendum 1)  Yes
- c. Project Name: Juniper Ridge Landfill Expansion

**NOTE:** Clear photographs or digital images of a) the pool and b) the indicators (one example of each species egg mass) are required for nonprofessional observers and encouraged for all observers.

## 3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner?  Yes  No If no, was landowner permission obtained for survey?  Yes  No
- b. Landowner's contact information (required)  
 Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c.  Large Projects: check if separate project landowner data file submitted

## 4. VERNAL POOL LOCATION INFORMATION

a. **Location** Township: Old Town

Brief site directions to the pool (using mapped landmarks):

See attached maps.

b. **Mapping Requirements:** At least 2 of the 3 must be submitted (check those submitted):

- USGS topographic map with pool clearly marked.
- Large scale aerial photograph with pool clearly marked.
- GPS data (complete section below).

**GPS location of vernal pool**

Longitude/Easting: \_\_\_\_\_ Latitude/Northing: \_\_\_\_\_

Check Datum:  NAD27  NAD83 / WGS84 Coordinate system: \_\_\_\_\_

Check one:  GIS shapefile  
 - send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (best)

The pool perimeter is delineated by multiple GPS points. (excellent)  
 - Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (good)

The center of the pool is approximately \_\_\_\_\_ m  /ft  in the compass direction of \_\_\_\_\_ degrees from the above GPS point. (acceptable)

# Maine State Vernal Pool Assessment Form

## 5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): \_\_\_\_\_

### b. Wetland habitat characterization

■ Choose the best descriptor for the landscape setting:

- Isolated depression  
 Floodplain depression  
 Pool associated with larger wetland complex  
 Other: \_\_\_\_\_

■ Check all wetland types that best apply to this pool:

- Forested swamp  
 Wet meadow  
 Slow stream  
 Shrub swamp  
 Lake or Pond Cove  
 Floodplain  
 Peatland (fen or bog)  
 Abandoned beaver flowage  
 Isolated pool  
 Emergent marsh  
 Active beaver flowage  
 Other: \_\_\_\_\_

### c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin:  Natural  Natural-Modified  Unnatural  Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

Skidder rut in wetland

### ii. Pool Hydrology

■ Select the pool's estimated hydroperiod AND provide rationale for opinion.

- Permanent  
 Semi-permanent (drying partially in all years and completely in drought years)  
 Ephemeral (drying out completely in most years)  
 Unknown

Explain:

Shallow water depth and vegetation in rut

■ Maximum depth at survey:  0-12" (0-1 ft.)  12-36" (1-3 ft.)  36-60" (3-5 ft.)  >60" (>5 ft.)

■ Approximate size of pool (at spring highwater): Width: 4  m  ft Length: 10  m  ft

■ Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present)  
 Mineral soil (sphagnum moss present)  
 Organic matter (peat/muck) shallow or restricted to deepest portion  
 Organic matter (peat/muck) deep and widespread

■ Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.)  
 Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern)  
 Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern)  
 Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle)  
 Sphagnum moss (anchored or suspended)  
 Wet site ferns (e.g. royal fern, marsh fern)  
 Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly)  
 Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes)  
 Aquatic vascular spp. (e.g. pickerelweed, arrowhead)  
 Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort)  
 No vegetation in pool

■ Faunal indicators (check all that apply):

- Fish  Bullfrog or Green Frog tadpoles  Other: Adult wood frog observed in pool

### iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet  
 Intermittent inlet or outlet  
 Permanent inlet or outlet (channel with well-defined banks and permanent flow)  
 Other or Unknown (explain): \_\_\_\_\_



# Maine State Vernal Pool Assessment Form

## 6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 5/14/15 \_\_\_\_\_

### b. Indicator abundance criteria

■ Was the entire pool surveyed for egg masses?  Yes  No; what % of pool surveyed? \_\_\_\_\_

■ For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae					
	#		Confidence Level <sup>1</sup>		Egg Mass Maturity <sup>2</sup>		Observed			Confidence Level <sup>1</sup>		
Wood Frog	0		3		n/a		N			3		
Spotted Salamander	1		3		A		N			3		
Blue-spotted Salamander	0		3		n/a		N			3		
Fairy Shrimp <sup>3</sup>	0		3									

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy Shrimp: X = present

### c. Rarity criteria

■ Note any rare species associated with vernal pools. Observations should be accompanied by photographs (labeled with observer name, pool location, and date).

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

\*Method of verification: P = Photographed, H = Handled, S = Seen

\*\*CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

### d. Optional observer recommendation:

SVP  Potential SVP  Non Significant VP  Indicator Breeding Area

### e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife  
Attn: Vernal Pools  
650 State Street, Bangor, ME 04401

**NOTE:** Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

**For MDIFW use only** Reviewed by MDIFW Date: \_\_\_\_\_ Initials: \_\_\_\_\_

This pool is:  Significant  Potentially Significant but lacking critical data  Not Significant due to:  does not meet biological criteria.  does not meet MDEP vernal pool criteria.

Comments:

Juniper Ridge Landfill Expansion Project



**Photo 1:** VP\_17JR\_M.  
Date: May 14, 2015. Stantec.

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 10  
NOTICE OF INTENT TO FILE AND  
CERTIFICATE OF GOOD CORPORATE STANDING**



## **PUBLIC NOTICE OF INTENT TO FILE**

Please take notice that the Bureau of General Services ("BGS"), c/o Department of Economic and Community Development, State House Station #59, Augusta, Maine 04333-0059 (tel. 207-624-7436), as owner, and NEWSME Landfill Operations, LLC ("NEWSME"), 358 Emerson Mill Road, Hampden, Maine 04444 (tel. 207 862-4200), as operator, are intending to file the following applications with the Maine Department of Environmental Protection (DEP) on or about July 20, 2015: (1) a Solid Waste Facility License Application pursuant to Maine's Waste Management Act, 38 M.R.S. §§ 1301 et seq., and regulations promulgated thereunder, and (2) a Tier 3 wetlands alteration application pursuant to Maine's Natural Resources Protection Act ("NRPA"), 38 M.R.S. §§ 480-A-480-HH, and regulations promulgated under NRPA, and Section 401 water quality certification request pursuant to 33 U.S.C. § 1341. The applications also will be processed under DEP's Chapter 2 Rules Concerning the Processing of Applications.

The applications are for an expansion of the Juniper Ridge Landfill located in Old Town, Maine on BGS-owned land and for filling approximately 2.04 acres of wetland in connection with the proposal to expand the landfill. The Juniper Ridge Landfill is owned by the State of Maine and operated by NEWSME Landfill Operations, LLC. The facility mailing address is 2828 Bennoch Road, Old Town, Maine 04468.

The applications and supporting documentation will be available for review at the Department's Augusta office, during normal working hours. A copy of the applications and supporting documentation may also be seen at the municipal offices in Old Town and Alton, Maine and at the Penobscot Indian Nation.

A request for the Board of Environmental Protection to assume jurisdiction over the applications or a request for a hearing on the applications must be submitted to the Department in writing no later than 20 days after the applications are accepted as complete for processing.

Public comments on the applications may be provided to the Department and will be accepted throughout the processing of the applications. Send all correspondence pertaining to the solid waste license application by email to Michael Parker at ([Michael.T.Parker@maine.gov](mailto:Michael.T.Parker@maine.gov)) or by regular mail to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, Maine 04333-0017, Tel: (207-287-2851 or 1-800-452-1942). Send all correspondence pertaining to the NRPA application by email to Lynn Caron at ([lynn.a.caron@maine.gov](mailto:lynn.a.caron@maine.gov)) or by regular mail to: Maine Department of Environmental Protection, Eastern Maine Regional Office, Bureau of Land and Water Quality, 106 Hogan Road, Bangor, Maine 04401, Tel: (207-446-1733 or 1-888-769-1137).

July 9, 2015

{

## Legal Notices

### PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Bureau of General Services ("BGS"), c/o Department of Economic and Community Development, State House Station #59, Augusta, Maine 04333-0059 (tel. 207-624-7436), as owner, and NEWSME Landfill Operations, LLC ("NEWSME"), 358 Emerson Mill Road, Hampden, Maine 04444 (tel. 207-862-4200), as operator, are intending to file the following applications with the Maine Department of Environmental Protection (DEP) on or about July 20, 2015: (1) a Solid Waste Facility License Application pursuant to Maine's Waste Management Act, 38 M.R.S. §§ 1301 et seq., and regulations promulgated thereunder, and (2) a Tier 3 wetlands alteration application pursuant to Maine's Natural Resources Protection Act ("NRPA"), 38 M.R.S. §§ 480-A-480-HH, and regulations promulgated under NRPA, and Section 401 water quality certification request pursuant to 33 U.S.C. § 1341. The applications also will be processed under DEP's Chapter 2 Rules Concerning the Processing of Applications.

The applications are for an expansion of the Juniper Ridge Landfill located in Old Town, Maine on BGS-owned land and for filling approximately 2.04 acres of wetland in connection with the proposal to expand the landfill. The Juniper Ridge Landfill is owned by the State of Maine and operated by NEWSME Landfill Operations, LLC. The facility mailing address is 2828 Bennoch Road, Old Town, Maine 04468.

The applications and supporting documentation will be available for review at the Department's Augusta office, during normal working hours. A copy of the applications and supporting documentation may also be seen at the municipal offices in Old Town and Alton, Maine and at the Penobscot Indian Nation.

A request for the Board of Environmental Protection to assume jurisdiction over the applications or a request for a hearing on the applications must be submitted to the Department in writing no later than 20 days after the applications are accepted as complete for processing.

Public comments on the applications may be provided to the Department and will be accepted throughout the processing of the applications. Send all correspondence pertaining to the solid waste license application by email to Michael Parker at (Michael.T.Parker@maine.gov) or by regular mail to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, Maine 04333-0017, Tel: 207-287-2851 or 1-800-452-1942. Send all correspondence pertaining to the NRPA application by email to Lynn Caron at lynn.a.caron@maine.gov or by regular mail to: Maine Department of Environmental Protection, Eastern Maine Regional Office, Bureau of Land and Water Quality, 106 Hogan Road, Bangor, Maine 04401, Tel: 207-446-1733 or 1-888-769-1137.

---

July 9, 2015

---



## PUBLIC NOTICE OF INTENT TO FILE

Please take notice that the Bureau of General Services ("BGS"), c/o Department of Economic and Community Development, State House Station #59, Augusta, Maine 04333-0059 (tel. 207-624-7436), as owner, and NEWSME Landfill Operations, LLC ("NEWSME"), 358 Emerson Mill Road, Hampden, Maine 04444 (tel. 207 862-4200), as operator, are intending to file the following applications with the Maine Department of Environmental Protection (DEP) on or about July 20, 2015: (1) a Solid Waste Facility License Application pursuant to Maine's Waste Management Act, 38 M.R.S. §§ 1301 et seq., and regulations promulgated thereunder, and (2) a Tier 3 wetlands alteration application pursuant to Maine's Natural Resources Protection Act ("NRPA"), 38 M.R.S. §§ 480-A-480-HH, and regulations promulgated under NRPA, and Section 401 water quality certification request pursuant to 33 U.S.C. § 1341. The applications also will be processed under DEP's Chapter 2 Rules Concerning the Processing of Applications.

The applications are for an expansion of the Juniper Ridge Landfill located in Old Town, Maine on BGS-owned land and for filling approximately 2.04 acres of wetland in connection with the proposal to expand the landfill. The Juniper Ridge Landfill is owned by the State of Maine and operated by NEWSME Landfill Operations, LLC. The facility mailing address is 2828 Bennoch Road, Old Town, Maine 04468.

The applications and supporting documentation will be available for review at the Department's Augusta office, during normal working hours. A copy of the applications and supporting documentation may also be seen at the municipal offices in Old Town and Alton, Maine and at the Penobscot Indian Nation.

A request for the Board of Environmental Protection to assume jurisdiction over the applications or a request for a hearing on the applications must be submitted to the Department in writing no later than 20 days after the applications are accepted as complete for processing.

Public comments on the applications may be provided to the Department and will be accepted throughout the processing of the applications. Send all correspondence pertaining to the solid waste license application by email to Michael Parker at ([Michael.T.Parker@maine.gov](mailto:Michael.T.Parker@maine.gov)) or by regular mail to: Maine Department of Environmental Protection, Solid Waste Program, 17 State House Station, Augusta, Maine 04333-0017, Tel: (207-287-2851 or 1-800-452-1942). Send all correspondence pertaining to the NRPA application by email to Lynn Caron at ([lynn.a.caron@maine.gov](mailto:lynn.a.caron@maine.gov)) or by regular mail to: Maine Department of Environmental Protection, Eastern Maine Regional Office, Bureau of Land and Water Quality, 106 Hogan Road, Bangor, Maine 04401, Tel: (207-446-1733 or 1-888-769-1137).

July 9, 2015



**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

NEWSME Landfill Operations LLC  
282 Bennoch Road  
Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT, ME  
04021  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



1000



**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Anthony & Cynthia Brown  
1 Chamberlain Road  
Seymour, CT 06483

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT, ME  
04021  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



1000



**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Margo Diaz  
156 Old Stagecoach Rd.  
Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT, ME  
04021  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



1000



**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Kathryn Pelletier  
198 Old Stage Coach Rd.  
Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT, ME  
04021  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



1000



**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Jennifer & Richard Paradise  
38 John St.  
Wells, ME 04090

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT, ME  
04021  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



1000



### Certificate of Mailing

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Anthony Madden  
PO Box 499  
Milford, ME 04461

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT. ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000



### Certificate of Mailing

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Challis Randall  
220 Old Stagecoach Rd.  
Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT. ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000



### Certificate of Mailing

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Town of Alton  
3352 Bennoch Road  
Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT. ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000



### Certificate of Mailing

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

U.S. POSTAGE PAID  
CUMBERLAND CENT. ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000

To:

Charles Tringale III  
250 Old Stagecoach Rd.  
Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID  
CUMBERLAND CENT. ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000

PS Form 3817, April 2007 PSN 7530-02-000-9065



### Certificate of Mailing

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

Kenneth Gray  
PO Box 387  
Old Town, ME 04468

To:

PS Form 3817, April 2007 PSN 7530-02-000-9065





1000

U.S. POSTAGE PAID CUMBERLAND CENT. ME 04021 JUL 09 15 AMOUNT \$1.35 00089600-05



### Certificate ( Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailin. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Tasanee Lolonga  
157 Massapoag Ave  
N. Easton, MA 02356

U.S. POSTAGE PAID CUMBERLAND CENT. ME 04021 JUL 09 15 AMOUNT \$1.35 00089600-05



1000

### Certificate ( Mailin



This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailin. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

Jesse Peckala  
PO Box 471  
Telluride, CO 81435

To:

PS Form 3817, April 2007 PSN 7530-02-000-9065



### Certificate Mail

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Karl Held  
2351 Cochran Road  
Dallas, GA 30132

U.S. POSTAGE PAID CUMBERLAND CENT. ME 04021 JUL 09 15 AMOUNT \$1.35 00089600-05



0001

PS Form 3817, April 2007 PSN 7530-02-000-9065



### Certificate ( Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailin. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Win & Nancy Chayabhai  
PO Box 34  
Seasport, ME 04974

U.S. POSTAGE PAID CUMBERLAND CENT. ME 04021 JUL 09 15 AMOUNT \$1.35 00089600-05



1000

PS Form 3817, April 2007 PSN 7530-02-000-9065

Form with fields for From and To addresses, including: Harry & Tammy Fero, 1118 Southgate Rd, Aryle, ME 04068; Sevee & Maher Engineers, Inc., PO Box 85A 4 Blanchard Road, Cumberland, ME 04021.

U.S. POSTAGE PAID CUMBERLAND CENT. ME 04021 JUL 09 15 AMOUNT \$1.35 00089600-05



### Certificate ( Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailin. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

To:

Harry & Tammy Fero  
1118 Southgate Rd.  
Aryle, ME 04068



1000

U.S. POSTAGE PAID CUMBERLAND CENT. ME 04021 JUL 09 15 AMOUNT \$1.35 00089600-05



**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

**From:**

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**

Robyn Emmons  
488 West Old Town Road  
Old Town, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



UNITED STATES  
POSTAL SERVICE

1000



**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

**From:**

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**

SSR, LLC  
PO Box 435  
Stillwater, ME 04489

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



UNITED STATES  
POSTAL SERVICE

1000



**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

**From:**

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**

Herbert A. Robertson, Jr.  
163 Clewleyville Road  
Edgington, ME 04428

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



UNITED STATES  
POSTAL SERVICE

1000



**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

**From:**

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**

Gregg P. and Elynn Wallace  
526 West Old Town Road  
Old Town, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



UNITED STATES  
POSTAL SERVICE

1000



**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

**From:**

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**

New England Waste Services of Maine  
358 Emerson Mill Road  
Hampden, ME 04444

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
JUL 09, 15  
AMOUNT  
\$1.35  
00089600-05



UNITED STATES  
POSTAL SERVICE

1000



Certificate Of Mailing

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From: Sevee & Maher Engineers, Inc. PO Box 85A 4 Blanchard Road Cumberland, ME 04021
To: United Cerebral Palsy 700 Mount Hope Avenue Suite 320 Bangor, ME 04401

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID CUMBERLAND CENT., ME 04021 JUL 09, 15 AMOUNT \$1.35 00089600-05



1000



Certificate Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

From: Sevee & Maher Engineers, Inc. PO Box 85A 4 Blanchard Road Cumberland, ME 04021
To: Angela D. Cyr 449 West Old Town Road Old Town, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE PAID CUMBERLAND CENT., ME 04021 JUL 09, 15 AMOUNT \$1.35 00089600-05



1000

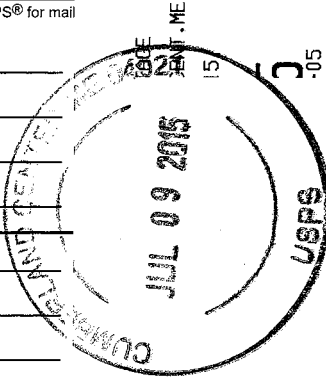


Certificate Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

From: Sevee & Maher Engineers, Inc. PO Box 85A 4 Blanchard Road Cumberland, ME 04021
To: NEWSME Landfill Operations LLC 282 Bennoch Road Alton, ME 04468

PS Form 3817, April 2007 PSN 7530-02-000-9065



00089600-05 \$1.35

U.S. POSTAGE PAID CUMBERLAND CENT., ME 04021 JUL 09, 15 AMOUNT



1000



Certificate Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

From: Sevee & Maher Engineers, Inc. PO Box 85A 4 Blanchard Road Cumberland, ME 04021
To: Scott E. Bergquist 474 South 2550 West Springville, UT 84663

00089600-05 \$1.35

U.S. POSTAGE PAID CUMBERLAND CENT., ME 04021 JUL 09, 15 AMOUNT



1000



Certificate Mailin

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mail. This form may be used for domestic and international mail.

From: Sevee & Maher Engineers, Inc. PO Box 85A 4 Blanchard Road Cumberland, ME 04021
To: University of Maine System 107 Maine Avenue Bangor, ME 04401



**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**  
This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing.  
This form may be used for domestic and international mail.

**From:**  
Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**  
Thomas Dunn and Karen Bertolino  
579 West Old Town Road  
Old Town, ME 04469

PS Form **3817**, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000

**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**  
This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing.  
This form may be used for domestic and international mail.

**From:**  
Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**  
Laurent J. and Barbara L. Beauregard  
273 Washington Street  
Brewer, ME 04412

PS Form **3817**, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000



U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05

1000

**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**  
This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing.  
This form may be used for domestic and international mail.

**From:**  
Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**  
Robert W. and Wendy Hall  
631 West Old Town Road  
Old Town, ME 04469

PS Form **3817**, April 2007 PSN 7530-02-000-9065

**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing.  
This form may be used for domestic and international mail.

**From:**  
Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**  
Lawrence Steeves Heirs  
216 Sycamore Street  
Holbrook, MA 02343

PS Form **3817**, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000

**UNITED STATES  
POSTAL SERVICE®**

**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing.  
This form may be used for domestic and international mail.

**From:**  
Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Road  
Cumberland, ME 04021

**To:**  
Raymond A. Perkins  
55 Old Brooklyn Turnpike  
Windham, CT 06280

PS Form **3817**, April 2007 PSN 7530-02-000-9065

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021  
JUL 09, 15  
AMOUNT  
**\$1.35**  
00089600-05



1000



**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Rd.  
Cumberland, ME 04021



To:

Paul Dalton  
208 Old Stagecoach Road  
Alton, ME 04468

1000



**\$1.35**  
00089600-03

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021-15  
JUL 17 2015  
AMOUNT

PS Form 3817, April 2007 PSN 7530-02-000-9065

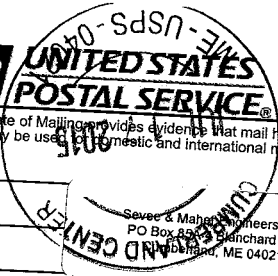


**Certificate of Mailing**

This Certificate of Mailing provides evidence that mail has been presented to USPS® for mailing. This form may be used for domestic and international mail.

From:

Sevee & Maher Engineers, Inc.  
PO Box 85A 4 Blanchard Rd.  
Cumberland, ME 04021



To:

Mary St. Louis/Cynthia and Anthony Brown  
P.O. Box 394  
Stillwater, ME 04489

1000



**\$1.35**  
00089600-03

U.S. POSTAGE  
PAID  
CUMBERLAND CENT., ME  
04021-15  
JUL 17 2015  
AMOUNT

PS Form 3817, April 2007 PSN 7530-02-000-9065

7012 1010 0002 1040 7154

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49

0021  
05 Postmark Here  
JUL 09 2015

07/09/2015

Chuck Leithiser  
394 Fourth Street  
Old Town, ME 04468

PS Form 3800, August 2006

See Reverse for Instructions

7012 1010 0002 1040 7185

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49

0021  
05 Postmark Here  
JUL 09 2015

07/09/2015

Peter Dufour  
230 West Old Town Road  
Old Town, ME 04468

PS Form 3800, August 2006

See Reverse for Instructions

7012 1010 0002 1040 7130

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49

0021  
05 Postmark Here  
JUL 09 2015

07/09/2015

Ralph Leonard  
96 Sargent Drive  
Old Town, ME 04468

PS Form 3800, August 2006

See Reverse for Instructions

7012 1010 0002 1040 7123

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49

0021  
05 Postmark Here  
JUL 09 2015

07/09/2015

Clyde Grant  
181 Oak Street  
Old Town, ME 04468

PS Form 3800, August 2006

See Reverse for Instructions

7012 1010 0002 1040 7147

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49

0021  
05 Postmark Here  
JUL 09 2015

07/09/2015

Ted Shina  
769 West Old Town Road  
Old Town, ME 04468

PS Form 3800, August 2006

See Reverse for Instructions

7012 1010 0002 1040 7161

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49

0021  
05 Postmark Here  
JUL 09 2015

07/09/2015

Bill Mayo City Manager  
City of Old Town  
265 Main Street  
Old Town, ME 04468

PS Form 3800, August 2006

See Reverse for Instructions



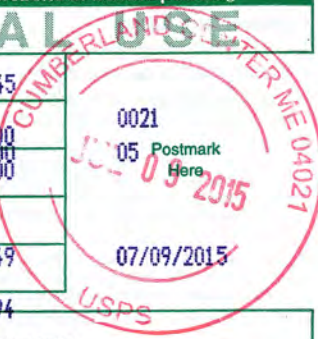
7012 1010 0002 1040 7178

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)®

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To

David Russell  
City of Old Town  
265 Main Street  
Old Town, ME 04468

PS Form 3800, August 2006 See Reverse for Instructions

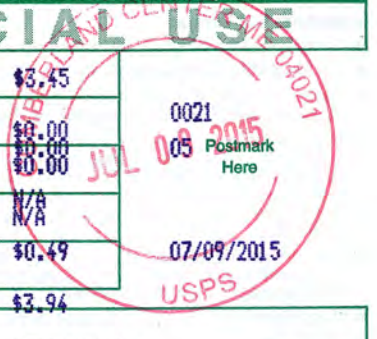
7012 1010 0002 1040 7093

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)®

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To

Bill Thompson Chair  
Landfill Advisory Committee  
12 Wabanaki Way  
Indian Island, ME 04468

PS Form 3800, August 2006 See Reverse for Instructions

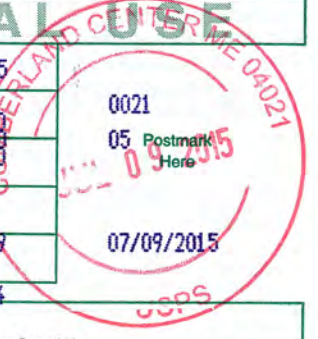
7012 1010 0002 1040 7109

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)®

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To

Dana Snowman  
120 Old Stagecoach Road  
Alton, ME 04468

PS Form 3800, August 2006 See Reverse for Instructions

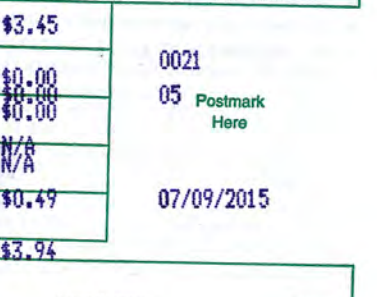
7012 1010 0002 1040 7116

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)®

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To

Laura Sanborn  
2845 Bennoch Road  
Alton, ME 04468

PS Form 3800, August 2006 See Reverse for Instructions

7012 1010 0002 1040 7086

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To

City of Old Town  
265 Main Street  
Old Town, ME 04468

Street, Apt. No.; or PO Box No.

City, State, ZIP+4

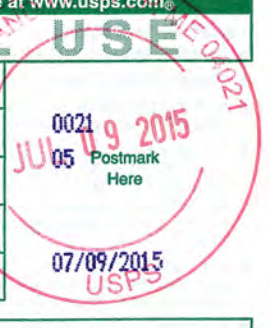
7012 1010 0002 1040 7079

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To

Town of Alton  
3352 Bennoch Road  
Alton, ME 04468

Street, Apt. No.; or PO Box No.

City, State, ZIP+4

7012 1010 0002 1040 7215

U.S. Postal Service™  
**CERTIFIED MAIL™ RECEIPT**  
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at [www.usps.com](http://www.usps.com)

OLD TOWN ME 04468

Postage	\$	\$3.45
Certified Fee		\$0.00
Return Receipt Fee (Endorsement Required)		\$0.00
Restricted Delivery Fee (Endorsement Required)		N/A
Total Postage & Fees	\$	\$0.49
		\$3.94



Sent To Penobscot Indian Nation

12 Wabanaki Way

Indian Island, ME 04468

Street, Apt. No.; or PO Box No.

City, State, ZIP+4



INDIAN ISLAND ME 04468-1254 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407093  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407093  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

ALTON ME 04468-4333 Zone-2 \$0.48  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407109  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407109  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

ALTON ME 04468-4200 Zone-2 \$0.48  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407116  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407116  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

OLD TOWN ME 04468-1632 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407123  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407123  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

CUMBERLAND CENTER MPO  
 CUMBERLAND CENTER, Maine  
 040219998  
 2269030021-0099  
 07/09/2015 (207)829-3661 01:30:27 PM

Sales Receipt			
Product Description	Sale Unit Qty	Unit Price	Final Price
INDIAN ISLAND ME 04468-1254 Zone-2			\$0.48
First-Class Mail Letter			
0.50 oz.			
Expected Delivery: Sat 07/11/15			
@@ Certified Mail			\$3.45
USPS Certified Mail #:			
70121010000210407215			
*** Return Receipt (Electronic)			\$1.40
Use label # 70121010000210407215			
for inquiry on Return Receipt (Electronic).			
Customer Postage			-\$3.94
Subtotal:			\$1.39
			=====
Issue Postage:			\$1.39

ALTON ME 04468-4224 Zone-2			\$0.48
First-Class Mail Letter			
0.50 oz.			
Expected Delivery: Sat 07/11/15			
@@ Certified Mail			\$3.45
USPS Certified Mail #:			
70121010000210407079			
*** Return Receipt (Electronic)			\$1.40
Use label # 70121010000210407079			
for inquiry on Return Receipt (Electronic).			
Customer Postage			-\$3.94
Subtotal:			\$1.39
			=====
Issue Postage:			\$1.39

OLD TOWN ME 04468-1530 Zone-2			\$0.48
First-Class Mail Letter			
0.50 oz.			
Expected Delivery: Sat 07/11/15			
@@ Certified Mail			\$3.45
USPS Certified Mail #:			
70121010000210407086			
*** Return Receipt (Electronic)			\$1.40
Use label # 70121010000210407086			
for inquiry on Return Receipt (Electronic).			
Customer Postage			-\$3.94
Subtotal:			\$1.39
			=====
Issue Postage:			\$1.39



OLD TOWN ME 04468-1236 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407130  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407130  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

OLD TOWN ME 04468-5717 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407147  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407147  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

OLD TOWN ME 04468-1652 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.60 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407154  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407154  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

OLD TOWN ME 04468-1530 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.60 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407161  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407161  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

OLD TOWN ME 04468-1530 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.50 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407178  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407178  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

OLD TOWN ME 04468-5704 \$0.48  
 Zone-2  
 First-Class Mail Letter  
 0.60 oz.  
 Expected Delivery: Sat 07/11/15  
 @@ Certified Mail \$3.45  
 USPS Certified Mail #:  
 70121010000210407185  
 \*\*\* Return Receipt \$1.40  
 (Electronic)  
 Use label # 70121010000210407185  
 for inquiry on Return Receipt  
 (Electronic).  
 Customer Postage -\$3.94  
 Subtotal: \$1.39  
 =====  
 Issue Postage: \$1.39

Total: \$18.07

Date: July 14, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407079. The delivery record shows that this item was delivered on July 14, 2015 at 12:03 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

Date: July 13, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407086. The delivery record shows that this item was delivered on July 13, 2015 at 12:24 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service



Date: July 13, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407093. The delivery record shows that this item was delivered on July 13, 2015 at 12:55 pm in OLD TOWN, ME 04468. The scanned image of the recipient information is provided below.

Signature of Recipient :

Delivery Section	
re	<i>A. P. Harris</i>
d	<i>A. Harris</i>

Address of Recipient :

ry is	<i>12 Wabandy way</i>
----------	-----------------------

Thank you for selecting the Postal Service for your mailing needs.

If you require additional assistance, please contact your local Post Office or postal representative.

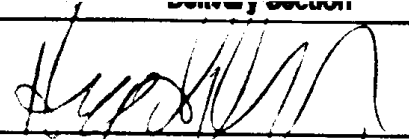

Sincerely,  
United States Postal Service

Date: July 11, 2015

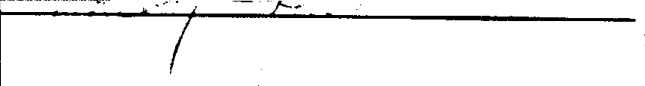
Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407116. The delivery record shows that this item was delivered on July 11, 2015 at 10:52 am in OLD TOWN, ME 04468. The scanned image of the recipient information is provided below.

Signature of Recipient :

9	
3	

Address of Recipient :

ry is	
----------	--

Thank you for selecting the Postal Service for your mailing needs.

If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

Date: July 11, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407123. The delivery record shows that this item was delivered on July 11, 2015 at 11:14 am in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service



Date: July 11, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407130. The delivery record shows that this item was delivered on July 11, 2015 at 12:31 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

Date: July 11, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407147. The delivery record shows that this item was delivered on July 11, 2015 at 12:58 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

Date: July 11, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407154. The delivery record shows that this item was delivered on July 11, 2015 at 9:01 am in OLD TOWN, ME 04468. The scanned image of the recipient information is provided below.

Signature of Recipient :

Delivery Section	
+	Cheryl [Signature]
+	Gretchen Lathiser

Address of Recipient :

+	394 Yth
---	---------

Thank you for selecting the Postal Service for your mailing needs.

If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service



Date: July 13, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407161. The delivery record shows that this item was delivered on July 13, 2015 at 12:24 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

Date: July 13, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407178. The delivery record shows that this item was delivered on July 13, 2015 at 12:24 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

Date: July 11, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407185. The delivery record shows that this item was delivered on July 11, 2015 at 1:30 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service



Date: July 13, 2015

Sevee and Maher:

The following is in response to your July 9, 2015 request for delivery information on your Certified Mail™ item number 70121010000210407215. The delivery record shows that this item was delivered on July 13, 2015 at 12:55 pm in OLD TOWN, ME 04468. There is no delivery signature on file for this item.

Thank you for selecting the Postal Service for your mailing needs. If you require additional assistance, please contact your local Post Office or postal representative.

Sincerely,  
United States Postal Service

# State of Maine



## Department of the Secretary of State

*I, the Secretary of State of Maine, certify that according to the provisions of the Constitution and Laws of the State of Maine, the Department of the Secretary of State is the legal custodian of the Great Seal of the State of Maine which is hereunto affixed and of the reports of formation, amendment and cancellation of articles of organization of limited liability companies and annual reports filed by the same.*

*I further certify that NEWSME LANDFILL OPERATIONS LLC is a duly formed limited liability company under the laws of the State of Maine and that the date of formation is September 18, 2003.*

*I further certify that said limited liability company has filed annual reports due to this Department, and that no action is now pending by or on behalf of the State of Maine to forfeit the articles of organization and that according to the records in the Department of the Secretary of State, said limited liability company is a legally existing limited liability company in good standing under the laws of the State of Maine at the present time.*

*In testimony whereof, I have caused the Great Seal of the State of Maine to be hereunto affixed. Given under my hand at Augusta, Maine, this twenty-third day of June 2015.*



A handwritten signature in black ink, appearing to read 'Matthew Dunlap', written over a horizontal line.

Matthew Dunlap  
Secretary of State

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 11  
MAINE HISTORIC PRESERVATION COMMISSION CORRESPONDENCE**





PAUL R. LEPAGE  
GOVERNOR

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

EARLE G. SHETTLEWORTH, JR.  
DIRECTOR

January 15, 2015

Mr. Michael Booth  
Sevee & Maher Engineers, Inc.  
P.O. Box 85A  
Cumberland, ME 04021

Project: MHPC# 0017-15 – Juniper Ridge Landfill; Map 3 lot 1; 54 acres landfill expansion  
Town: Old Town, ME

Dear Mr. Booth:

In response to your recent request, I have reviewed the information received January 7, 2015 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I have concluded that there will be **no historic properties affected** by this proposed undertaking, as defined by Section 106.

Please contact Robin Reed of our staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney  
Deputy State Historic Preservation Officer

## Mike Booth

---

**From:** Mike Booth  
**Sent:** Wednesday, January 07, 2015 1:35 PM  
**To:** 'Reed, Robin K'  
**Subject:** RE: Old Town landfill project - MHPC# 1488-14  
**Attachments:** 20141003robinreed.pdf

Hi Robin

Thanks for getting back to me. The project you forwarded was not for the actual landfill project, rather it appears to be for a borrow pit, adjacent to the site that is being developed by the construction contractor who does most of the landfill construction work. I've attached the letter we sent out back in October which shows the boundary of the actual landfill expansion project we are currently preparing a permit application for, and some correspondences relating to a previous version of this project. Basically the current project is about half the size of the previous project. The smaller project is located within the same footprint as the larger project. The site is located on Old Town Tax Map 3 lot 1. Let me know if there is any other information you would need.

Thanks  
Mike

*Michael Booth P.E.*  
Sevee & Maher Engineers, Inc.  
4 Blanchard Road  
PO Box 85A  
Cumberland, ME 04021  
Phone 207.829.5016  
Cell Phone 207-749-2867  
Fax 207.829.5692

This electronic message contains information from Sevee & Maher Engineers, Inc. (SME), which may be confidential, privileged or otherwise protected from disclosure. The information is intended to be used solely by the recipient(s) named. If you are not an intended recipient, be aware that any review, disclosure, copying, distribution, or use of this transmission or its contents is prohibited. If you have received this transmission in error, please notify SME immediately at [postmaster@smemaine.com](mailto:postmaster@smemaine.com).

**Sent:** Wednesday, January 07, 2015 12:48 PM  
**To:** Mike Booth  
**Subject:** Old Town landfill project - MHPC# 1488-14

Michael:

Per your voice message yesterday, please see attached a letter about a landfill project in Old Town that was issued in Sept. 2014.

If this is not the project you are looking for, please give me more information including street address, map, lot, a topo map indicating the site etc. and I will search our files again.

Let me know, Robin

Robin K. Reed  
Maine Historic Preservation Commission  
55 Capitol Street  
65 State House Station

Augusta, ME 04333  
phone: 207-287-2132 ext. 1  
fax: 207-287-2335  
[robin.k.reed@maine.gov](mailto:robin.k.reed@maine.gov)  
<http://www.maine.gov/mhpc>



# SME

Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

October 3, 2014

14101.00

Ms. Robin Reed  
State Historic Preservation Commission  
55 Capitol Street  
65 State House Station  
Augusta, Maine 04333

Subject: Known Structures of Historical Significance or Known Archaeological Sites  
Associated with Land Near the Juniper Ridge Landfill in Old Town, Maine

Dear Robin:

The purpose of this letter is to request information on any known structures of historical significance or known archaeological sites on land near the Juniper Ridge Landfill in Old Town, Maine. An approximate 54-acre landfill expansion is being proposed for this area. Please review the attached map and let me know if there are any known structures of historical significance within, or in the vicinity of, the proposed project. For convenience, the June and September 2008 review comments and correspondence from your agency for this project are attached.

Thank you for your assistance in obtaining this information.

Sincerely,

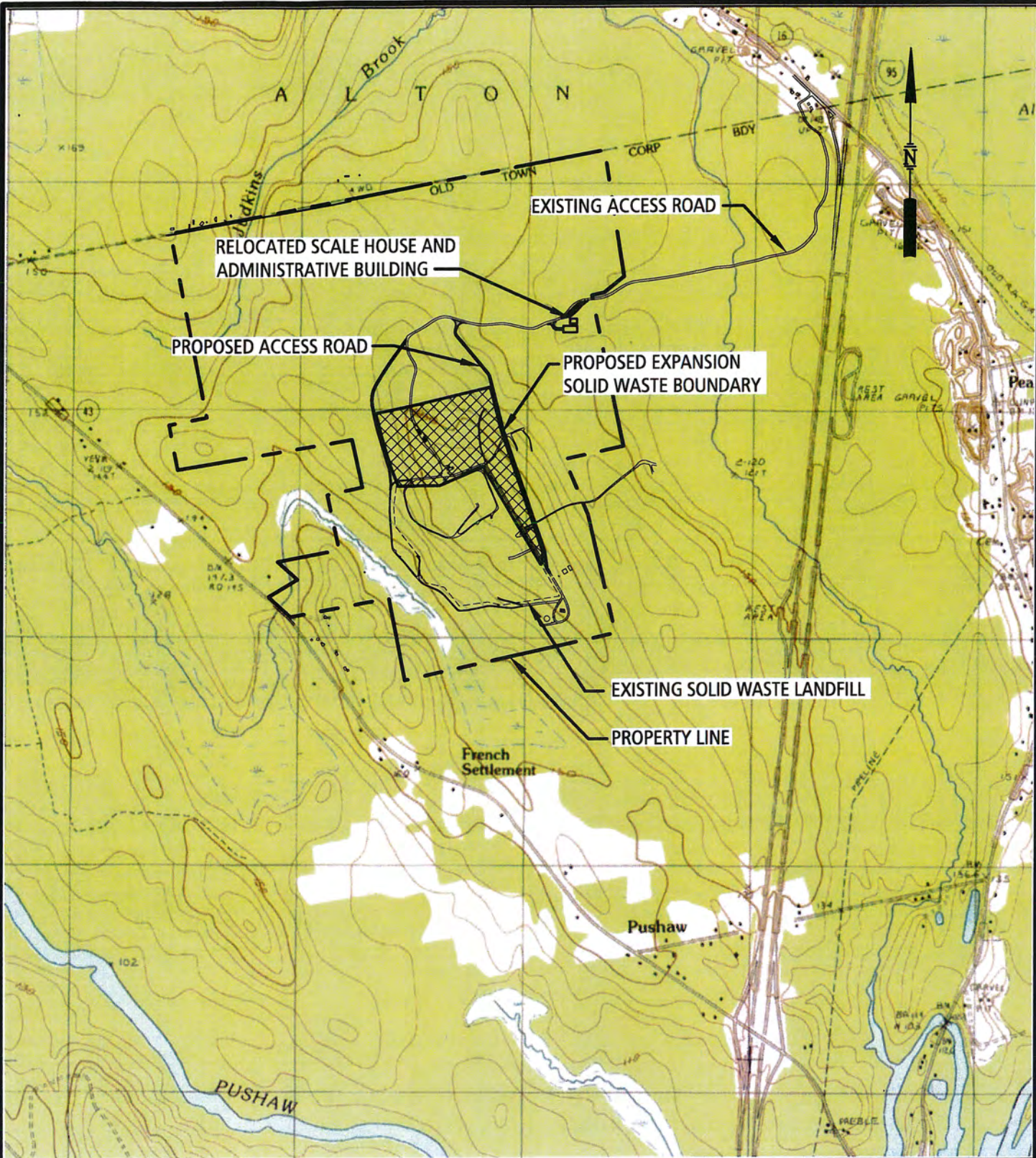
SEVEE & MAHER ENGINEERS, INC.



Michael S. Booth, P.E.  
Senior Project Manager

Attachments





**SITE LOCATION MAP  
JUNIPER RIDGE LANDFILL EXPANSION  
OLD TOWN, MAINE**



ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

I:\server\cis\Casella\OldTown\Landfill\Expansion\9.35M\CY-Expansion\Acad\Figures\Presentation.dwg, 10/2/2014, 1:03:23 PM, paf





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

JOHN ELIAS BALDACCI  
GOVERNOR

EARLE G. SHETTLEWORTH, JR.  
DIRECTOR

September 15, 2008

Mr. Steven E. Patch  
Sevee & Mahar Engineers, Inc.  
P. O. Box 85A  
Cumberland Center, ME 04021

RE: 100 acre Juniper Ridge landfill expansion, West Old Town, MHPC #0895-08

Dear Mr. Patch:

Dr. Arthur Spiess of my staff has reviewed the additional information for this project (expansion boundary and detailed topographic map) that you supplied with your letter of September 3<sup>rd</sup>. We withdraw our request for archaeological survey and for further architectural information.

I find that there will be no historic or archaeological properties affected by the proposed undertaking.

Sincerely,

Kirk Mohney  
Assistant Director/Deputy SHPO



PRINTED ON RECYCLED PAPER



*Sevee & Maher Engineers, Inc.*  
*Waste Management and Hydrogeologic Consultants*

September 3, 2008

08097.02  
080903 mhpc.doc

Dr. Arthur Speiss  
Maine Historic Preservation Commission  
55 Capital Street  
65 State House Station  
Augusta, Maine 04333

Subject: MHPC #0895-08 – 100-Acre Project in West Old Town Maine  
Stantec Project No. I95600338

Dear Dr. Speiss:

In May 2008, your office received correspondence from Ms. Jessica Haider of Stantec Consulting to initiate consultation on a landfill expansion project proposed for the Juniper Ridge Landfill. The Juniper Ridge Landfill is located on a 780-acre parcel located in Old Town, Maine. The parcel is owned by the State of Maine and administered by the State Planning Office (SPO).

A reply letter dated June 16, 2008 was sent by Mr. Kirk Mohny of your office, which discussed the potential need for a Phase I archaeological survey at the site. On July 16, 2008, I spoke briefly with you about Sevee & Maher Engineers, Inc. (SME) providing additional information regarding the location of the ground disturbance proposed for the expansion project. During our discussion, you indicated that the June 16, 2008 letter was a typical response letter sent to developers for commercial development and that it may not strictly apply to the development of a landfill expansion where the ground disturbance and increased level of human activity resulting from the proposed development is limited to the immediate area of the proposed expansion. You also indicated that if we could give you a better understanding of where the landfill and landfill infrastructure development will occur in relation to the segment of Judkins Brook that crosses the SPO parcel (i.e., the stream referenced in Mr. Mohny's June 16, 2008 letter), you could provide a more conclusive recommendation as to the need for a Phase I survey.

Attached are two figures that better define the location of the proposed landfill expansion project. As shown on the attached figures, the ground disturbance associated with the proposed landfill expansion development is approximately 1,500 linear feet (plus or

minus 500 meters) from Judkins Brook. The human activity associated with the proposed landfill expansion will also be limited to those areas within the limits of the landfill expansion footprint. As such, the proposed development will not disturb any ground within 50 meters of Judkins Brook or any prehistoric archaeological sites located near this segment of the Brook (if they do indeed exist).

Please call us if you have any questions or if you require any additional information regarding the proposed expansion project. Thank you again for taking time to reconsider the need for a Phase I archaeological survey for this project.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

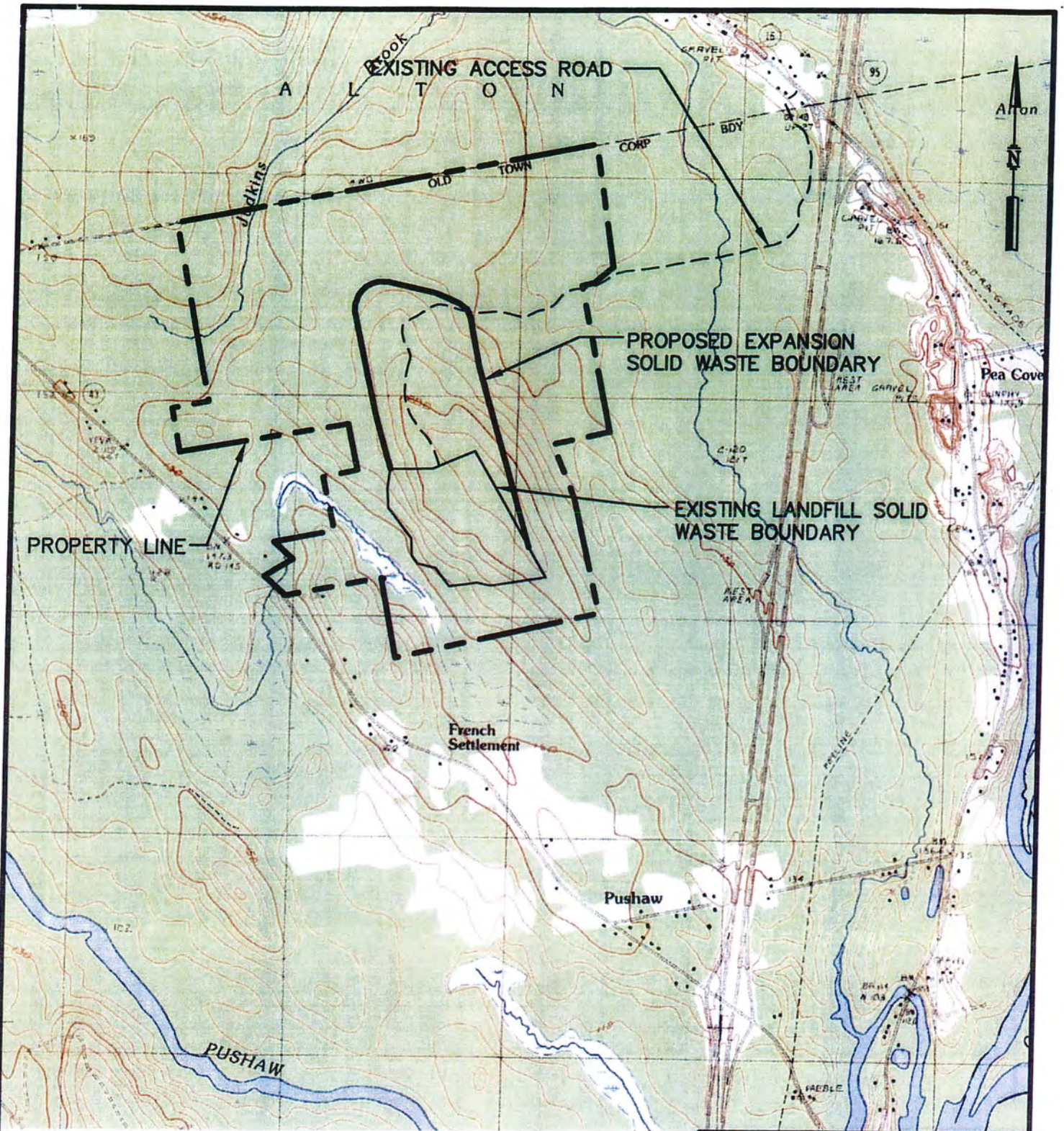


Steven E. Patch, P.E.  
Project Engineer

Attachments

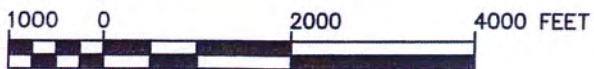
cc: Toni King, NEWSME Operations  
Don Meagher, NEWSME Operations  
George McDonald, State Planning Office  
Jon Ryan, Stantec





**NOTE:**

BASE MAP ADAPTED FROM 7.5 MIN  
USGS TOPOGRAPHIC QUADRANGLE  
OLD TOWN, MAINE-1988



DWG: SITELOC LMN:EXP-PL CTB: WATERSHED REV: 9/2/08

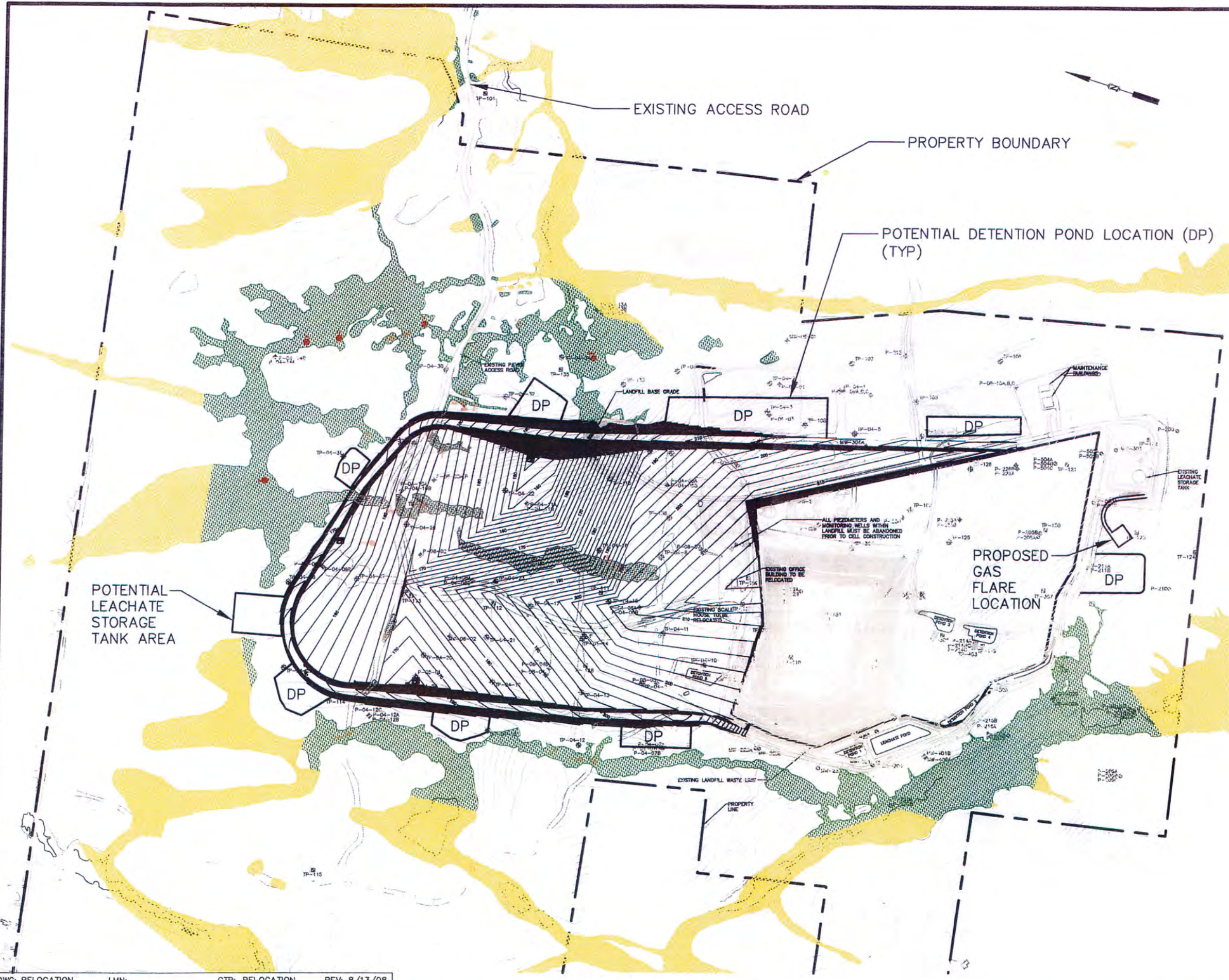
**SITE LOCATION  
JUNIPER RIDGE LANDFILL  
OLD TOWN, MAINE**

**SME**

*Sevee & Maher Engineers, Inc.*



\\server\cfs\Casella\OldTown\Landfill\Expansion\Acad\Figures\Relocation.dwg, 8/13/2008 9:16:23 AM, paf



**NOTES**

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO, NORRIDGEWOCK, MAINE. PHOTO DATE MAY 2, 2008. VERTICAL DATUM BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM MAINE STATE COORDINATE SYSTEM EAST ZONE, NAD 83. GROUND CONTROL BY PLISGA & DAY, BANGOR, MAINE. STANDARD PRACTICE DICTATES THAT PLANS COMPILED IN THIS MANNER SHOULD BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. OF TOPSHAM, MAINE IN 2004, 2005, 2006 & 2008.
3. PROPERTY BOUNDARY LOCATION IS A RESULT OF FIELD SURVEY PERFORMED BY HERRICK AND SALSURY, INC. LAND SURVEYORS, ELLSWORTH, MAINE FOR TRYTON TREE FARM PROJECT, PATTEN CORPORATION-DOWNEAST, OLD TOWN, MAINE, FEBRUARY 23, 1988, REVISED APRIL 7, 1988.
4. SIZE AND LOCATION OF STORM WATER DETENTION PONDS ARE SUBJECT TO CHANGE WITH FINAL DESIGN.

**LEGEND**

- VERNAL POOL & DESIGNATION
- SIGNIFICANT VERNAL POOL & DESIGNATION
- WETLAND DELINEATED
- WETLAND PHOTO INTERPRETED

DRAFT

ATTORNEY-CLIENT PRIVILEGED



JUNIPER RIDGE LANDFILL PROPOSED EXPANSION SITE PLAN







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

ROBIN ELIAS BALDACCIO  
 DIRECTOR

EARLE G. SHELTON, JR.  
 DIRECTOR

June 16, 2008

Ms. Jessica Haider  
 Project Assistant  
 Stantec Consulting  
 30 Park Drive  
 Topsham, ME 04086

Project: MHPC # 0895-08 - 100 acre project area in West Old Town; Stantec project # 195600338  
 Town: Old Town, ME

Dear Ms. Haider:

In response to your recent request, I have reviewed the information received May 22, 2008 to initiate consultation on the above referenced project.

Based on the information provided, I have concluded that the project area that is within 50 m of the stream is likely to contain one or more prehistoric archaeological sites based on our predictive model of archaeological site location. Therefore, Phase I archaeological survey is necessary for this parcel prior to any ground disturbance. A list of qualified prehistoric archaeologists is enclosed along with material explaining the Phase I/II/III approach to archaeological survey. This information can also be found on our website: [www.maine.gov/mhpc/project\\_review](http://www.maine.gov/mhpc/project_review). This office must approve any proposal for archaeological fieldwork.

In order to determine whether historic above ground resources will be affected by the proposed undertaking, we are requesting photos of any buildings over fifty years of age on properties that are on, adjacent to, or across the street from the project site and any associated access roads. All photos should be keyed to a 7.5' U.S.G.S. quad map and submitted on the enclosed *Maine Historic Preservation Commission Historic Building/Structure Survey Form* with lines 3-5 filled out. If no such buildings exist, please indicate this in writing.

Once this information is received, we will forward a response regarding the results of our evaluation. Please contact Dr. Arthur Spiess of my staff regarding archaeology or Robin Stancampiano of my staff regarding architecture if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney  
 Deputy State Historic Preservation Officer

enc.





JOHN ELIAS BALDACCI  
Governor

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

**Prehistoric Archaeologists Approved List:  
Review and Compliance Consulting/Contracting (Active)**

EARLE G. SHETLEWORTH, JR.  
Director

**LEVEL 1**

Ms Edna Feighuer (207-879-9496)  
NH Division of Historical Resources  
PO Box 2043  
Concord NH 03302-2043  
[Efeighuer@NHCHIR.state.nh.us](mailto:Efeighuer@NHCHIR.state.nh.us)

James A Clark (207-667-4055)  
TRC/Northeast Cultural Resources  
71 Oak St  
Ellsworth ME 04605  
[clark.ja@gmail.com](mailto:clark.ja@gmail.com)

Mr. Michael Brigham (207-778-7012)  
Archaeology Research Center  
University of Maine at Farmington  
139 Quebec St  
Farmington ME 04938  
[brigham@maine.edu](mailto:brigham@maine.edu)

Richard P Corey (207-778-7012)  
PO Box 68  
E Wilton ME 04234-0068  
[rcorey@maine.edu](mailto:rcorey@maine.edu)

Edward Kitson (207-778-7012)  
Archaeology Research Center  
University of Maine at Farmington  
139 Quebec St  
Farmington ME 04938  
[kitson@maine.edu](mailto:kitson@maine.edu)

Mr Brian Valimont (207-251-9467)  
New England Archaeology Co LLC  
117 Cat Mousam Rd  
Kennebunk ME 04043  
[newarchll@verizon.net](mailto:newarchll@verizon.net)

Ms. Sarah Haugh (207-879-9496 x238)  
Northern Ecological Associates  
451 Presumpscot St  
Portland ME 04103  
[shaugh@neamaine.com](mailto:shaugh@neamaine.com)

**LEVEL 2**

Dr Richard Will (207-667-4055)  
TRC/Northeast Cultural Resources  
71 Oak St  
Ellsworth ME 04605  
FAX: 207-667-0485  
[willtrc@adelphia.net](mailto:willtrc@adelphia.net)

Dr Jonathan Lothrop (412-856-6400)  
GAI Consultants  
570 Beatty Rd  
Monroeville PA 15146  
[j.lothrop@gaiconsultants.com](mailto:j.lothrop@gaiconsultants.com)

Dr Stuart Eldridge (207-879-9496)  
Northern Ecological Associates  
451 Presumpscot St  
Portland ME 04103  
[seldridge@neamaine.com](mailto:seldridge@neamaine.com)

Dr Ellen Cowie (207-778-7012)  
Archaeology Research Center  
University of Maine at Farmington  
139 Quebec St  
Farmington ME 04938-1507  
[ecowie@maine.edu](mailto:ecowie@maine.edu)

Robert N Bartone  
Archaeology Research Center  
University of Maine at Farmington  
139 Quebec St  
Farmington ME 04938  
[b\\_bartone@maine.edu](mailto:b_bartone@maine.edu)

Dr Victoria Bunker (603-776-4306)  
PO Box 16  
New Durham NH 03809-0016  
[ybi@worldpath.net](mailto:ybi@worldpath.net)

Dr Bruce J Bourque (207-287-3909)  
Maine State Museum  
83 State House Station  
Augusta ME 04333-0083  
[bbourque@abacus.bates.edu](mailto:bbourque@abacus.bates.edu)

Dr Leslie Shaw (207-725-3815)  
Dept of Sociology & Anthropology  
Bowdoin College  
Brunswick ME 04011  
e-mail: [lshaw@bowdoin.edu](mailto:lshaw@bowdoin.edu)

David Putnam (207-762-5078)  
47 Hilltop Rd  
Chapman ME 04757  
[putnam@umpi.edu](mailto:putnam@umpi.edu)

Dr Nathan Hamilton (207-780-5324)  
Dept of Geography & Anthropology  
University of Southern Maine  
Gorham ME 04038

Dr William R Belcher  
US Army CHH  
310 Worcester Ave Bldg 45  
Hickam AFB HI 96853-5530  
[wbelcher@msn.com](mailto:wbelcher@msn.com)

Dr Steven L Cox (207-342-7790)  
57 Cilent Rd  
Searsport ME 04973  
[stevencox@fairpoint.net](mailto:stevencox@fairpoint.net)

Geraldine Baldwin (914-271-0897)  
John Miller Associates Inc  
1 Croton Point Ave Ste B  
Croton-on-Hudson NY 10520  
FAX: 914-271-0898  
[GeraldineBaldwin@aol.com](mailto:GeraldineBaldwin@aol.com)

Dr. Robert Goodby (603-446-2366)  
Monadnock Archaeological Consulting  
16 Fox Hill Rd  
Stoddard NH 03464  
[MonadArch@surfglobal.net](mailto:MonadArch@surfglobal.net)

Edward Moore  
TRC/Northeast Cultural Resources  
71 Oak St  
Ellsworth ME 04605  
FAX: 207-667-0485







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

ANGUS S. KING, JR.  
GOVERNOR

EARLE G. SHETTLEWORTH, JR.  
DIRECTOR

## CONTRACT ARCHAEOLOGY GUIDELINES

June 10, 2002

This document is provided as background information to agencies, corporations, professional consultants or individuals needing contract archaeological services (also known as Cultural Resources Management archaeology) in Maine. These guidelines are based on state rules (94-089 Chapter 812).

### Project Types

The vast majority of contract archaeology survey work falls into one of three categories. **Phase I** surveys are designed to determine whether or not archaeological sites exist on a particular piece of land. Such work involves checking records of previous archaeology in the area, walking over the landscape to inspect land forms and look for surface exposures of soil and possible archaeological material, and the excavation of shovel test pits in areas of high probability.

**Phase II** surveys are designed to focus on one or more sites that are already known to exist, find site limits by digging test pits, and determine site content and preservation. Information from Phase II survey work is used by the Maine Historic Preservation Commission (MHPC) to determine site significance (eligibility for listing in the National Register of Historic Places). **Phase III** archaeological work, often called data recovery, is careful excavation of a significant archaeological site to recover the artifacts and information it contains in advance of construction or other disturbance.

Archaeological sites are further divided into two broad categories of culture, **prehistoric** (or Native American), and **historic** (or European-American). Different archaeological specialists are usually needed for prehistoric or historic sites because the nature of content and preservation and site locations are quite different.

### Scope of Work

In responding to a project submission, the MHPC may issue a letter specifying which type of archaeological survey is needed (prehistoric, historic or both) and at what level (Phase I, II, or III). Often the response letter contains further information, such as the suspected presence of an historic site of a certain age, or a statement that only a portion of the project parcel in question is sensitive for prehistoric sites and only that portion needs archaeological survey.

Once the project applicant has one or more scopes of work (proposals) from appropriate archaeologists (see below), the applicant should submit their preferred proposal (*without attached financial information or bid total*) to the MHPC for approval. MHPC will not comment upon cost, but will comment on the appropriateness of the scale and scope of the work. An approval from MHPC of the scope of work is the applicant's guarantee that, if the field and laboratory work are done according to the scope, and appropriately described in writing, the results will be accepted by MHPC.

The final written report on the project must also be submitted to MHPC for review and comment.



### **Finding an Archaeologist**

At the time that MHPC issues a letter requiring archaeological survey work, MHPC will also supply one (or more) lists of archaeologists (Levels 1 and/or 2, historic or prehistoric) appropriate to the type of work (Phase I, II, III, historic or prehistoric). Archaeologists on the Level 2 Approved Lists can do projects of any level, including Phase I archaeological survey projects. Level 1 archaeologists are restricted to doing Phase I surveys, and certain planning projects for municipal governments.

MHPC maintains lists of archaeologists interested in working in different geographic areas of Maine, and those who are qualified in different types of work. The archaeologists themselves indicate their availability (except for short-term absence) to MHPC on a periodic basis, so archaeologists on the list can be expected to respond to inquiries. The applicant should solicit proposals or bids for work from archaeologists whose names appear on the list supplied by MHPC.

These archaeologists' names are taken from lists of archaeologists approved for work in Maine by MHPC under a set of rules establishing minimal qualifications, such as previous supervisory experience in northern New England, and an appropriate graduate degree. *However, the inclusion of an archaeologist on one of these lists should not be interpreted as an endorsement by the MHPC beyond these limited qualification criteria. Moreover, the MHPC cannot recommend the services of an individual archaeologist.*

### **Project Final Report**

Whatever the archaeological survey result, a final report on the project should be submitted by the applicant to the MHPC. The MHPC will review the report, and issue further guidance or issue a "clearance" letter for the project.

MPHC USE ONLY

INVENTORY NO. \_\_\_\_\_

### MAINE HISTORIC PRESERVATION COMMISSION Historic Building/Structure Survey Form

1. PROPERTY NAME (HISTORIC): \_\_\_\_\_

2. PROPERTY NAME (OTHER): \_\_\_\_\_

3. STREET ADDRESS: \_\_\_\_\_

4. TOWN: \_\_\_\_\_

5. COUNTY: \_\_\_\_\_

6. DATE RECORDED: \_\_\_\_\_

7. SURVEYOR: \_\_\_\_\_

8. OWNER NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

9. PRIMARY USE (PRESENT):
- |   |                                       |  |                                      |
|---|---------------------------------------|--|--------------------------------------|
| <input type="checkbox"/> SINGLE FAMILY      | <input type="checkbox"/> AGRICULTURE  | <input type="checkbox"/> COMMERCIAL/TRADE    | <input type="checkbox"/> FUNERARY    |
| <input type="checkbox"/> MULTI-FAMILY       | <input type="checkbox"/> GOVERNMENTAL | <input type="checkbox"/> EDUCATION           | <input type="checkbox"/> HEALTH CARE |
| <input type="checkbox"/> INDUSTRY           | <input type="checkbox"/> RELIGIOUS    | <input type="checkbox"/> HOTEL               | <input type="checkbox"/> LANDSCAPE   |
| <input type="checkbox"/> TRANSPORTATION     | <input type="checkbox"/> DEFENSE      | <input type="checkbox"/> SUMMER COTTAGE/CAMP | <input type="checkbox"/> SOCIAL      |
| <input type="checkbox"/> RECREATION/CULTURE | <input type="checkbox"/> UNKNOWN      |  |                                      |
| <input type="checkbox"/> OTHER _____        |                                       |  |                                      |

10. CONDITION:  GOOD  FAIR  POOR  DESTROYED, DATE    /    /   

#### ARCHITECTURAL DATA

11. PRIMARY STYLISTIC CATEGORY:
- |   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> COLONIAL       | <input type="checkbox"/> STICK STYLE      | <input type="checkbox"/> NEO-CLASSICAL REV.   | <input type="checkbox"/> FOUR SQUARE   |
| <input type="checkbox"/> FEDERAL        | <input type="checkbox"/> QUEEN ANNE       | <input type="checkbox"/> RENAISSANCE REV.     | <input type="checkbox"/> ART DECO      |
| <input type="checkbox"/> GREEK REVIVAL  | <input type="checkbox"/> SHINGLE STYLE    | <input type="checkbox"/> 19TH/20TH C. REVIVAL | <input type="checkbox"/> INTERNATIONAL |
| <input type="checkbox"/> GOTHIC REVIVAL | <input type="checkbox"/> R. ROMANESQUE    | <input type="checkbox"/> ARTS & CRAFTS        | <input type="checkbox"/> RANCH         |
| <input type="checkbox"/> ITALIANATE     | <input type="checkbox"/> ROMANESQUE       | <input type="checkbox"/> BUNGALOW             | <input type="checkbox"/> VERNACULAR    |
| <input type="checkbox"/> SECOND EMPIRE  | <input type="checkbox"/> HIGH VIC. GOTHIC | <input type="checkbox"/> OTHER _____          |  |

12. OTHER STYLISTIC CATEGORY:
- |   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> COLONIAL       | <input type="checkbox"/> STICK STYLE      | <input type="checkbox"/> NEO-CLASSICAL REV.   | <input type="checkbox"/> FOUR SQUARE   |
| <input type="checkbox"/> FEDERAL        | <input type="checkbox"/> QUEEN ANNE       | <input type="checkbox"/> RENAISSANCE REV.     | <input type="checkbox"/> ART DECO      |
| <input type="checkbox"/> GREEK REVIVAL  | <input type="checkbox"/> SHINGLE STYLE    | <input type="checkbox"/> 19TH/20TH C. REVIVAL | <input type="checkbox"/> INTERNATIONAL |
| <input type="checkbox"/> GOTHIC REVIVAL | <input type="checkbox"/> R. ROMANESQUE    | <input type="checkbox"/> ARTS & CRAFTS        | <input type="checkbox"/> RANCH         |
| <input type="checkbox"/> ITALIANATE     | <input type="checkbox"/> ROMANESQUE       | <input type="checkbox"/> BUNGALOW             | <input type="checkbox"/> VERNACULAR    |
| <input type="checkbox"/> SECOND EMPIRE  | <input type="checkbox"/> HIGH VIC. GOTHIC | <input type="checkbox"/> OTHER _____          |  |

13. HEIGHT:  1 STORY  1 1/2 STORY  2 STORY  2 1/2 STORY  3 STORY  4 STORY  
 5 STORY  OVER 5 (\_\_\_\_)

14. PRIMARY FACADE WIDTH (MAIN BLOCK; USE GROUND FLOOR):  
 1 BAY  2 BAY  3 BAY  4 BAY  5 BAY  MORE THAN 5 (\_\_\_\_)

15. APPENDAGES:  SIDE ELL.  REAR ELL.  FRONT  ADDED STORIES  SHED  
 DORMERS  PORCH  TOWER  CUPOLA  BAY WINDOW

#### PHOTOGRAPH:



16. PORCH:  ATTACHED FULL WIDTH  ENGAGED WRAPAROUND  ONE STORY SLEEPING PORCH  MORE THAN ONE STORY SECONDARY PORCH
17. PLAN:  HALL AND PARLOR BACK HALL  1/2 CAPE IRREGULAR  CENTRAL HALL OTHER  SIDE HALL
18. PRIMARY STRUCTURAL SYSTEM:  TIMBER FRAME  BRACED FRAME  BRICK LOG OTHER  CONCRETE FRAME CONSTRUCTION  STEEL  TYPE UNKNOWN  STONE PLANK WALL  BALLOON FRAME PLATFORM FRAME
19. CHIMNEY PLACEMENT:  INTERIOR OTHER  INTERIOR FRONT/REAR  CENTER  INTERIOR END  EXTERIOR
20. ROOF CONFIGURATION:  GABLE SIDE  GAMBREL  COMPOUND  GABLE FRONT  PARAPET GABLE  OTHER  HIP  SHED  MANSARD  CROSS  FLAT  GABLE
21. ROOF MATERIAL: WOOD  METAL  TILE  SLATE  ASPHALT  ASBESTOS
22. EXTERIOR WALL MATERIALS:  CLAPBOARD  LOG  GRANITE  OTHER  BRICK  PRESSED METAL  ASBESTOS  FLUSH SHEATHING  CONCRETE  TERRA COTTA  WOOD SHINGLE  STUCCO  BOARD AND BATTEN  STONE ASPHALT  ALUMINUM/VINYL
23. FOUNDATION MATERIAL:  FIELDSTONE  OTHER  BRICK  WOOD  CONCRETE  GRANITE  ORNAMENTAL CONC. BLOCK
24. OUTBUILDINGS/FEATURES:  CARRIAGE HOUSE  BARN (DETACHED)  GARAGE  FENCE OR WALL  FORMAL GARDEN  OTHER  CEMETERY  LANDSCAPE/PLANT MAT.  BARN (CONNECTED)  ARCHAEOLOGICAL SITE

**HISTORICAL DATA**

25. DOCUMENTED DATE OF CONSTRUCTION: \_\_\_\_\_ 26. ESTIMATED DATE OF CONSTRUCTION: \_\_\_\_\_
27. DATE MAJOR ADDITIONS/ALTERATIONS: \_\_\_\_\_
28. ARCHITECT: \_\_\_\_\_ 29. CONTRACTOR: \_\_\_\_\_
30. ORIGINAL OWNER: \_\_\_\_\_
31. SUBSEQUENT SIGNIFICANT OWNER: \_\_\_\_\_ DATES: \_\_\_\_\_
32. CULTURAL/ETHNIC AFFILIATION:  ENGLISH  EAST EUROPEAN  FRENCH ACADIAN  IRISH  NATIVE AMERICAN  OTHER  SCOTTISH  FRENCH CANADIAN
33. HISTORIC CONTEXT(S):  COMMERCE  RELIGION  ART, LIT, SCIENCE  INDUSTRY  CIVIC AFFAIRS  SOCIAL  TRANSPORTATION  RECREATION  AGRICULTURE  HABITATION  MILITARY  EDUCATION
34. COMMENTS/SOURCES: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

35. HISTORICAL DRAWINGS EXIST:  YES  NO LOCATION: \_\_\_\_\_

**ENVIRONMENTAL DATA**

36. SITE INTEGRITY:  ORIGINAL  MOVED DATE MOVED: \_\_\_\_\_
37. SETTING:  RURAL/UNDISTURBED  RURAL/BUILT UP  SMALL TOWN  URBAN  SUBURBAN
38. QUADRANGLE MAP USED: \_\_\_\_\_ QUADRANGLE #: \_\_\_\_\_
39. UTM NORTHING: \_\_\_\_\_ 40. UTM EASTING: \_\_\_\_\_
41. FACADE DIRECTION (CIRCLE ONE):  N  S  E  W  NE  NW  SE  SW

MHPD USE ONLY

DATE ENTERED IN INVENTORY: \_\_\_\_\_ PHOTO FILE #: \_\_\_\_\_  
 NR STATUS: I \_\_\_\_\_ HD \_\_\_\_\_ E \_\_\_\_\_ NE \_\_\_\_\_ ND \_\_\_\_\_ REVIEWER: \_\_\_\_\_  
 DATA SOURCE:  HIP  CUG  RAC  STAFF  STATE SURVEY  OTHER \_\_\_\_\_ LEVEL OF SURVEY: R \_\_\_\_\_ I \_\_\_\_\_

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 12  
FUNCTIONS AND VALUES ASSESSMENT**

**Juniper Ridge Landfill  
Expansion Project: Wetland  
Functions and Values  
Assessment**

Juniper Ridge Landfill  
Old Town, Maine



Prepared for:  
Bureau of General Services  
77 State House Station  
Augusta, ME 04333

and

NEWSME Landfill Operations LLC  
358 Emerson Mill Road  
Hampden, ME 04444

Prepared by:  
Stantec Consulting Services Inc.  
30 Park Drive  
Topsham, ME 04086

July 10, 2015



## Table of Contents

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>METHODS.....</b>	<b>1</b>
2.1	DATA COLLECTION.....	1
2.2	WETLAND FUNCTION AND VALUE ASSESSMENT .....	2
<b>3.0</b>	<b>EXISTING WETLAND RESOURCES .....</b>	<b>3</b>
3.1	OVERALL SITE CONDITIONS .....	3
3.2	EXISTING WETLAND RESOURCES .....	4
3.2.1	Wetland 01TTA .....	4
3.2.2	Wetland 01TTB .....	4
3.2.3	Wetland 01TTC.....	4
3.2.4	Wetland 01TTD.....	5
3.2.5	Wetland 01RKB .....	5
3.2.6	Wetland 01BEE.....	5
3.2.7	Wetland 01BEA.....	6
3.2.8	Wetland 01BED.....	6
3.3	NRPA WETLANDS OF SPECIAL SIGNIFICANCE .....	6
<b>4.0</b>	<b>SUMMARY OF PROPOSED IMPACTS .....</b>	<b>6</b>
<b>5.0</b>	<b>WETLAND FUNCTIONS AND VALUES .....</b>	<b>7</b>
<b>6.0</b>	<b>SUMMARY AND CONCLUSIONS .....</b>	<b>11</b>
<b>LIST OF FIGURES</b>		
	Figure 1 Location Map .....	13
	Figure 2 Wetland Function Value Assessment .....	14
	Figure 3 Proposed Natural Resource Impacts .....	15
<b>LIST OF APPENDICES</b>		
<b>APPENDIX A</b>	<b>REPRESENTATIVE SITE PHOTOGRAPHS.....</b>	<b>A.1</b>

July 10, 2015

## 1.0 INTRODUCTION

This report presents the results of a wetlands function and value assessment (FVA) associated with a proposed expansion of the Juniper Ridge Landfill located in Old Town, Maine (Figure 1). The FVA was prepared by Stantec Consulting Services Inc. (Stantec) on behalf of NEWSME Landfill Operations LLC (NEWSME), as operator, and the State of Maine Bureau of General Services (BGS), as owner. The facility site will encompass approximately 74 acres including new landfill cells and site infrastructure (e.g., roadways, stormwater ponds, scale house, and administrative buildings). The proposed expansion area includes the facility site and the relocated electrical line and perimeter fence (Figure 2). The proposed expansion area impacts are expected to include approximately 2.04 acres of direct fill impacts to freshwater wetlands, approximately 0.10 acres of wetland clearing to freshwater wetlands, clearing impacts to 1 man-made vernal pool, clearing impacts in the terrestrial habitat of a Significant Vernal Pool, and direct impact to 6 man-made jurisdictional vernal pools and their associated critical terrestrial habitat. This FVA is focused on those wetlands located within the proposed expansion area that are proposed to be impacted as part of the landfill expansion.

This report has been prepared to meet the permitting requirements for an Individual Natural Resources Protection Act (NRPA) permit for the Maine Department of Environmental Protection (MDEP) and a Section 404 of the Clean Water Act permit for the U.S. Army Corps of Engineers (Corps).

## 2.0 METHODS

### 2.1 DATA COLLECTION

Stantec has conducted multiple field visits to the 780-acre parcel that includes the proposed expansion area from 2004 through 2015. In 2004, Stantec conducted a wetland delineation of approximately 309 acres surrounding the current expansion footprint (Figure 2). In addition to the delineation, aerial photograph interpretation with limited associated ground-truthing was used to identify wetlands within an additional 800 (+/-) acres surrounding the delineation area. In 2008, Stantec field-verified the previously field delineated wetlands and conducted vernal pool surveys within the 309 acres of field delineated wetlands. In 2014 and 2015, Stantec verified previously mapped wetlands within the currently proposed expansion area. To prepare the FVA, Stantec revisited the field delineated wetlands and vernal pools within and adjacent to the expansion area on October 2, 2014, and in May 2015, respectively, to collect information on wetland functions and values.

July 10, 2015

## 2.2 WETLAND FUNCTION AND VALUE ASSESSMENT

Wetland functions and values were evaluated in 2014 and 2015 using *The Highway Methodology Workbook Supplement*.<sup>1</sup> This method bases function and value determinations on the presence or absence of specific criteria for each of 13 wetland functions and values typically considered by MDEP and the Corps in the wetland alteration permitting process. The criteria are assessed through direct field observations and a review of existing public data sources. As part of the evaluation, the “principal” (i.e., most important) functions and values associated with the subject wetland are identified and described. In addition, the ecological integrity of the wetland is evaluated based on the existing and past levels of disturbance and the overall significance of that wetland within the local watershed. This descriptive and qualitative approach integrates wetland science with subjective value judgments made by wetland professionals.

Following are the 13 wetland functions and values considered in the assessment.

### **Groundwater Interchange (Recharge/Discharge)**

This function considers the potential for a wetland to serve as groundwater recharge and/or discharge areas. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

### **Floodwater Alteration (Storage and Desynchronization)**

This function considers the effectiveness of the wetlands in reducing flood damage by water retention for prolonged periods following precipitation and the gradual release of floodwaters.

### **Fish and Shellfish Habitat**

This function considers the effectiveness of seasonal or permanent waterbodies associated with the wetland in question for fish and shellfish habitat.

### **Sediment/Toxicant Retention**

This function relates to a wetland’s ability to reduce or prevent degradation of surface water and ground water quality by trapping sediments, toxicants, or pathogens that may enter the wetland. A wetland’s effectiveness in performing this function is typically related to factors such as soil type, vegetation type and density, and the position in the landscape.

### **Nutrient Removal/Retention/Transformation**

This wetland function relates to the effectiveness of the wetland to assimilate nutrients and prevent or reduce the adverse effects of excess nutrients on aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

---

<sup>1</sup> U.S. Army Corps of Engineers. 1999. *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach*. U.S. Army Corps of Engineers. New England Division. 32pp. NAEEP-360-1-30a.



July 10, 2015

## **Production Export**

This function relates to the effectiveness of the wetland to produce and export food or usable products for humans or other living organisms.

## **Sediment/Shoreline Stabilization**

This function considers the effectiveness of a wetland to stabilize stream banks and shorelines against erosion, primarily through the presence of persistent, well-rooted vegetation.

## **Wildlife Habitat**

This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and migrating species are considered.

## **Recreation (Consumptive and Non-Consumptive)**

This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.

## **Educational/Scientific Value**

This value considers the effectiveness of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

## **Uniqueness/Heritage**

This value relates to the effectiveness of the wetland or its associated water bodies to provide certain special values such as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.

## **Visual Quality/Aesthetics**

This value relates to the visual and aesthetic qualities of the wetland.

## **Endangered Species Habitat**

This value considers the suitability of the wetland to support threatened or endangered species.

## **3.0 EXISTING WETLAND RESOURCES**

### **3.1 OVERALL SITE CONDITIONS**

The proposed expansion area is located southwest of Route 16 and north of Route 43 in Old Town, Maine (Figure 1). Development around the expansion area includes the existing landfill and associated access roads. On-site topography consists of gently sloping terrain with wetland depressions and streams. The site has been disturbed in the past by timber harvest activities and secondary road construction. The proposed expansion area includes forested uplands and

July 10, 2015

several small, forested wetlands. Further descriptions of the proposed expansion area and the delineated wetlands within the proposed expansion area are provided below and in the Wetland Delineation Report (Attachment 9 to the NRPA Individual Permit application).

## 3.2 EXISTING WETLAND RESOURCES

Wetland delineations within the proposed expansion area were completed on September 25 and October 9, 2014, and on May 5, 6, and 14, 2015. Eight wetlands were identified within the proposed expansion area. Each wetland is described below and shown on Figure 2.

### 3.2.1 Wetland 01TTA

Wetland 01TTA is located between the existing scale and the western edge of the proposed expansion area. It is a palustrine forested wetland<sup>2</sup> mixed with palustrine emergent wetland areas (Photo 1). Wetland 01TTA was likely created by past timber harvest disturbance and recent construction of adjacent stormwater infrastructure and was not identified as a wetland during previous wetland delineations in the expansion area. Hydrology in the wetland is influenced by the stormwater pond outlet located near the southwestern edge of the wetland (Photo 2). Dominant tree species include red maple, balsam fir, and white ash. Shrubs include balsam fir, gray birch, and red maple. Bluejoint (*Calamagrostis canadensis*), sensitive fern (*Onoclea sensibilis*), fowl manna grass (*Glyceria striata*), and woodland horsetail (*Equisetum sylvaticum*) dominate the herbaceous layer. Hydric soils are predominately a depleted silt loam with 5 to 10 percent redoximorphic concentrations. Hydrology indicators present in the wetland included saturation, water-stained leaves, surface water, and drainage patterns. Wetland 01TTA contained one man-made vernal pool that was identified during the 2015 vernal pool survey.

### 3.2.2 Wetland 01TTB

Wetland 01TTB is a small, forested wetland located just north of the existing administration building (Photo 3). Balsam fir is the dominant tree species. Shrubs include gray birch, balsam fir, white meadowsweet (*Spiraea alba*), and common winterberry (*Ilex verticillata*). Royal fern (*Osmunda spectabilis*), interrupted fern (*Osmunda claytoniana*), northern water-horehound (*Lycopus uniflorus*), and greater bladder sedge (*Carex intumescens*) dominate the herbaceous layer. Hydric soil is a depleted silt loam with 2 to 4 percent redoximorphic concentrations. At the time of the site visit, water-stained leaves were the primary indicator of hydrology.

### 3.2.3 Wetland 01TTC

Wetland 01TTC is primarily forested (Photo 4) with an emergent area at the southern end resulting from past timber harvesting (Photo 5). The wetland is located in the center of the proposed expansion area and parallel to the existing access road. Dominant tree species

---

<sup>2</sup> Wetland classifications per: Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, U.S. Fish and Wildlife Service. FWS/OBS-79/31.

July 10, 2015

include red maple, balsam fir, eastern hemlock, and yellow birch). Shrubs include speckled alder (*Alnus incana*), white meadowsweet, steeplebush (*Spiraea tomentosa*), red maple, winterberry, and beaked hazelnut (*Corylus cornuta*). Bluejoint, cottongrass bulrush (*Scirpus cyperinus*), sensitive fern, fowl manna grass, woodland horsetail, cinnamon fern (*Osmundastrum cinnamomeum*), and interrupted fern dominate the herbaceous layer. Hydric soils predominately had a dark mineral or organic layer at the surface over a depleted silt loam matrix with 5 to 10 percent redoximorphic concentrations. Hydrology indicators included saturation, water-stained leaves, and small areas of surface water. Wetland 01TTC contained 4 man-made vernal pools that were identified during the 2015 vernal pool survey.

### 3.2.4 Wetland 01TTD

Wetland 01TTD is primarily forested and located adjacent to the existing access road (Photo 6) near the proposed location of the scale house and administrative building. The southern portion of the wetland is an emergent wetland along the access road. Dominant tree species include red maple, gray birch, and balsam fir. Shrubs include those species observed in the tree layer, as well as quaking aspen (*Populus tremuloides*), and white meadowsweet. Bluejoint, interrupted fern, northern water-horehound, northern lady fern (*Athyrium angustum*), dwarf red raspberry (*Rubus pubescens*), and rattlesnake manna grass (*Glyceria canadensis*) dominate the herbaceous layer. Hydric soils had a depleted silt loam matrix with 10 percent redoximorphic concentrations. At the time of the site visit, water-stained leaves were the primary indicator of hydrology.

### 3.2.5 Wetland 01RKB

Wetland 01RKB is located adjacent to an open borrow area east of the proposed expansion area (Photo 7). It is forested and interspersed with areas of scrub-shrub wetland. The wetland consists of two parts that are separated by a narrow section of upland. Dominant tree species include gray birch and balsam fir. Gray willow (*Salix bebbiana*) dominates the shrub layer. Sensitive fern, dwarf red raspberry, water horsetail (*Equisetum fluviatile*), and fringed sedge (*Carex crinita*) dominate the herbaceous layer. Hydric soils predominately are a depleted silt loam matrix with redoximorphic concentrations. At the time of the site visit, hydrology indicators included water-stained leaves, presence of reduced iron, and drainage patterns. This wetland extends beyond the expansion area to the east, where it contains a Significant Vernal Pool (SVP). The portion of the wetland containing the SVP and the 250-foot critical terrestrial habitat would be considered a Wetland of Special Significance.

### 3.2.6 Wetland 01BEE

Wetland 8 is a forested and emergent wetland located adjacent to the existing access road at the north end of the proposed relocated electrical line. The emergent portion of the wetland is located at the proposed crossing of the new electrical line. Dominant canopy species include red maple, balsam fir, green ash (*Fraxinus pensylvanica*), and yellow birch. The shrub layer consists of white meadowsweet, speckled alder, steeplebush, and those species observed in the



July 10, 2015

canopy. Hydric soils predominantly had a depleted silt loam matrix with 10 percent redoximorphic concentrations. Hydrology indicators included saturation, water-stained leaves, areas of surface water, and drainage patterns. Wetland 01BEE contained 4 man-made vernal pools near the proposed relocated electrical line crossing that were identified during the 2008 and 2015 vernal pool surveys.

### 3.2.7 Wetland 01BEA

Wetland 01BEA is a small, isolated forested wetland located at the western edge of the expansion area. The canopy is dominated by balsam fir with cinnamon fern, three-leaved goldthread (*Coptis trifolia*), and peat moss (*Sphagnum* sp.) present. Soils were disturbed, but consisted of a depleted silt loam matrix with redoximorphic concentrations. Indicators of hydrology included areas of inundation and saturation at the soil surface. Wetland 01BEA contained 1 man-made vernal pool that was identified during the 2015 vernal pool surveys.

### 3.2.8 Wetland 01BED

Wetland 01BED is a small emergent wetland located in an historic woods road at the southern end of the proposed fence line. The wetland is dominated by emergent species such as sensitive fern, cinnamon fern, northern lady fern, and cottongrass bulrush. Soils were disturbed, but consisted of a depleted silt loam matrix with redoximorphic concentrations. Indicators of hydrology included areas of inundation, saturation at the soil surface, and wetland drainage patterns. Wetland 01BED contained 1 man-made vernal pool that was identified during the 2015 vernal pool surveys.

## 3.3 NRPA WETLANDS OF SPECIAL SIGNIFICANCE

Based on Stantec's field surveys, none of the wetlands that are being directly filled within the proposed expansion area meet the NRPA definition of a Wetland of Special Significance. Wetland 01RKB, located on the eastern edge of the expansion area, contains a SVP that is located outside of the expansion area. The portion of the wetland containing the SVP and the 250-foot critical terrestrial habitat would be considered a Wetland of Special Significance. The critical terrestrial habitat does not overlap with the proposed limits of fill for the landfill expansion; however, clearing for the proposed relocated electrical line and perimeter fence will occur within the terrestrial habitat. The impact of this area is 0.29 acres, less than 10 percent of the terrestrial habitat for the SVP.

## 4.0 SUMMARY OF PROPOSED IMPACTS

The proposed expansion will directly impact approximately 2.04 acres of primarily forested freshwater wetlands. Impacts will occur as direct fill to expand the existing landfill. Five separate wetlands will have fill impacts from the proposed expansion. Wetlands 01TTA, 01TTB, 01TTC, 01RKB, and 01BEA are primarily forested wetlands that have been altered by timber harvesting



July 10, 2015

activity. The proposed expansion will result in the complete filling of Wetland 01TTB and partial filling of the remaining 4 wetlands. The expansion also will involve upper canopy and shrub clearing of approximately 0.1 acres of freshwater wetland for a proposed electrical line. The proposed relocated electrical line and perimeter fence will run approximately north-south along the eastern edge of the expansion area and will cross two wetlands, 01RKB and 01BEE. Portions of these two wetlands will be cleared for construction of the line, but no fill impacts to these wetlands associated with the relocated electrical line and perimeter fence are proposed.

The proposed expansion will also directly impact 6 man-made vernal pools located within Wetlands 01TTC, 01TTA, and 01BEA. Impacts from the proposed expansion also include clearing impacts to 1 man-made vernal pool and clearing impacts in the terrestrial habitat of a Significant Vernal Pool. Because the vernal pools are man-made they do not meet the criteria to be considered Significant Vernal Pools (SVP) as defined in Chapter 335 of the NRPA. However, they meet the Corps' definition of a vernal pool. Two additional low-functioning vernal pools were located within the expansion area and were identified as naturally occurring but were not located within jurisdictional wetlands. Because the pools did not contain enough egg masses to be considered SVPs, and they were not located in jurisdictional wetlands, they are not regulated by either MDEP or the Corps.

At the time of the 2015 vernal pool survey, 4 of the vernal pools contained less than 4 total egg masses in each pool. One pool contained 18 spotted salamander (*Ambystoma maculatum*) egg masses and the other contained 47 spotted salamander egg masses and 3 wood frog (*Lithobates sylvatica*). The proposed expansion is expected to impact the Vernal Pool Management Areas (VPMA) surrounding the 6 pools. The VPMA is defined in the Corps' General Permit (GP) as the area within 750 feet of the vernal pool edge. The 6 man-made vernal pools are in close proximity, as shown on Figure 3, and their individual 750-foot VPMAs overlap considerably. Because the vernal pools are being directly impacted, it is assumed that the combined VPMA, approximately 94 acres, will be counted as an impact. The proposed impact to the combined VPMAs for the two pools exceeds the 25 percent allowable impact to the VMPA under the Corps' GP.

## 5.0 WETLAND FUNCTIONS AND VALUES

The intent of this FVA is to document existing wetland functions and values within the proposed expansion area and discuss the effects that the proposed expansion may have on those functions and values. The following assessment focuses on the freshwater wetlands that are proposed to be impacted as part of the expansion. It does not include a detailed assessment of the wetlands outside of the proposed expansion area. Table 1 provides a summary of the existing wetland functions and values for those wetlands proposed to be impacted as part of the proposed expansion.

### Groundwater Interchange (Recharge/Discharge)



July 10, 2015

There is no identified sand and gravel aquifer underlying the proposed expansion area, so there is no significant groundwater interchange occurring within these wetlands. None of the wetlands in the proposed expansion area contain streams, nor do they contain sand or gravel soils. No evidence of groundwater discharge (e.g., springs) were observed. Therefore, the wetlands within the expansion area do not provide this function.

### **Floodwater Alteration (Storage and Desynchronization)**

The wetlands within the proposed expansion area provide localized floodwater alteration by detaining varying amounts of surface runoff in topographic basins and slowing overland flows in dense woody and herbaceous plant growth. Water retention periods for these wetlands may not be significant, but the ability of the wetlands to slow runoff from adjacent uplands helps desynchronize the rate at which surface runoff ultimately reaches lower watershed surface water bodies. Wetlands 01TTB and 01BEA are small relative to the size of the watershed and provide this function at a very limited level. This function would not be considered a principal function for any of the wetlands.

### **Fish and Shellfish**

None of the wetlands within the proposed expansion area contain streams or suitable habitat to support fisheries. Therefore, this function is not provided by the expansion area wetlands.

### **Sediment/Toxicant Retention**

Sediment/toxicant retention would be considered a function of Wetland 01TTA. This wetland is downslope of an outfall from a stormwater pond; therefore, there is a source of sediment and toxicants above the wetland. Wetland 01RKB also provides this function based on its proximity to an existing soil pit. The wetlands do not contain slow moving water or deep water habitat, and do not retain water for long enough periods of time for the function to be considered principal. The remaining wetlands in the expansion area also perform this function; however, it would not be considered a principal function for any of the wetlands. The wetlands do not contain any watercourses, do not contain areas of deepwater habitat, and do not retain water for long periods of time. Because much of the proposed expansion area is undeveloped, the wetlands receive surface runoff primarily from the wooded uplands. Sources of sediment associated with the existing development include areas of exposed/unstable soil that could be deposited by surface runoff in the adjacent wetlands. In addition, toxicants in the form of gasoline and oils that occur on roadways can reach wetlands in surface runoff, as could runoff from the landfill that is not contained by retention basins and other pollution control devices. Wetlands 01TTB, 01TTC, and 01RKB are in proximity to existing development and are likely to perform sediment/toxicant retention. However, based on their size and available sediment/toxicant inputs, the functions would not be considered principal.

### **Nutrient Removal**

Similar to sediment/toxicant retention described above, the opportunity for a wetland to provide nutrient removal is often a function of landscape position and available nutrient sources. Those same characteristics that allow wetlands to provide sediment/toxicant retention also allow them to provide nutrient removal. There are no known sources of excess nutrients in the



July 10, 2015

immediate watershed with the possible exception of the existing landfill. Pollution control devices such as retention basins should control the release of nutrient laden water to the surrounding wetlands. The wetlands do not contain deep water habitats, deep organic soils, or large areas of emergent vegetation. Because Wetland 01TTA receives direct outflow from a stormwater pond, the wetland performs this function but it would not be considered principal for this wetland. Similarly, the other wetlands perform this function, but it would not be considered principal because the wetlands lack deep water, open water, deep organic material, or dense herbaceous vegetation to trap and remove nutrients.

### **Production Export**

Production export is a wetland function that typically occurs in the form of nutrient or biomass transport via watercourses, foraging by wildlife species, and removal of timber and other natural products. None of the wetlands within the proposed expansion area contain a watercourse capable of transporting detritus or flushing organic material and the wetlands do not have dense emergent or aquatic vegetation, typical characteristics of wetlands that provide the function of production export. The wetlands do contain harvestable timber and exhibit signs of historic timber harvesting. Foraging by wildlife species likely also occurs in each of the wetlands. Therefore, production export is provided by the expansion area wetlands, with the exception of 01TTB and 01BEA, which are too small and lack the vegetation density, wildlife food sources, or commercial timber to provide this function. This function would not be considered a principal function for the remaining wetlands.

### **Sediment/Shoreline Stabilization**

The proposed expansion area wetlands do not contain a watercourse; therefore, they do not perform this function.

### **Wildlife Habitat**

Wetlands 01TTA, 01TTC, 01RKB, 01BEA and 01BEE provide wildlife habitat for some aquatic and wetland dependent species. The wetlands may also provide habitat for small mammals typical of forested areas. The proposed expansion area wetlands are part of a habitat block of over 1,000 acres surrounding the existing landfill and may provide limited habitat for non-wetland dependent species, including moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), and coyote (*Canis latrans*). Four vernal pools were documented in Wetland 01TTC. One of the vernal pools in Wetland 01TTC contained 3 wood frogs and 47 spotted salamander egg masses and the others contained only 1 egg mass in each pool in 2015. The man-made vernal pool in Wetland 01TTA contained 18 spotted salamander egg masses. The other man-made jurisdictional vernal pool in Wetland 01BEA contained a total of 4 spotted salamander egg masses. Three man-made vernal pools were also identified in 01BEE near the location where the proposed electrical line meets the existing access road. One man-made vernal pool was also identified in Wetland 01BED near the southern end of the proposed fence line. Based upon the physical characteristics of the wetlands and past surveys, wildlife habitat is provided by wetlands 01TTA, 01TTC, 01RKB, and 01BEE. Wetland 01TTB is a small isolated wetland that did not contain any vernal pools; therefore, this wetland does not provide this

July 10, 2015

function. Wildlife habitat would only be considered a principal function for wetlands 01TTC, and 01BEE due to the presence of multiple vernal pools in each wetland.

### **Recreation**

As part of an undeveloped landscape, the wetlands may have some recreational value for passive (e.g., bird watching) and consumptive (e.g., hunting) activities. However, public access to the expansion area wetlands is limited. Therefore, the expansion area wetlands do not provide this value.

### **Education/Scientific Value**

The proposed expansion area wetlands do not possess the characteristics that would make it useful for education or scientific study, nor are there public access locations that would allow for exploration of the property. Therefore, the wetlands do not provide this value.

### **Uniqueness/Heritage**

The wetlands within the proposed expansion area would not be considered exemplary wetland communities, and they are unlikely to contain unique natural or geologic features. The Maine Natural Areas Program (MNAP) indicated that there are no rare botanical features specifically documented at the site and no rare species were identified during field surveys on the site in 2014. As a result, the proposed expansion area wetlands do not provide the value of uniqueness/heritage.

### **Visual Quality/Aesthetics**

The proposed expansion area wetlands do not have the visual quality or aesthetics characteristics necessary to provide this value, and they are not visible from public viewing locations.

### **Endangered Species Habitat**

According to correspondence from the Maine Department of Inland Fisheries and Wildlife (MDIFW), MDEP, and MNAP, there are no known locations of rare or endangered plant or animal species or rare natural communities within the proposed expansion area. A portion of the expansion area occurs within the broad area designated as Critical Habitat for Atlantic salmon (*Salmo salar*) listed under the Endangered Species Act (ESA), but the on-site wetlands do not contain any streams that would provide Atlantic salmon habitat. Based on the recent listing of the northern long-eared bat (*Myotis septentrionalis*; NLEB) as threatened by the U.S. Fish and Wildlife Service (USFWS), the proposed expansion area was surveyed with acoustic monitors for the presence of the NLEB by Stantec on June 10 and 11, 2015. No NLEB were detected during the acoustic survey. Based upon agency correspondence and site surveys, this does not appear to be a value of these wetlands.

July 10, 2015

**Table 1. Wetland Functions and Values for Wetlands Proposed to be Impacted**

Wetland Functions and Values	01TTA	01TTB	01TTC	01RKB	01BEE	01BEA
Groundwater Interchange	--	--	--	--	--	--
Floodwater Alteration	X	--	X	X	X	--
Fish and Shellfish Habitat	--	--	--	--	--	--
Sediment/Toxicant Retention	X	X	X	X	X	X
Nutrient Removal	X	X	X	X	X	X
Production Export	X	--	X	X	X	--
Sediment/Shoreline Stabilization	--	--	--	--	--	--
Wildlife Habitat	X	--	P	X	P	X
Recreation	--	--	--	--	--	--
Educational/Scientific	--	--	--	--	--	--
Uniqueness/Heritage	--	--	--	--	--	--
Visual Quality/Aesthetics	--	--	--	--	--	--
Endangered Species	--	--	--	--	--	--

X = Wetland Function/Value Present

P = Principal Wetland Function/Value

## 6.0 SUMMARY AND CONCLUSIONS

Table 1 above summarizes the existing wetland functions and values associated with the proposed expansion area wetlands. The wetlands are providing limited functions and values, with only wildlife habitat considered to be principal functions of any of the wetlands based on the presence of vernal pools. The expansion area wetlands are relatively low functioning wetlands due to their small size, isolated landscape position (i.e., not connected to large wetlands), and lack of habitat diversity.

The proposed expansion would include approximately 2.04 acres of wetland fill across 5 wetlands and 0.1 acre of wetland clearing in one additional wetland. These impacts will reduce or eliminate the capacities of the wetlands to provide the limited functions that they currently provide. The functions that will be impacted include sediment/toxicant retention, nutrient removal, and wildlife habitat. Each of the 6 impacted wetlands provides the functions of sediment/toxicant retention and nutrient removal. However, due to the relatively small size of these wetlands, the loss of these functions is unlikely to have a landscape level effect. With the efforts that have been made to avoid and minimize impacts to wetlands, the proposed impact areas represent relatively small portions of the larger wetland communities surrounding the proposed expansion area. The larger wetland systems located around the proposed expansion area will still be able to perform those functions provided by the impacted wetlands. Therefore,

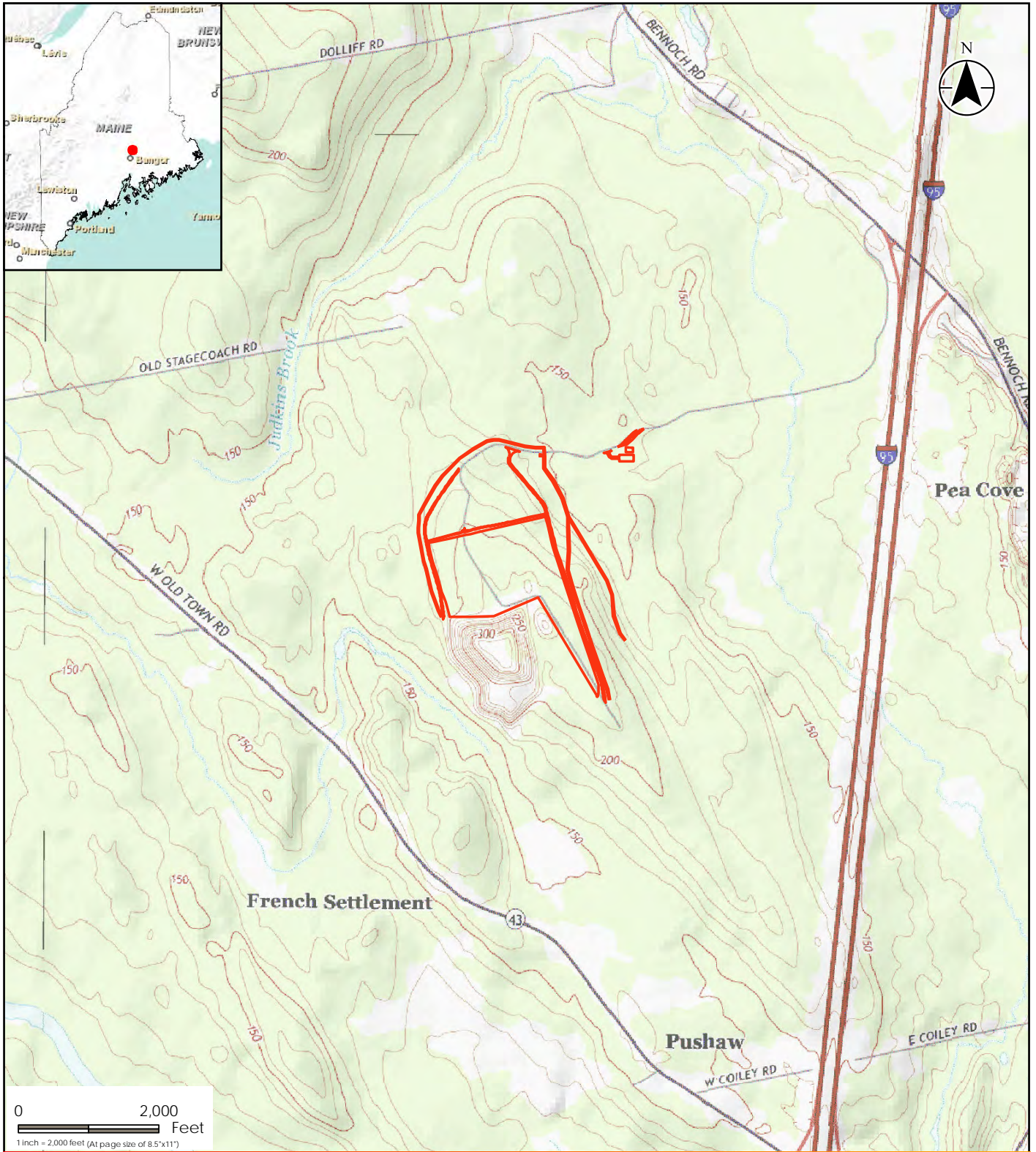


## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND FUNCTIONS AND VALUES ASSESSMENT

July 10, 2015

the proposed impacts are not expected to significantly affect overall water quality downstream of the impact areas or in the surrounding landscape.

The proposed expansion will impact wildlife habitat in the wetlands, specifically with the impacts to vernal pools. As shown on Figure 2, however, many functioning vernal pools have been identified in the wetlands surrounding the expansion area. While the expansion will result in the loss of vernal pool habitat, the large wetland systems surrounding the proposed expansion area are providing functional vernal pool habitat. The presence of this existing habitat that will not be impacted should serve to offset the loss of habitat within the expansion area. The surrounding wetlands and vernal pools will provide opportunity for amphibian species that are currently using the impacted vernal pools to find suitable breeding habitat nearby. Therefore, the proposed impacts are not expected to significantly affect the amphibian populations in the overall landscape.



Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

195600983



30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

Prepared by DLJ on 2015-04-13  
 Reviewed by KWH on 2015-04-13

00983\_01\_Locus.mxd

**Legend**  
 — 2015 Proposed Expansion Area (approx.)

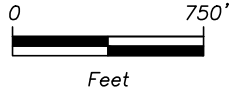
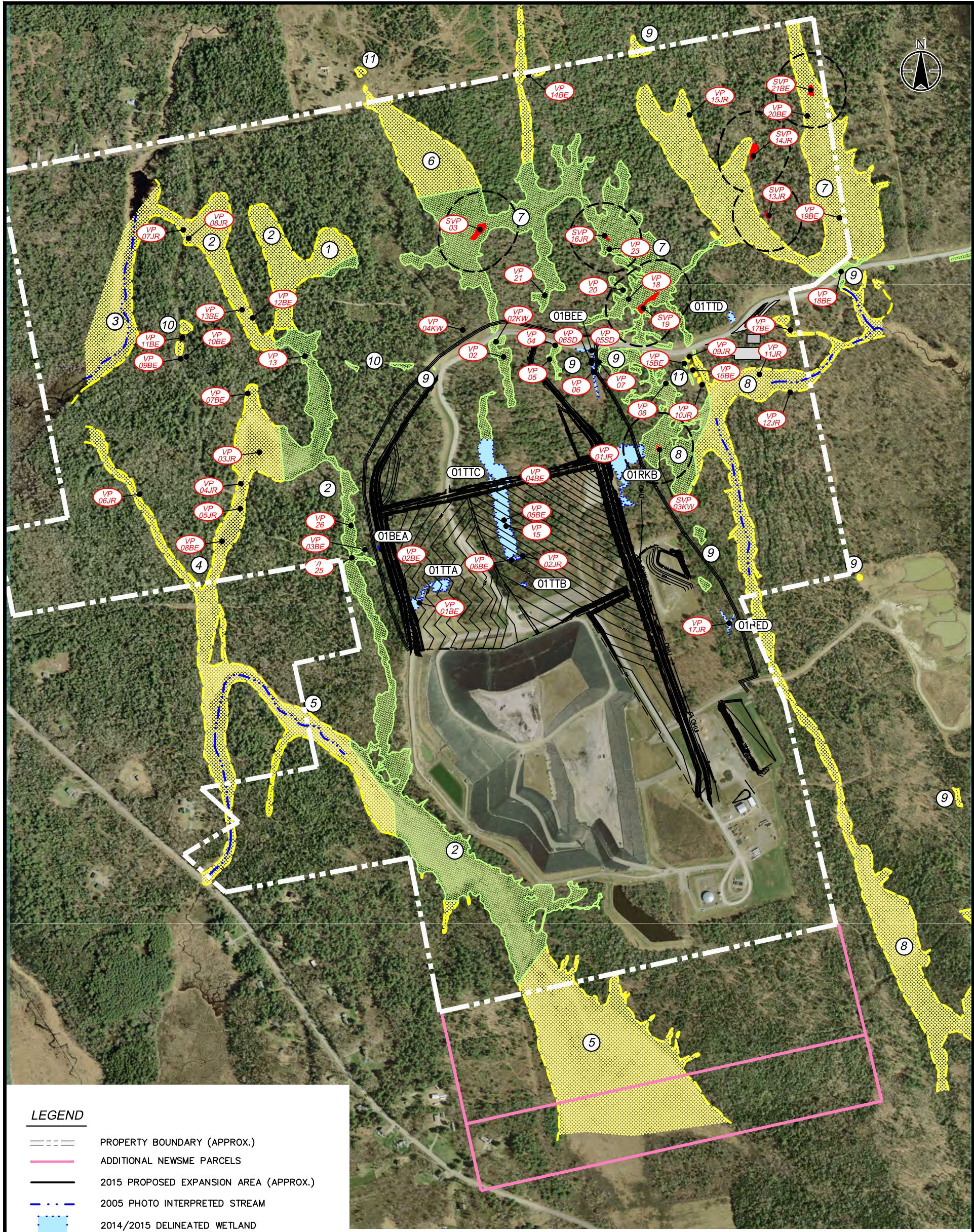
**Client/Project**  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine

**Figure No.**  
 1

**Title**  
 Site Location  
 5/29/2015



V:\1956\active\19560983\dwg\CompensationPlan\_00983\_03\_ProposedPreservation.dwg



**LEGEND**

- PROPERTY BOUNDARY (APPROX.)
- ADDITIONAL NEWSME PARCELS
- 2015 PROPOSED EXPANSION AREA (APPROX.)
- 2005 PHOTO INTERPRETED STREAM
- 2014/2015 DELINEATED WETLAND
- 2015 DELINEATED SIGNIFICANT VERNAL POOL
- 2015 SIGNIFICANT VERNAL POOL 250' CRITICAL HABITAT
- 2008 DELINEATED WETLAND
- 2005 PHOTO INTERPRETED WETLAND
- 2015 VERNAL POOL DESIGNATOR
- 2008 WETLAND DESIGNATOR
- 2014/2015 WETLAND DESIGNATOR

**NOTES:**

1. Wetland and vernal pool boundaries delineated in accordance with US ACOE Wetland Delineation Manual (1987) or subsequent versions.
2. Wetland and vernal pool boundaries located in 2005, 2008, 2014, and 2015 with GPS technology. Expected accuracy of GPS data is within 1 to 2 meters of actual position.
3. Photo interpreted wetland boundaries were field verified in September and October 2004 and are approximate.
4. Basemap and Proposed Expansion provided by Sevee & Maher Engineers, Inc. Aerial Photography obtained from the National Agriculture Imagery Project. Photo date 2013.

Rev. 3 07/10/2015

PREPARED BY:

PROJECT:

NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion  
Old Town, Maine

SHEET TITLE:

Wetland Function and Value Assessment

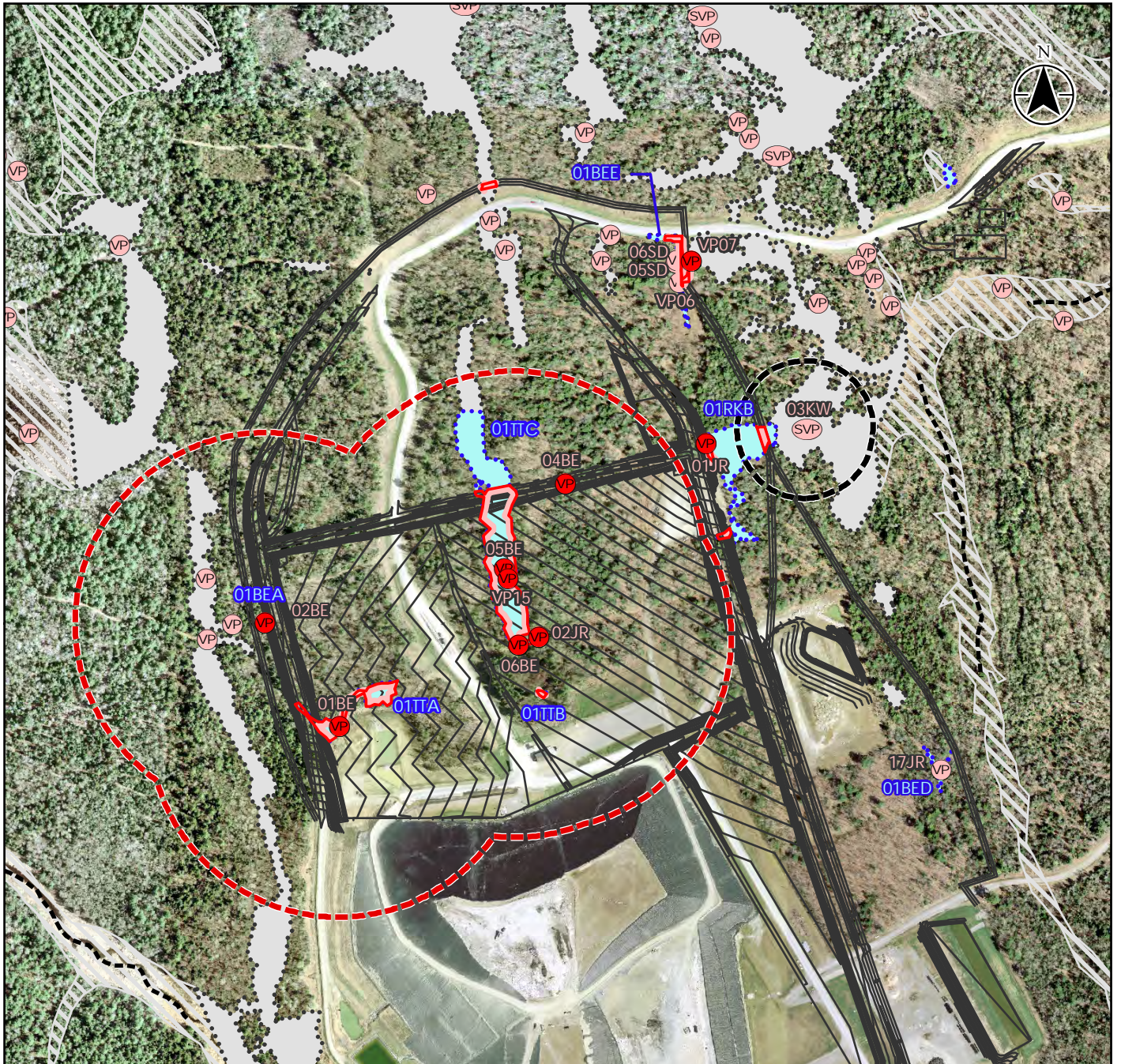
DATE: April 13, 2015

PROJ. NO.: 19560983

FIGURE:

2



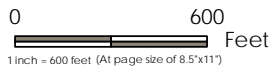


**Legend**

- |  |                                |                                  |
|--|--------------------------------|----------------------------------|
| — 2015 Proposed Expansion Area (approx.)             | 2015 Delineated Vernal Pool    | ⋯ 2008 Delineated Wetland        |
| ● VP   | ● VP                           | ▨ 2005 Photo Interpreted Wetland |
| ▭ Proposed Wetland Impacts                           | ● SVP                          | — 2005 Photo Interpreted Stream  |
| ⋯ 2015 Significant Vernal Pool 250' Critical Habitat | ⋯ 2014/2015 Delineated Wetland |                                  |
| ⋯ 2015 Vernal Pool 750' Critical Habitat             |                                |                                  |

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

195600983



Client/Project  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine

Figure No.  
 3

Title  
 Proposed Natural  
 Resource Impacts  
 6/9/2015

30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

**Notes**

1. Refer to Figure 1 of the Juniper Ridge Landfill Expansion Project: Wetland and Waterbody Delineation and Vernal Pool Survey Report, produced by Stantec.
2. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
3. Orthophotography from 2013 provided by Maine Office of GIS.

Revised by KWH on 2015-06-03  
 Reviewed by BPE on 2015-06-05

00983\_03\_ProposedImpacts.mxd



July 10, 2015

## Appendix A REPRESENTATIVE SITE PHOTOGRAPHS

July 10, 2015



**Photo 1.** Forested wetland with emergent wetland area in Wetland 01TTA. Stantec, September 25, 2014.



**Photo 2.** Stormwater pond outlet pipe draining into Wetland 01TTA. Stantec, September 25, 2014.



July 10, 2015



**Photo 3.** Forested Wetland 01TTB. Stantec, September 25, 2014.



**Photo 4.** Forested portion of Wetland 01TTC. Stantec, September 25, 2014.



July 10, 2015



**Photo 5.** Emergent wetland at southern end of Wetland 01TTC. Stantec, September 25, 2014.



**Photo 6.** Forested Wetland 01TTD looking towards existing access road. Stantec, September 25, 2014.



July 10, 2015



**Photo 7.** Mixed forested and scrub-shrub Wetland 01RKB. Stantec, October 9, 2014.



**Photo 8.** Emergent wetland portion of Wetland 01BEE. Stantec, May 14, 2015.



July 10, 2015



**Photo 9.** Forested Wetland 01BEA, containing vernal pool 02BE. Stantec, May 5, 2015.



**Photo 10.** Emergent Wetland 01BED in old woods road. Stantec, May 14, 2015.

**JUNIPER RIDGE LANDFILL EXPANSION  
NRPA PERMIT APPLICATION  
ATTACHMENT 13  
WETLAND COMPENSATION PLAN**

**Juniper Ridge Landfill  
Expansion Project: Wetland  
Compensation Plan**

Juniper Ridge Landfill  
Old Town, Maine



Prepared for:  
Bureau of General Services  
77 State House Station  
Augusta, ME 04333

and

NEWSME Landfill Operations LLC  
358 Emerson Mill Rd.  
Hampden, ME 04444

Prepared by:  
Stantec Consulting Services Inc.  
30 Park Drive  
Topsham, ME 04086

July 15, 2015



## Table of Contents

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1.1</b>
<b>2.0</b>	<b>SUMMARY OF PROPOSED IMPACTS .....</b>	<b>2.1</b>
2.1	WETLAND FUNCTIONS AND VALUES .....	2.2
<b>3.0</b>	<b>COMPENSATION SITE SEARCH .....</b>	<b>3.3</b>
3.1	OFF-SITE PRESERVATION .....	3.4
3.2	IN LIEU FEE COMPENSATION .....	3.5
3.3	ON-SITE PRESERVATION .....	3.5
<b>4.0</b>	<b>WETLAND COMPENSATION PLAN .....</b>	<b>4.6</b>
<b>5.0</b>	<b>PROTECTION AND LONG-TERM STEWARDSHIP .....</b>	<b>5.8</b>
<b>6.0</b>	<b>MITIGATION MONITORING PLAN .....</b>	<b>6.8</b>

## LIST OF APPENDICES

<b>APPENDIX A</b>	<b>FIGURES.....</b>	<b>A.1</b>
<b>APPENDIX B</b>	<b>SAMPLE RESTRICTIONS FOR CONSERVATION EASEMENT .....</b>	<b>B.1</b>
<b>APPENDIX C</b>	<b>EMAILS FROM CORPS AND MDEP PROVIDING PRELIMINARY CONFIRMATION THAT THIS PROPOSED SITE WOULD PROVIDE ADEQUATE COMPENSATION FOR THE PROPOSED IMPACTS.....</b>	<b>C.1</b>

July 15, 2015

## 1.0 INTRODUCTION

NEWSME Landfill Operations LLC (NEWSME), as operator, and the State of Maine Bureau of General Services (BGS), as owner, are applying for an Individual Natural Resource Protection Act (NRPA) and Solid Waste Management Act permits from the Maine Department of Environmental Protection (MDEP) and a Section 404 Clean Water Act permit from the U.S. Army Corps of Engineers (Corps) for a proposed expansion of the Juniper Ridge Landfill located in Old Town, Maine (Figure 1). The proposed facility will encompass approximately 74 acres and include new landfill cells and site infrastructure (e.g., roadways, stormwater ponds, scale house, and administrative buildings). The proposed expansion area impacts are expected to include approximately 2.04 acres of direct fill impacts to freshwater wetlands, approximately 0.10 acres of wetland vegetation clearing associated with the relocated electrical line and perimeter fence, tree clearing impacts to 1 man-made vernal pool, tree clearing impacts in the terrestrial habitat of a Significant Vernal Pool (SVP), and direct impact to 6 man-made jurisdictional vernal pools and their associated critical terrestrial habitat. As a result of these impacts, compensatory mitigation is required to satisfy the permitting requirements for both MDEP and the Corps. This Wetland Compensation Plan was prepared by Stantec Consulting Services Inc. (Stantec) to describe the compensatory mitigation measures that will be implemented by NEWSME and BGS to offset the unavoidable wetland and vernal pool buffer impacts associated with the proposed expansion.

## 2.0 SUMMARY OF PROPOSED IMPACTS

The proposed expansion will directly impact approximately 2.04 acres of primarily forested freshwater wetlands (Figure 2). These wetlands are not Wetlands of Special Significance as defined in Chapter 310 of the NRPA. Impacts will occur as direct fill to expand the existing landfill. Five separate wetlands will have fill impacts from the proposed expansion. Wetlands 01TTA, 01TTB, 01TTC, 01RKB, and 01BEA are primarily forested wetlands that have been altered by timber harvesting activity. The proposed expansion will result in the complete filling of Wetland 01TTB and filling of a portion of the remaining 4 wetlands. The proposed expansion also will involve upper canopy and shrub clearing of approximately 0.1 acres of freshwater wetland for a perimeter fence and an electrical line that is proposed to be relocated. The proposed electrical line and perimeter fence will run approximately north-south along the eastern edge of the expansion area and will cross two wetlands, 01RKB and 01BEE. Portions of these two wetlands will be cleared for construction of the line, but no fill impacts are proposed.

The proposed expansion will also directly impact 6 man-made vernal pools located within Wetlands 01TTC, 01TTA, and 01BEA. Because the vernal pools were man-made they do not meet the criteria to be considered SVPs as defined in Chapter 335 of the NRPA. However, they meet the Corps' definition of a vernal pool. Two additional low-functioning vernal pools, 04BE and

July 15, 2015

01JR, were located within the expansion area and were identified as naturally occurring but were not located within jurisdictional wetlands. Because the pools did not contain enough egg masses to be considered SVPs, and they were not located in jurisdictional wetlands, they are not regulated by either MDEP or the Corps. The expansion will also impact the critical terrestrial habitat surrounding one SVP. The impacts to this terrestrial habitat are less than 25% of the total 250' habitat; therefore, these impacts are being covered by a Permit By Rule to be submitted with the NRPA application and are not included as part of this compensation plan. There is one additional vernal pool that will have clearing impacts for the relocated fence and electrical line.

At the time of the 2015 vernal pool survey, 4 of the 6 vernal pools in the expansion area contained less than 4 total egg masses in each pool. For the other 2 vernal pools, one vernal pool (01BE) contained 18 spotted salamander (*Ambystoma maculatum*) egg masses and the other vernal pool (VP 17) contained 47 spotted salamander egg masses and 3 wood frog (*Lithobates sylvatica*) egg masses. The proposed expansion is expected to impact the terrestrial Vernal Pool Management Areas (VPMA) surrounding the 6 vernal pools. The VPMA is defined in the Corps' General Permit (GP) as the area within 750 feet of the vernal pool edge. The 6 man-made vernal pools are in close proximity, as shown on Figure 3, and their individual 750-foot VPMAs overlap considerably. Because the six vernal pools are being directly impacted, it is assumed that the combined overlapping VPMAs totals approximately 94 acres, which will be counted as an impact. The proposed impact to the combined VPMAs for the 6 pools exceeds the 25% threshold to the VMPA under the Corps' GP.

## 2.1 WETLAND FUNCTIONS AND VALUES

Wetland functions and values were evaluated in 2014 and 2015 by Stantec using The Highway Methodology Workbook Supplement.<sup>1</sup> In summary, the wetlands within the proposed expansion area are providing limited functions and values, with only wildlife habitat, based on the presence of the vernal pools, considered to be a principal function of any of the wetlands. The expansion area wetlands are relatively low functioning wetlands due to their small size, isolated landscape position (i.e., not connected to large wetlands), and lack of habitat diversity.

The proposed expansion will reduce or eliminate the capacities of the wetlands to provide the limited functions and values that they currently provide. The functions in each of the 6 wetlands that will be impacted include sediment/toxicant retention, nutrient removal, and wildlife habitat. The proposed project will impact wildlife habitat in the wetlands, specifically with the impacts to vernal pools. However, due to the relatively small size of these wetlands, the loss of these functions is unlikely to have a landscape-level effect and the proposed impacts are not expected to significantly affect overall water quality downstream of the impact areas or in the surrounding landscape. While the project will result in the loss of vernal pool habitat, the large

---

<sup>1</sup> U.S. Army Corps of Engineers. 1999. *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach*. U.S. Army Corps of Engineers. New England Division. 32pp. NAEEP-360-1-30a.



## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

wetland systems surrounding the project are providing more productive vernal pool habitat. The presence of the existing vernal pool habitat immediately outside the proposed expansion area that will not be impacted will provide ample habitat for amphibians so that populations will not be significantly affected by the proposed impacts.

A detailed wetland functions and values assessment is provided in Attachment 12 of the NRPA application. Table 1 below summarizes the existing wetland functions and values associated with the proposed expansion area wetlands.

**Table 1. Wetland Functions and Values for Wetlands Proposed to be Impacted**

Wetland Functions and Values	01TTA	01TTB	01TTC	01RKB	01BEE	01BEA
Groundwater Interchange	--	--	--	--	--	--
Floodwater Alteration	X	--	X	X	X	--
Fish and Shellfish Habitat	--	--	--	--	--	--
Sediment/Toxicant Retention	X	X	X	X	X	X
Nutrient Removal	X	X	X	X	X	X
Production Export	X	--	X	X	X	--
Sediment/Shoreline Stabilization	--	--	--	--	--	--
Wildlife Habitat	X	--	P	X	P	X
Recreation	--	--	--	--	--	--
Educational/Scientific	--	--	--	--	--	--
Uniqueness/Heritage	--	--	--	--	--	--
Visual Quality/Aesthetics	--	--	--	--	--	--
Endangered Species	--	--	--	--	--	--

X = Wetland Function/Value Present

P = Principal Wetland Function/Value

### 3.0 COMPENSATION SITE SEARCH

The goal of the compensation site search was to find a site that could compensate for the proposed impacts to wetlands and vernal pool buffers within the proposed expansion area. Based on the proposed impacts, Stantec investigated three main options to provide compensation for the proposed project impacts: off-site preservation, the In Lieu Fee Compensation Program (ILF), and on-site preservation.

To focus the preservation site search options, Stantec estimated the following amount of preservation mitigation that would be required. For direct impacts to freshwater wetlands, the

July 15, 2015

Corps' Compensatory Mitigation Guidance<sup>2</sup> recommends a preservation ratio of 15:1 (i.e., area preserved to area impacted). MDEP uses a ratio of 8:1 for preservation compensation, as stated in Chapter 310 of the NRPA. Because the Corps' ratio is higher, the compensation site search was focused on areas large enough to meet the Corps' standards for preservation. Based on these ratios, approximately 31 acres of preservation would be required to compensate for the wetland impacts. Because the vernal pools that will be directly impacted as part of this expansion do not meet the definition of a SVP, this plan has been prepared to comply with the Corps' Compensatory Mitigation Guidance. Six vernal pools will be directly impacted by the project; therefore, it is assumed that compensation will be required for the entire combined VPMA's surrounding these pools. The combined VPMA's of the six pools totals approximately 94 acres and we understand that a similar amount of preservation would be required to compensate for the vernal pool impacts, as recommended by Shawn Mahaney of the Corps during the October 29, 2014, meeting. In total, we have estimated that approximately 125 acres would be required to provide adequate preservation mitigation for the proposed project impacts.

The site search was also conducted to find a site that could compensate for the impacts to wetland functions and values within the proposed expansion area. As described in Section 2.1 above, and in Attachment 12 of the application, the functions and values being impacted within the proposed expansion area include sediment/toxicant retention, nutrient removal, and wildlife habitat. The site search was conducted to find a site that could provide these functions to an equal or greater capacity than the wetlands in the proposed expansion area.

The three compensation options that were investigated are further described below.

### 3.1 OFF-SITE PRESERVATION

Following an April 27, 2015, agency meeting with MDEP, the Corps, Stantec, NEWSME, and BGS, Stantec also investigated off-site preservation options. Stantec contacted the Sunkhaze Meadows National Wildlife Refuge to determine if there were any parcels that they had identified as potential additions to the Refuge. Stantec spoke with the Refuge Manager and identified 3 potential sites around the Refuge. One land parcel, an approximately 100-acre site on the eastern side of the Refuge, appeared to contain a suitable amount of wetlands and uplands to meet the requirements for preservation mitigation. The Refuge Manager also identified 2 smaller parcels (approximately 30 acres in size for each) that they had been looking to acquire. The Refuge had been unable to acquire any of these sites because the property owner was asking for a price that was not feasible for the refuge. Ultimately, it was determined that the costs of any of these sites exceeded NEWSME's available funds for the expansion project and off-site preservation would be a cost-prohibitive alternative for the proposed expansion.

---

<sup>2</sup> U.S. Army Corps of Engineers. New England District. Regulatory Division. *New England District Compensatory Mitigation Guidance*. July 20, 2010.

July 15, 2015

## **3.2 IN LIEU FEE COMPENSATION**

As part of the mitigation site search process, Stantec investigated whether use of the ILF program would be feasible to provide suitable mitigation for the proposed impacts within the expansion area. Stantec calculated the approximate cost of mitigating for the project impacts using exclusively ILF. Using the total wetland impacts of approximately 2.1 acres, plus the approximately 94 acres of vernal pool buffer impacts, the fee to compensate for the impacts would be greater than \$500,000. This fee far exceeds NEWSME's available funding for this project, which made this an unfeasible option for compensation.

## **3.3 ON-SITE PRESERVATION**

Stantec, NEWSME, and BGS investigated several on-site preservation options to meet the compensatory mitigation requirements described above. Stantec performed a desktop analysis of several options and configurations of potential sites on the 780-acre parcel owned by BGS surrounding the landfill, which included reviewing publicly available natural resource data, aerial photographs, National Wetland Inventory (NWI) data, mapped Significant Wildlife Habitats, Beginning with Habitat data, and resource data collected by Stantec during previous years' surveys. Important considerations made in the on-site search process include:

- proximity to existing protected land or conservation areas;
- the presence of high ecological value habitat;
- ability of the site to mitigate for the impacted functions and values at the project site;
- local and regional ecological values and conservation goals;
- the threat of development; and
- the likelihood that the site will succeed in meeting the goals of the compensation plan.

At the April 27 agency meeting with MDEP and the Corps, potential compensation plan options were discussed. For on-site preservation, MDEP and the Corps recommended preserving a large enough parcel to function as an independent ecological unit while adequately compensating for the wetland and vernal pool impacts within the expansion area.

Based on this feedback, Stantec identified a 266-acre on-site preservation area. This site was selected as the site with the best potential to provide suitable preservation mitigation for this project. Both the Corps and MDEP provided preliminary confirmation in emails to Stantec on June 25, 2015, that this proposed site would provide adequate compensation for the proposed impacts (Appendix D). The Corps was also provided with preliminary approval of the plan from Mark Kern at the U.S. Environmental Protection Agency in an email on June 18, 2015. This site is further described in Section 4.0 below.



July 15, 2015

## 4.0 WETLAND COMPENSATION PLAN

The wetland compensation measures outlined in this plan are intended to compensate for the wetland and vernal pool buffer impacts associated with the proposed landfill expansion. As described above, suitable off-site preservation options were not available. Additionally, Stantec, BGS, and NEWSME determined that use of the ILF program to compensate for the project impacts would not be feasible given the amount. Therefore, it was determined that on-site preservation mitigation would be the best method to provide compensation for the proposed wetland and vernal pool buffer impacts.

The proposed preservation site is approximately 266 acres in area and is located north and west of the proposed expansion area (Figure 3). As stated above, the minimum acreage for preservation mitigation was estimated to be 125 acres, and the area proposed in this Plan exceeds that by 141 acres. The proposed preservation site is "L-shaped", wrapping around the northwest corner of the proposed landfill expansion area. The site fully encompasses existing conservation land that was preserved as preservation mitigation during the original landfill construction. The maximum extent of any future landfill development has been considered in the formation of this preservation area. Therefore, no future impacts to this preservation area would be expected as a result of any future landfill development. The site is owned by the State of Maine, through BGS. BGS has confirmed that it will be possible to protect state-owned land for preservation mitigation. Discussions between NEWSME and BGS determined that the proposed mechanism for long-term protection will be a conservation easement held by a qualified third party entity.

The parcel is dominated by a mix of upland and wetland forest. Based on wetland delineations and aerial photo interpretation, the site contains approximately 57 acres of wetlands. The wetlands within the proposed preservation area provide the functions of wildlife habitat, floodwater alteration, sediment/toxicant retention, and nutrient removal as principal functions. The site also contains many more highly productive vernal pools than those being impacted.

Stantec performed a vernal pool survey at the proposed site in 2015 and identified 25 functioning vernal pools within the delineated wetlands, 3 of which were SVPs. An additional 8 vernal pools were high-functioning pools (egg mass counts exceeding SVP thresholds but did not meet other SVP criteria).

The total egg mass counts, as shown in Table 2 below, are significantly higher in the proposed preservation area than in the area being impacted. The vernal pools in the proposed preservation area also contain a more diverse assemblage of species, with 4 vernal pools in the preservation area containing blue-spotted salamander egg masses (*Ambystoma laterale*) while no pools being impacted contained blue-spotted salamander egg masses. Therefore, the preservation area provides significantly more pools, and higher functioning pools, than are being impacted in the expansion area.

July 15, 2015

**Table 2. Comparison of Vernal Pool Productivity between Vernal Pools to be Directly Impacted and Proposed Preservation Area**

	Size (ac)	Number of Vernal Pools	Total Egg Masses Observed in All Pools <sup>1</sup>		
			Wood Frog	Spotted Salamander	Blue Spotted Salamander
Proposed Expansion Area <sup>2</sup>	74	6	4	71	0
Proposed Preservation Area	266	25	68	873	9

Notes: <sup>1</sup> Total egg mass count taken from the highest total observed in either the first or second visit to the each pool.

<sup>2</sup> Does not include 2 vernal pools to be impacted that are not located in jurisdictional wetland and are not SVPs; therefore, not jurisdictional to either MDEP or the Corps.

Preservation of the 266-acre parcel will provide suitable compensation for the impacts associated with the proposed landfill expansion for the following reasons, which are described below to address specific criteria established by the Corps for evaluating preservation sites:

- Preservation of the proposed site would protect a large area of valuable wetlands and wildlife habitat at a size that can function as an independent ecological unit. The site contains 25 documented vernal pools, which provides compensation for the vernal pools being impacted in the proposed expansion area. The wetlands to be protected are also contiguous with wetlands associated with Judkins Brook to the northeast of the proposed expansion area. Preservation of these wetlands and adjacent uplands would create an undisturbed buffer to the brook providing filtering and nutrient/sediment retention capacity.
- The proposed preservation area surrounds existing conservation land that was protected, by deed restriction, as compensation for wetland impacts during the initial permitting of the landfill site by a prior owner, James River Paper Company. Protecting additional land surrounding this conservation area will create a larger area of protected, undeveloped land that can function as an independent, ecological system.
- The preservation parcel contains approximately 209 acres of developable uplands. Future development in this proposed preservation area is possible, either by future landfill operations or other commercial, industrial, and residential uses. Preservation of the parcel will protect these developable uplands that provide important buffering to the existing wetlands and valuable terrestrial habitat for vernal pool associated species.
- The proposed 266-acre preservation area far exceeds the size necessary to compensate for the proposed natural resource impacts. The proposed expansion is expected to impact approximately 2.04 acres of wetland. Using a 15:1 ratio, this equates to roughly 31 acres of required preservation. The combined area of the VPMA's for the six impacted vernal pools totals approximately 94 acres. Therefore, the total protected area required for preservation mitigation is 125 acres. To compensate for the impacts to wetlands and

July 15, 2015

vernal pools, the proposed preservation site protects 141 acres more than the required minimum acreage, including 25 vernal pools. Therefore, the proposed site provides more than adequate compensation for the proposed wetland and vernal pool impacts using the Corps mitigation standards.

- The proposed preservation site will be permanently protected through the establishment of a conservation easement that will be held by a qualified third party entity.

### 5.0 PROTECTION AND LONG-TERM STEWARDSHIP

BGS and NEWSME are working with potential qualified third party entities to establish a conservation easement to provide long-term protection to the proposed preservation area (see Appendix B for an example of conservation easement language). The proposed preservation area will be protected from future development by the qualified entity, permanently preserving the functions and values of the wetlands and upland buffers within the bounds of the preservation areas. BGS and NEWSME are proposing to use a Declaration of Covenants and Restrictions to provide long-term protection to the proposed preservation site. Within 90 days of the date the permits are issued, BGS and NEWSME will submit to MDEP and the Corps a completed draft conservation easement for the proposed site. Within 30 days of the date MDEP and the Corps approve the draft conservation easement in writing, BGS and NEWSME will execute and record it with the Registry of Deeds for Penobscot County. The recorded document will then be sent to the MDEP and Corps within 30 days of the date it is recorded.

BGS and NEWSME are willing to pay a reasonable stewardship endowment to cover long-term maintenance and protection of the property. The details of the payment of these fees will be negotiated between BGS/NEWSME and the third party to satisfy the needs of both parties and the proposed preservation site. The easement to a qualified third party entity will protect the valuable natural resources on the site in perpetuity from future development.

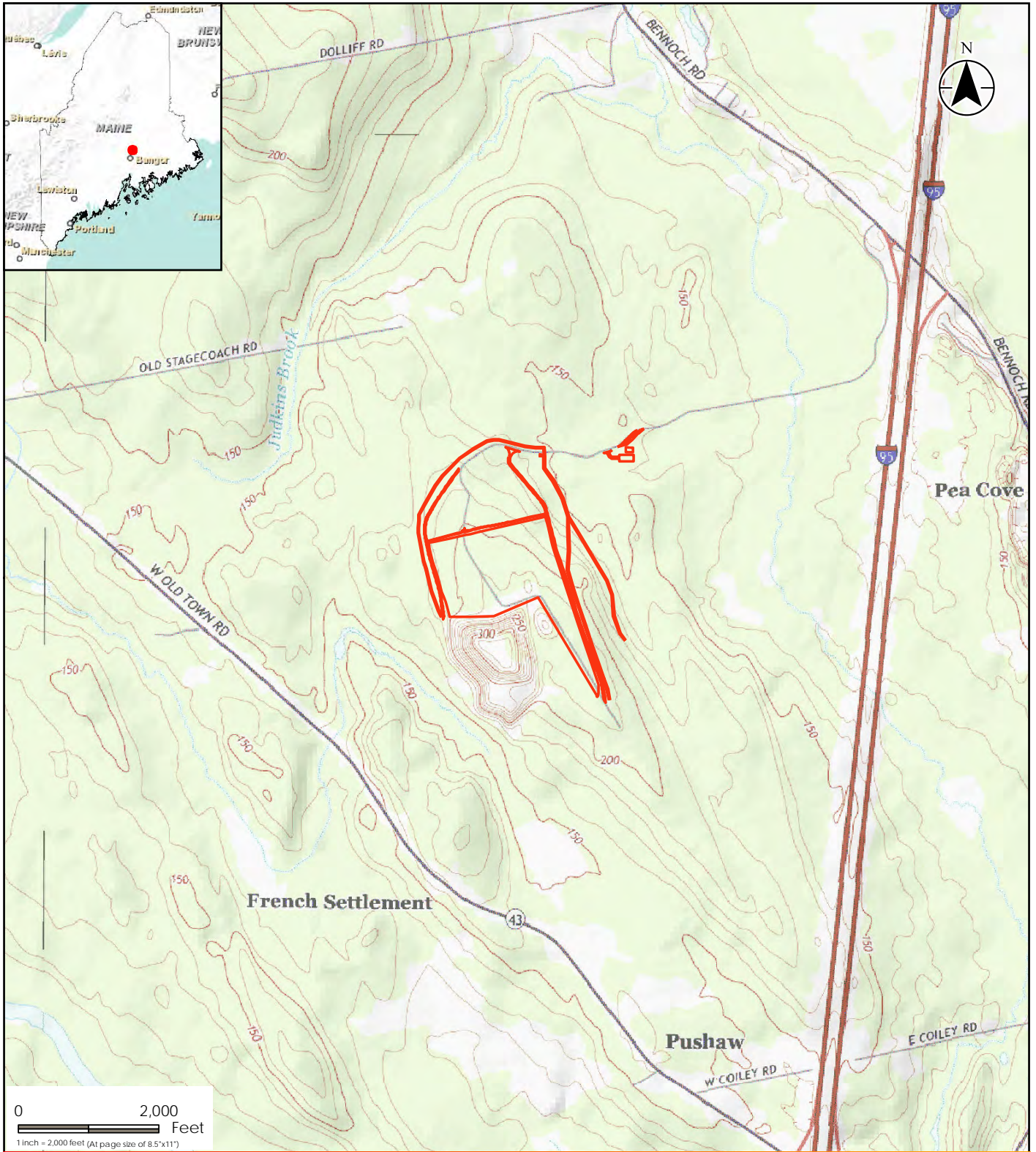
### 6.0 MITIGATION MONITORING PLAN

Long-term monitoring will not be required at the proposed preservation site, as no construction activities will occur in the 266-acre parcel. No monitoring reports are required to be submitted to the Corps or MDEP.



July 15, 2015

## Appendix A FIGURES



Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

195600983



30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

Prepared by DLJ on 2015-04-13  
 Reviewed by KWH on 2015-04-13

00983\_01\_Locus.mxd

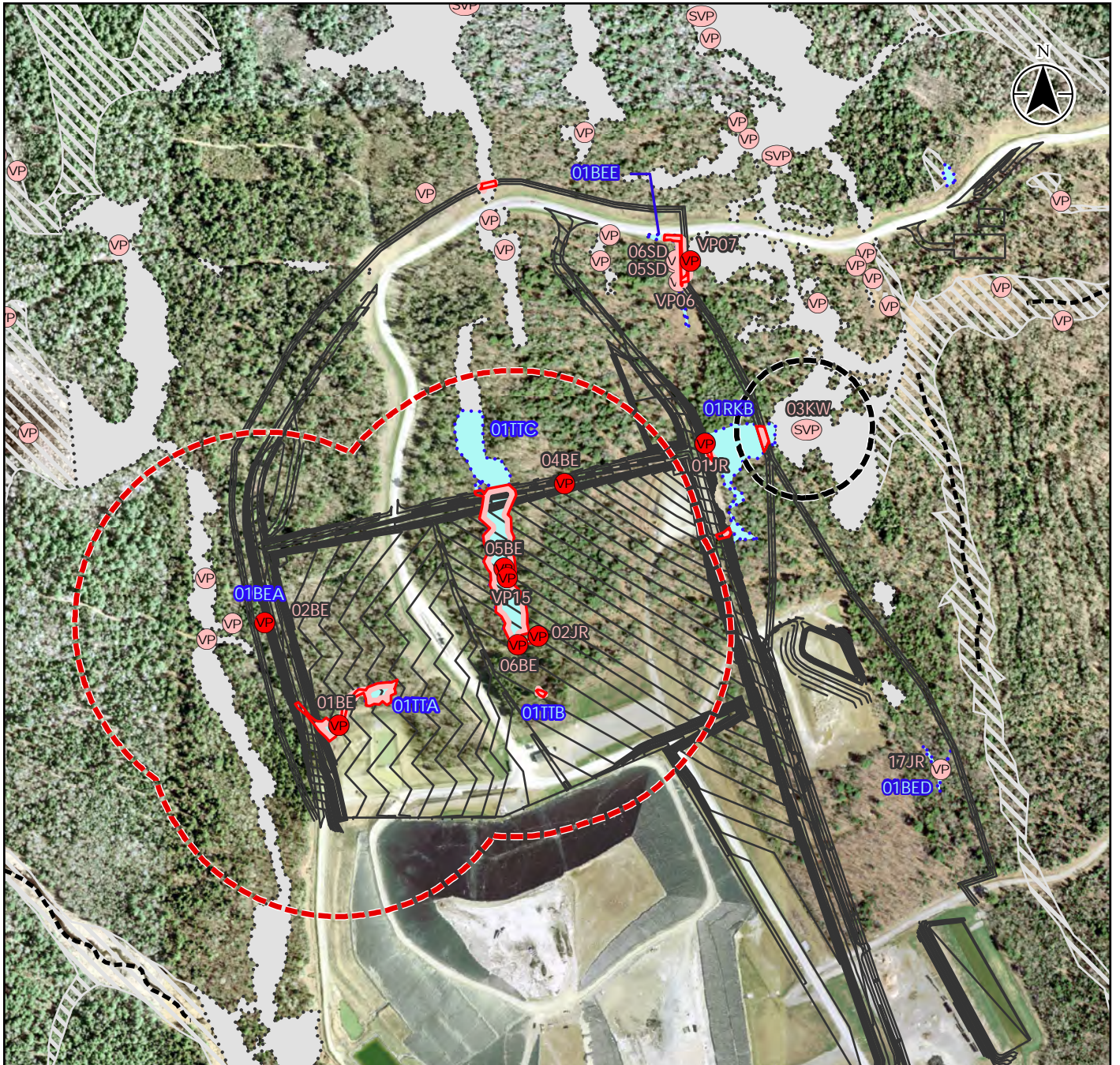
**Legend**  
 — 2015 Proposed Expansion Area (approx.)

**Client/Project**  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine

**Figure No.**  
 1

**Title**  
 Site Location  
 5/29/2015





**Legend**

- |  |                                |                                   |
|--|--------------------------------|-----------------------------------|
| — 2015 Proposed Expansion Area (approx.)             | 2015 Delineated Vernal Pool    | ⋯ 2008 Delineated Wetland         |
| ● Proposed Vernal Pool Impacts                       | VP VP                          | ▨ 2005 Photo Interpreted Wetland  |
| ▭ Proposed Wetland Impacts                           | SVP SVP                        | --- 2005 Photo Interpreted Stream |
| ▭ 2015 Significant Vernal Pool 250' Critical Habitat | ⋯ 2014/2015 Delineated Wetland |                                   |
| ▭ 2015 Vernal Pool 750' Critical Habitat             |                                |                                   |

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

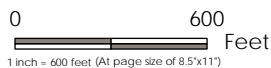
195600983



30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

Revised by KWH on 2015-06-30  
 Reviewed by BPE on 2015-06-30

00983\_02\_ProposedImpacts.mxd



**Notes**

1. Refer to Figure 1 of the Juniper Ridge Landfill Expansion Project: Wetland and Waterbody Delineation and Vernal Pool Survey Report, produced by Stantec.
2. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
3. Orthophotography from 2013 provided by Maine Office of GIS.

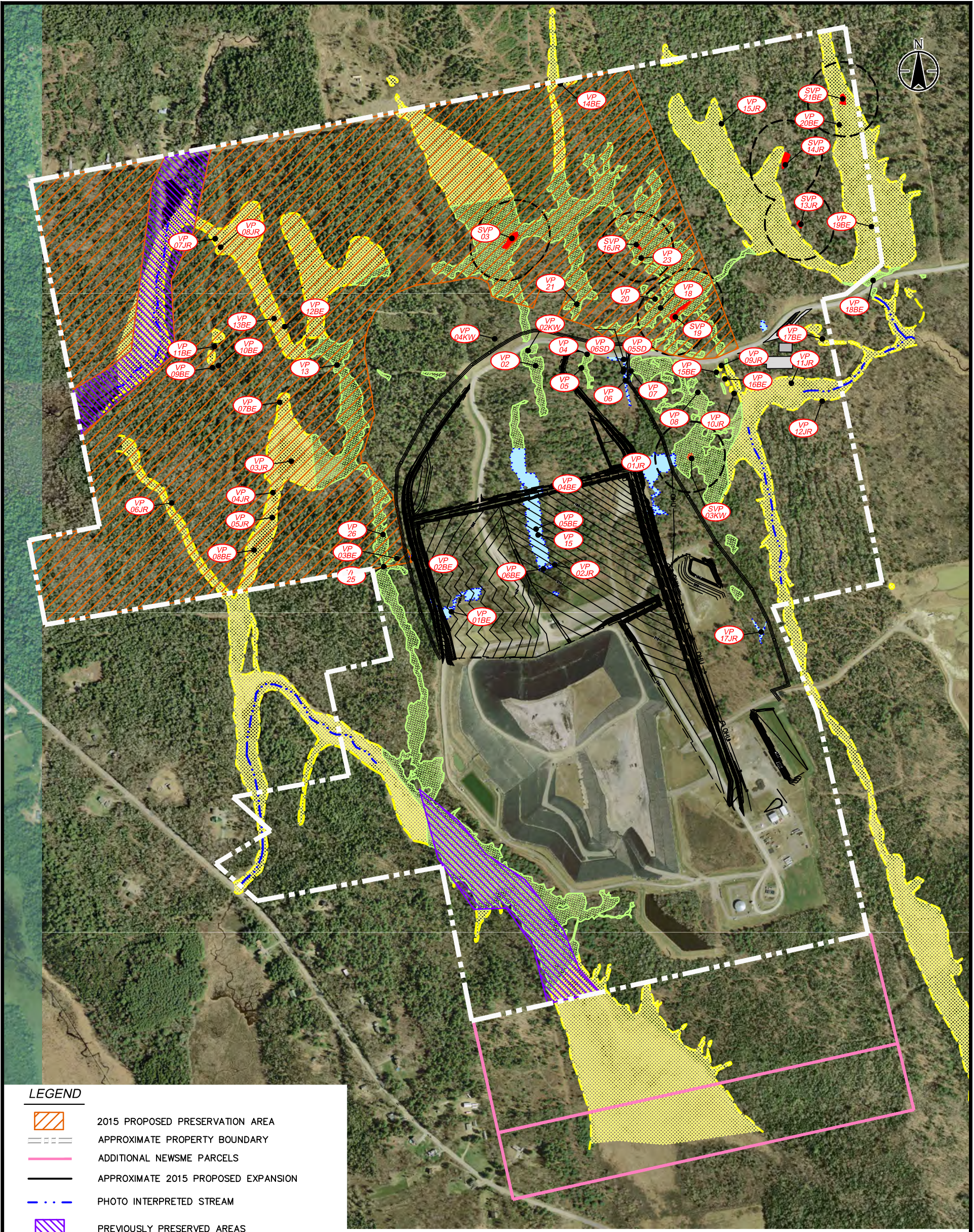
Client/Project  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine

Figure No.  
 2

Title  
 Proposed Natural  
 Resource Impacts  
 7/10/2015

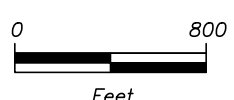


V:\1956\arch\195600983\dwg\CompensationPlan\_00983\_03\_ProposedPreservation.dwg



**LEGEND**

-  2015 PROPOSED PRESERVATION AREA
-  APPROXIMATE PROPERTY BOUNDARY
-  ADDITIONAL NEWSME PARCELS
-  APPROXIMATE 2015 PROPOSED EXPANSION
-  PHOTO INTERPRETED STREAM
-  PREVIOUSLY PRESERVED AREAS
-  2014 AND 2015 DELINEATED WETLAND
-  2015 DELINEATED SIGNIFICANT VERNAL POOL
-  250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT
-  2008 DELINEATED WETLAND
-  2005 PHOTO INTERPRETED WETLAND
-  2015 VERNAL POOL DESIGNATOR



**2015 PRESERVATION AREA**

UPLAND	WETLAND	TOTAL	VERNAL POOLS
209 ACRES	57 ACRES	266 ACRES	25*

\*-3 OF WHICH ARE SVP

**NOTES:**

1. This figure is based on "Juniper Ridge Landfill Expansion, Old Town Maine, Mitigation Areas" map dated January 7, 2009.
2. Wetland and vernal pools delineated in 2005, 2008, 2014, and 2015
3. Photo interpreted wetland boundaries were field verified in September and October 2004 and are approximate.
4. Basemap obtained from Sevee & Maher Engineers, Inc.
5. Aerial orthoimagery from 2013 provided by Maine Office of GIS.



July 15, 2015

## Appendix B SAMPLE RESTRICTIONS FOR CONSERVATION EASEMENT

JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

DECLARATION OF COVENANTS AND RESTRICTIONS

THIS DECLARATION OF COVENANTS AND RESTRICTIONS is made this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, by (name), (a Maine corporation having a place of business at (street address), (city or town), (name) County, Maine, (zipcode), (herein referred to as the "Declarant"), pursuant to State of Maine Department of Environmental Protection Natural Resources Protection Act (Tier 1 or Tier 2 or Order), Project Number \_\_\_\_\_, dated \_\_\_\_\_, 19\_\_\_\_ (hereinafter referred to as "Order"), relating to preservation of an approximately \_\_\_\_\_ acre parcel of land near \_\_\_\_\_ Road, (known feature and/or town).

RECITALS

WHEREAS, the Declarant holds title to certain real property situated in (town), Maine described in a deed from (name) to (name) dated \_\_\_\_\_, 19\_\_\_\_, and recorded in Book \_\_\_\_\_ Page \_\_\_\_\_ at the \_\_\_\_\_ County Registry of Deeds, and the Declarant is the successor in title to \_\_\_\_\_ by deeds recorded in Book \_\_\_\_\_, Page \_\_\_\_\_, (and Book \_\_\_\_\_, Page \_\_\_\_\_,) all in said Registry; and

WHEREAS, Declarant desires to place certain deed covenants, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Covenant Area") described as follows:

\*\*\*\*Insert property description here\*\*\*\*

WHEREAS, pursuant to the Natural Resources Protection Act, Title 38 M.R.S.A. Section 480-A et seq. and Chapter 310 of regulations promulgated by the Maine Department of Environmental Protection (the "Wetland Protection Rules"), Declarant has agreed, in satisfaction of paragraph \_\_\_\_\_ of the Order, to impose certain covenants and restrictions on the Covenant Area as more particularly set forth herein and has agreed that such covenants and agreements may be enforced by the Maine Department of Environmental Protection (hereinafter the "MDEP") or any successor in interest.

NOW, THEREFORE, the Declarant hereby declares that the Covenant Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the covenants, conditions and restrictions set forth herein (sometimes referred to as the "Covenants and Restrictions"). The Covenants and Restrictions shall run with the Covenant Area and shall be binding on all parties having any right, title and interest in and to the Covenant Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Covenant 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 Covenant Area subject to the Covenants and Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Covenants and Restrictions hereinafter set forth.

- 1. Restrictions on Covenant Area. Unless the owner of the Covenant Area, or its successors or assigns, obtains the prior written approval of the MDEP, (or any successor thereof), the Covenant Area shall remain undeveloped in perpetuity.
  - 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 will be placed, stored or dumped on the Covenant Area and the surface waters contained thereon, nor shall the topography of the area be altered or manipulated in any way;
  - b. no trees, grasses, shrubs, vines, or other vegetation shall be cut, destroyed, or sprayed with biocides, except that de minimis flower picking shall be allowed, and clearing will be allowed for the maintenance of any path or trail, and dead wood which is leaning or fallen may be removed;
  - c. no ditches shall be dug, and no draining of the Covenant Area shall take place, and no pumping or any other removal of water shall occur on the Covenant Area, nor shall the manipulation or alteration of natural water courses or hydrology occur;
  - d. no building, sign, fence, utility pole, or other temporary or permanent structure will be constructed, placed or permitted to remain on the Covenant Area;





JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

e. no trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment shall be permitted on the Covenant Area; and

[OPTIONAL f. no wildlife shall be taken, killed, harmed or removed from the Covenant Area. Enforcement of this restriction is the sole responsibility of the Declarant.]

Any activity on or use of the Covenant Area inconsistent with the purpose of these Covenants and Restrictions is prohibited. Prior to undertaking any changes in the use of the Covenant Area, the Declarant, its successors and assigns, shall consult with the MDEP regarding the proposed changes to determine the effect of such changes on the conservation values of the Covenant Area. The MDEP shall have the right to approve such changes in use if such uses do not impair or impede the conservation values of the Covenant Area or the purpose of the Covenants and Restrictions.

2. Enforcement. The MDEP may enforce any of the Covenants and Restrictions set forth in Section 1 above. Any future alterations of the Covenant Area must receive the prior approval in writing from the MDEP.

3. Binding Effect. The restrictions set forth herein shall be binding on any present or future owner of the Covenant Area. If the Covenant Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions but only to the extent that any of the Covenant 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 Covenant Area and by the MDEP (or any successor thereto).

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 covenant running with the land as a burden and upon the title to the Covenant Area.

6. Severability. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity of 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.

(COMPANY/CORPORATE NAME)

\_\_\_\_\_  
BY:  
IT'S: (Company or Corporate Title)

STATE OF MAINE  
(County), ss. \_\_\_\_\_, 19\_\_

Personally appeared before me the above named (name), (company or corporate title), (COMPANY OR CORPORATE NAME), and acknowledged the foregoing instrument to be (his/her) free act and deed in (his/her) said capacity and the free act and deed of said (company or corporate name).

\_\_\_\_\_  
Notary Public  
\_\_\_\_\_



July 15, 2015

**Appendix C** EMAILS FROM CORPS AND MDEP PROVIDING  
PRELIMINARY CONFIRMATION THAT THIS  
PROPOSED SITE WOULD PROVIDE ADEQUATE  
COMPENSATION FOR THE PROPOSED IMPACTS

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

---

**From:** Mahaney, Shawn B NAE <Shawn.B.Mahaney@usace.army.mil>  
**Sent:** Thursday, June 25, 2015 10:40 AM  
**To:** Emerson, Bryan  
**Cc:** Caron, Lynn A (Lynn.A.Caron@maine.gov); Jim.R.Beyer@maine.gov; Riley, Jake  
**Subject:** RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Hi Bryan,

You are correct.

Shawn

-----Original Message-----

From: Emerson, Bryan [mailto:bryan.emerson@stantec.com]  
Sent: Thursday, June 25, 2015 10:37 AM  
To: Mahaney, Shawn B NAE  
Cc: Caron, Lynn A (Lynn.A.Caron@maine.gov); Jim.R.Beyer@maine.gov; Riley, Jake  
Subject: [EXTERNAL] RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Shawn,

Thanks for talking this morning. And thanks for forwarding the response from EPA.

As we discussed, I just wanted to confirm that based on the comments from EPA, you think that the proposed 266-acre preservation area would likely be an acceptable compensation plan to the Corps for the proposed wetland/VP impacts for the Juniper Ridge Landfill expansion project. We understand that the concept of future mitigation credit may not be acceptable, but the preservation area as proposed should provide acceptable compensation for the current proposed impacts. This is under the assumption that MDIFW (or another third party) can hold the conservation easement. To Mark's 4th point below, I understand that his reference to preserving less now would have to be done off-site and adjacent to other protected area, and that preserving less on-site likely would not be acceptable for you.

Can you please respond to this email and confirm that I've understood everything correctly? Or correct/clarify anything as needed.

Lynn/Jim, do you think that DEP would be amenable to the proposed 266-acre preservation plan as well?

Thanks,  
-Bryan

-----Original Message-----

From: Mahaney, Shawn B NAE [mailto:Shawn.B.Mahaney@usace.army.mil]  
Sent: Thursday, June 25, 2015 10:03 AM  
To: Emerson, Bryan  
Subject: FW: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

-----Original Message-----

From: Kern, Mark [mailto:kern.mark@epa.gov]



# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

Sent: Thursday, June 18, 2015 3:30 PM  
To: Mahaney, Shawn B NAE; Mahaney, Wende  
Cc: Ladd, Ruth M NAE; Minkin, Paul NAE; LeClair, Jacqueline  
Subject: [EXTERNAL] RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Hi Shawn,

Thanks for the information. Here is my quick take on the proposal to fill 2 acres of wetland, including 2 VPs, and cause other secondary impacts to other VPs. They propose to protect 266 acres on-site, containing 26 vernal pools.

- 1) normally I do not care for protection on-site, but this is a large one with lots of VPs. Some of the preservation next to the landfill will be impacted by the development, especially the VPs, but most of the site should be OK.
- 2) assuming they have a good easement holder -- (Is ME Inland FW for sure or are they thinking about it?) -- I think it is a fair deal for us.
- 3) I am opposed to any informal banking for future wetland filling.
- 4) If they think it is too much mitigation it would be far better to either permit all the future impacts now or do less of the protection now. We would also have to spend some time sorting out debits and credits to try and figure this out. Paul and Ruth will have to take some advanced math classes. I suspect that the applicant may be right, but they may not have a much extra mitigation as they think (once we consider the secondary impacts from the development on the mitigation site).

Take care, Mark

-----Original Message-----

From: Mahaney, Shawn B NAE [mailto:Shawn.B.Mahaney@usace.army.mil]  
Sent: Friday, June 12, 2015 10:37 AM  
To: Mahaney, Wende; Kern, Mark  
Subject: FW: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

Hi Guys,

Info on the Juniper Ridge Landfill and what they are proposing for mitigation.

Any thoughts?

The original plan is attached as well. I told them that the original wouldn't cut it. A small piece that is stuck all by itself with the potential to be surrounded. So, I told them to look for something else. They asked if anything on site would work and I said maybe but it would have to be big (like the remainder of the property). That's what they are looking at now.

Thanks

Have a good weekend.

Shawn

-----Original Message-----

From: Emerson, Bryan [mailto:bryan.emerson@stantec.com]  
Sent: Thursday, June 11, 2015 2:44 PM  
To: Mahaney, Shawn B NAE; Caron, Lynn A (Lynn.A.Caron@maine.gov); Jim.R.Beyer@maine.gov

## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

Cc: Michael.Barden@maine.gov; william.laubenstein@maine.gov; don.meagher@casella.com; Toni King (toni.king@casella.com) (toni.king@casella.com); Mike Booth (msb@smemaine.com); TDoyle@PierceAtwood.com; Brian Rayback (brayback@PierceAtwood.com); Riley, Jake; Stewart, Doug (Topsham)  
Subject: [EXTERNAL] Juniper Ridge Landfill revised compensation plan

Shawn/Lynn/Jim,

Please find attached 2 figures related to the compensation plan for the proposed expansion of the Juniper Ridge landfill in Old Town, ME. First, there is a map depicting the revised conceptual mitigation plan. As you will see, the plan consists of on-site preservation that has been substantially increased based on your feedback during the project meeting on April 27th. Since that meeting, Stantec has completed vernal pool surveys on the entire property, which have guided the current proposal. Second, I have included a figure showing the proposed project impacts, which will be included in the Function-Value Assessment that is part of the application. I have included this figure at Shawn's request so you can compare the impacts with the proposed preservation. The following highlights the major differences in the proposed mitigation plan from the last proposal:

1. The previously proposed preservation site was 88 acres in size. The new proposed preservation area is a contiguous 266 total acres and includes approximately 57 acres of wetlands. A site of this size can function as an independent ecological unit that provides more than suitable compensation for the resources being impacted.
2. 266 total acres far exceeds the minimum requirements (i.e., ratios) for preservation based on the proposed impacts. As shown on the attached impact figure, the proposed expansion proposes approximately 2.04 acres of wetland impact, plus approximately 94 acres of impact to the 750' VPMA surrounding 6 man-made jurisdictional vernal pools. 4 of these pools had 4 total egg masses or less. 1 VP had 18 spotted salamander egg masses (01BE) and one pool had 3 wood frogs and 47 spotted salamander egg masses (VP15). Note that there are 2 natural vernal pools (each containing less than 4 egg masses) shown on the impact figure that are not located in wetlands, and are not SVPs, and therefore are not jurisdictional to MDEP or the Corps. These two pools are not included in the impact calculations. Using the Corps ratio guidelines, the minimum requirement for preservation to compensate for the wetland impacts would be approximately 31 acres (15:1 ratio for 2.04 acres of impacts), plus the 94 acres of VPMA impacts for total of 125 acres. This 266-acre preservation proposal is more than double the required minimum. This proposal would also provide compensation for the approximately 0.1 acres of wetland clearing impact also associated with the project. This includes clearing impacts to one man-made vernal pool near the existing access road.
3. The proposed preservation area includes approximately 57 acres of wetlands. This acreage for wetlands alone exceeds the minimum 15:1 ratio for preservation, and that does not include the additional 209 acres of upland that would also be preserved providing valuable buffering capacity to the wetlands. The uplands that would be protected include large contiguous tracts of developable land that would be unavailable for future development.
4. The proposed preservation area includes 25 vernal pools, 3 of which are SVPs. An additional 8 vernal pools were high-functioning pools (egg mass counts exceeding SVP thresholds but did not meet SVP criteria). The vernal pool habitat provided in the preservation area more than adequately compensates for the impacts within the expansion area and includes critical adjacent terrestrial habitat.
5. The functions and values provided by the wetlands the project would impact are limited, but include floodwater alteration, sediment/toxicant retention, nutrient removal, production export, and wildlife habitat. None of these functions are considered principal functions for any of these wetlands.
6. On the other hand, the 266 acre parcel contains wetlands with higher functions and values than the impacted wetlands. Specifically, the preservation area wetlands provide wildlife habitat, floodwater alteration, sediment/toxicant retention, and nutrient removal as principal functions. The site also contains many more highly productive vernal pools than those being impacted, and natural vernal pools as opposed to man-made pools.
7. The preservation area will be protected by a conservation easement to be held by the Maine Department of Inland Fisheries and Wildlife.
8. The new preservation area now fully encompasses the area that was previously preserved for the initial project compensation in the early 1990's, providing additional protection to the stream corridor in the northwest portion of the site.

## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

9. The maximum extent of any future landfill development has been considered in the formation of this preservation area. Therefore, no future impacts to this preservation area would be expected as a result of any future landfill development.

We would appreciate your comments and feedback on this conceptual plan. If you agree to this plan, we would also like to discuss the possibility of using the extra mitigation provided as a mitigation credit toward potential future wetland impacts associated with future expansion of the landfill, as we discussed at the April 27th meeting.

Please don't hesitate to contact us if you have any questions. We look forward to hearing from you.

Thank you,

--Bryan

Bryan Emerson, PWS

Project Manager | Wetland Scientist  
Stantec  
30 Park Drive Topsham ME 04086-1737  
Phone: (207) 406-5462  
Cell: (207) 355-1082  
Fax: (207) 729-2715  
bryan.emerson@stantec.com <mailto:bryan.emerson@stantec.com>

Stantec <<http://www.stantec.com/>>

The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

♻ Please consider the environment before printing this email.

Classification: UNCLASSIFIED  
Caveats: NONE

Classification: UNCLASSIFIED  
Caveats: NONE



JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

Classification: UNCLASSIFIED  
Caveats: NONE

## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

---

**From:** Caron, Lynn A <Lynn.A.Caron@maine.gov>  
**Sent:** Thursday, June 25, 2015 4:05 PM  
**To:** Emerson, Bryan  
**Subject:** RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Hi Bryan, sorry for the delay, still catching up.  
We believe the proposed compensation plan will acceptable for the proposed wetland impacts.  
I'll be looking for the application in the near future!  
Lynn

-----Original Message-----

**From:** Emerson, Bryan [mailto:bryan.emerson@stantec.com]  
**Sent:** Thursday, June 25, 2015 10:54 AM  
**To:** Mahaney, Shawn B NAE  
**Cc:** Caron, Lynn A; Beyer, Jim R; Riley, Jake  
**Subject:** RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Thank you Shawn.

Lynn and Jim, if you can please provide DEP's thoughts on this proposed plan, that would be great and would keep us moving forward with the application.

Thanks!

--Bryan

-----Original Message-----

**From:** Mahaney, Shawn B NAE [mailto:Shawn.B.Mahaney@usace.army.mil]  
**Sent:** Thursday, June 25, 2015 10:40 AM  
**To:** Emerson, Bryan  
**Cc:** Caron, Lynn A (Lynn.A.Caron@maine.gov); Jim.R.Beyer@maine.gov; Riley, Jake  
**Subject:** RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

Hi Bryan,

You are correct.

Shawn

-----Original Message-----

**From:** Emerson, Bryan [mailto:bryan.emerson@stantec.com]  
**Sent:** Thursday, June 25, 2015 10:37 AM  
**To:** Mahaney, Shawn B NAE  
**Cc:** Caron, Lynn A (Lynn.A.Caron@maine.gov); Jim.R.Beyer@maine.gov; Riley, Jake  
**Subject:** [EXTERNAL] RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Shawn,  
Thanks for talking this morning. And thanks for forwarding the response from EPA.

As we discussed, I just wanted to confirm that based on the comments from EPA, you think that the proposed 266-acre preservation area would likely be an acceptable compensation plan to the Corps for the proposed wetland/VP impacts for the Juniper Ridge Landfill expansion project. We understand that the concept of future mitigation credit

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

may not be acceptable, but the preservation area as proposed should provide acceptable compensation for the current proposed impacts. This is under the assumption that MDIFW (or another third party) can hold the conservation easement. To Mark's 4th point below, I understand that his reference to preserving less now would have to be done off-site and adjacent to other protected area, and that preserving less on-site likely would not be acceptable for you.

Can you please respond to this email and confirm that I've understood everything correctly? Or correct/clarify anything as needed.

Lynn/Jim, do you think that DEP would be amenable to the proposed 266-acre preservation plan as well?

Thanks,  
--Bryan

-----Original Message-----

From: Mahaney, Shawn B NAE [mailto:Shawn.B.Mahaney@usace.army.mil]  
Sent: Thursday, June 25, 2015 10:03 AM  
To: Emerson, Bryan  
Subject: FW: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

-----Original Message-----

From: Kern, Mark [mailto:kern.mark@epa.gov]  
Sent: Thursday, June 18, 2015 3:30 PM  
To: Mahaney, Shawn B NAE; Mahaney, Wende  
Cc: Ladd, Ruth M NAE; Minkin, Paul NAE; LeClair, Jacqueline  
Subject: [EXTERNAL] RE: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Hi Shawn,

Thanks for the information. Here is my quick take on the proposal to fill 2 acres of wetland, including 2 VPs, and cause other secondary impacts to other VPs. They propose to protect 266 acres on-site, containing 26 vernal pools.

- 1) normally I do not care for protection on-site, but this is a large one with lots of VPs. Some of the preservation next to the landfill will be impacted by the development, especially the VPs, but most of the site should be OK.
- 2) assuming they have a good easement holder -- (Is ME inland FW for sure or are they thinking about it?) -- I think it is a fair deal for us.
- 3) I am opposed to any informal banking for future wetland filling.
- 4) If they think it is too much mitigation it would be far better to either permit all the future impacts now or do less of the protection now. We would also have to spend some time sorting out debits and credits to try and figure this out. Paul and Ruth will have to take some advanced math classes. I suspect that the applicant may be right, but they may not have a much extra mitigation as they think (once we consider the secondary impacts from the development on the mitigation site).

Take care, Mark

-----Original Message-----

From: Mahaney, Shawn B NAE [mailto:Shawn.B.Mahaney@usace.army.mil]  
Sent: Friday, June 12, 2015 10:37 AM  
To: Mahaney, Wende; Kern, Mark  
Subject: FW: Juniper Ridge Landfill revised compensation plan (UNCLASSIFIED)

Classification: UNCLASSIFIED



## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

Caveats: NONE

Hi Guys,

Info on the Juniper Ridge Landfill and what they are proposing for mitigation.

Any thoughts?

The original plan is attached as well. I told them that the original wouldn't cut it. A small piece that is stuck all by itself with the potential to be surrounded. So, I told them to look for something else. They asked if anything on site would work and I said maybe but it would have to be big (like the remainder of the property). That's what they are looking at now.

Thanks

Have a good weekend.

Shawn

-----Original Message-----

From: Emerson, Bryan [mailto:bryan.emerson@stantec.com]

Sent: Thursday, June 11, 2015 2:44 PM

To: Mahaney, Shawn B NAE; Caron, Lynn A (Lynn.A.Caron@maine.gov); Jim.R.Beyer@maine.gov

Cc: Michael.Barden@maine.gov; william.laubenstein@maine.gov; don.meagher@casella.com; Toni King (toni.king@casella.com) (toni.king@casella.com); Mike Booth (msb@smemaine.com); TDoyle@PierceAtwood.com; Brian Rayback (brayback@PierceAtwood.com); Riley, Jake; Stewart, Doug (Topsham)

Subject: [EXTERNAL] Juniper Ridge Landfill revised compensation plan

Shawn/Lynn/Jim,

Please find attached 2 figures related to the compensation plan for the proposed expansion of the Juniper Ridge landfill in Old Town, ME. First, there is a map depicting the revised conceptual mitigation plan. As you will see, the plan consists of on-site preservation that has been substantially increased based on your feedback during the project meeting on April 27th. Since that meeting, Stantec has completed vernal pool surveys on the entire property, which have guided the current proposal. Second, I have included a figure showing the proposed project impacts, which will be included in the Function-Value Assessment that is part of the application. I have included this figure at Shawn's request so you can compare the impacts with the proposed preservation. The following highlights the major differences in the proposed mitigation plan from the last proposal:

1. The previously proposed preservation site was 88 acres in size. The new proposed preservation area is a contiguous 266 total acres and includes approximately 57 acres of wetlands. A site of this size can function as an independent ecological unit that provides more than suitable compensation for the resources being impacted.
2. 266 total acres far exceeds the minimum requirements (i.e., ratios) for preservation based on the proposed impacts. As shown on the attached impact figure, the proposed expansion proposes approximately 2.04 acres of wetland impact, plus approximately 94 acres of impact to the 750' VPMA surrounding 6 man-made jurisdictional vernal pools. 4 of these pools had 4 total egg masses or less. 1 VP had 18 spotted salamander egg masses (01BE) and one pool had 3 wood frogs and 47 spotted salamander egg masses (VP15). Note that there are 2 natural vernal pools (each containing less than 4 egg masses) shown on the impact figure that are not located in wetlands, and are not SVPs, and therefore are not jurisdictional to MDEP or the Corps. These two pools are not included in the impact calculations. Using the Corps ratio guidelines, the minimum requirement for preservation to compensate for the wetland impacts would be approximately 31 acres (15:1 ratio for 2.04 acres of impacts), plus the 94 acres of VPMA impacts for total of 125 acres. This 266-acre preservation proposal is more than double the required minimum. This proposal would also provide compensation for the approximately 0.1 acres of wetland clearing impact also associated with the project. This includes clearing impacts to one man-made vernal pool near the existing access road.

## JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

3. The proposed preservation area includes approximately 57 acres of wetlands. This acreage for wetlands alone exceeds the minimum 15:1 ratio for preservation, and that does not include the additional 209 acres of upland that would also be preserved providing valuable buffering capacity to the wetlands. The uplands that would be protected include large contiguous tracts of developable land that would be unavailable for future development.
4. The proposed preservation area includes 25 vernal pools, 3 of which are SVPs. An additional 8 vernal pools were high-functioning pools (egg mass counts exceeding SVP thresholds but did not meet SVP criteria). The vernal pool habitat provided in the preservation area more than adequately compensates for the impacts within the expansion area and includes critical adjacent terrestrial habitat.
5. The functions and values provided by the wetlands the project would impact are limited, but include floodwater alteration, sediment/toxicant retention, nutrient removal, production export, and wildlife habitat. None of these functions are considered principal functions for any of these wetlands.
6. On the other hand, the 266 acre parcel contains wetlands with higher functions and values than the impacted wetlands. Specifically, the preservation area wetlands provide wildlife habitat, floodwater alteration, sediment/toxicant retention, and nutrient removal as principal functions. The site also contains many more highly productive vernal pools than those being impacted, and natural vernal pools as opposed to man-made pools.
7. The preservation area will be protected by a conservation easement to be held by the Maine Department of Inland Fisheries and Wildlife.
8. The new preservation area now fully encompasses the area that was previously preserved for the initial project compensation in the early 1990's, providing additional protection to the stream corridor in the northwest portion of the site.
9. The maximum extent of any future landfill development has been considered in the formation of this preservation area. Therefore, no future impacts to this preservation area would be expected as a result of any future landfill development.

We would appreciate your comments and feedback on this conceptual plan. If you agree to this plan, we would also like to discuss the possibility of using the extra mitigation provided as a mitigation credit toward potential future wetland impacts associated with future expansion of the landfill, as we discussed at the April 27th meeting.

Please don't hesitate to contact us if you have any questions. We look forward to hearing from you.

Thank you,

–Bryan

Bryan Emerson, PWS

Project Manager | Wetland Scientist  
Stantec  
30 Park Drive Topsham ME 04086-1737  
Phone: (207) 406-5462  
Cell: (207) 355-1082  
Fax: (207) 729-2715  
bryan.emerson@stantec.com <mailto:bryan.emerson@stantec.com>

# JUNIPER RIDGE LANDFILL EXPANSION PROJECT: WETLAND COMPENSATION PLAN

July 15, 2015

Stantec <<http://www.stantec.com/>>

The content of this email is the confidential property of Stantec and should not be copied, modified, retransmitted, or used for any purpose except with Stantec's written authorization. If you are not the intended recipient, please delete all copies and notify us immediately.

ü Please consider the environment before printing this email.

Classification: UNCLASSIFIED  
Caveats: NONE

Classification: UNCLASSIFIED  
Caveats: NONE

Classification: UNCLASSIFIED  
Caveats: NONE



**APPENDIX A**

**VISUAL EVALUATION FIELD SURVEY CHECK LIST  
AND VISUAL ASSESSMENT**



5. Are any of the resources checked in question 1 used by the public during the time of year during which the activity will be visible?  Yes  No

A listing of National Natural Landmarks and other outstanding natural features in the State of Maine can be found at: [www.nature.nps.gov/nnl/Registry/USA\\_map/states/Maine/maine.htm](http://www.nature.nps.gov/nnl/Registry/USA_map/states/Maine/maine.htm) . In addition, unique natural areas are listed in the Maine Atlas and Gazetteer published by DeLorme.

(pink)

Most Maine State and National Wildlife Refuges, Sanctuaries, and Preserves and State Game Refuges are listed in the Maine Atlas and Gazetteer published by DeLorme.

Most State and federal trails are listed in the Maine Atlas and Gazetteer published by DeLorme. In addition, the Maine Department of Conservation maintains a list of state parks with trails that can be searched by county at: [www.state.me.us/doc/parks/programs/db\\_search/index.html](http://www.state.me.us/doc/parks/programs/db_search/index.html)

Maine sites and structures listed on the National Register of Historic Places pursuant to the National Historic Preservation Act of 1966, as amended, can be searched by town at: [www.cr.nps.gov/nr/research/nris.htm](http://www.cr.nps.gov/nr/research/nris.htm)

In addition, State historic sites can be found at:

[www.state.me.us/doc/parks/programs/db\\_search/index.html](http://www.state.me.us/doc/parks/programs/db_search/index.html) A partial listing of historic sites in Maine can be found in the Maine Atlas and Gazetteer published by DeLorme.

A listing of Maine State Parks can be found at:

[www.state.me.us/doc/parks/programs/db\\_search/index.html](http://www.state.me.us/doc/parks/programs/db_search/index.html) or in the Maine Atlas and Gazetteer published by DeLorme. Acadia National Park on Mount Desert Island is Maine's only National Park.

For guidance on completing this field survey checklist, please contact Licensing staff in the Division of Land Resource Regulation at the following offices:

(Headquarters)  
Central Maine Regional Office  
17 State House Station  
Ray Building, Hospital Street  
Augusta, Maine 04333  
(207) 287-3901 or  
toll free at 1-800-452-1942

Eastern Maine Regional Office  
106 Hogan Road  
Bangor, Maine 04401  
(207) 941-4570 or  
toll free at 1-888-769-1137

Northern Maine Regional Office  
1235 Central Drive  
Presque Isle, Maine 04769  
(207) 764-0477 or  
toll free at 1-888-769-1053

Southern Maine Regional Office  
312 Canco Road  
Portland, Maine 04103  
(207) 822-6300 or  
toll free at 1-888-769-1036

(pink)



# Visual Assessment Report Juniper Ridge Landfill

Old Town, Maine

Prepared for:  
NEWSME Landfill Operations, LLC  
and  
Maine Bureau of General Services

July 2015



**Submitted by:**

SMRT Architects and Engineers  
144 Fore St., P.O. Box 618  
Portland, Maine 04101  
p 207.772.3846

This report presents the Visual Assessment completed for the expansion of the Juniper Ridge Landfill (JRL) as proposed by the Maine Bureau of General Services (BGS), as owner, and NEWSME Landfill Operations, LLC (NEWSME), as operator, to the Maine Department of Environmental Protection (MEDEP). The JRL Expansion (the Expansion) will be located directly to the north and adjacent to the existing JRL on a 780-acre parcel of land in west Old Town, Maine and will expand the current licensed footprint from 68 acres to 122 acres. The Visual Assessment (VA) was completed to evaluate whether the Expansion will have an unreasonable adverse effect on existing uses and scenic character, and, specifically, whether it will unreasonably interfere with views from “established public viewing areas” in accordance with the requirements of Maine Solid Waste Management Rules Chapter 400.4.F(1)(c) and (e); MEDEP Rules Chapter 315 *Assessing and Mitigating Impacts to Existing Scenic and Aesthetic Uses*; and similar requirements of Chapter 24 Solid Waste Facilities of the Town of Old Town Code (§24-8.M).

As defined in MEDEP Chapter 400.1, ““Public viewing area” means an area designated for the public to view scenic areas, historical sites, unusual natural features or public monuments. These areas include but are not limited to scenic highways; public easements; scenic turnouts; public monuments; and national, state or municipal parks.” The City of Old Town Chapter 24 Solid Waste Facilities’ Ordinance uses this same definition.

The Expansion is being reviewed for a Tier III permit application under the Natural Resource Protection Act for wetland impact. This VA was also completed in accordance with MEDEP Rules Chapter 315 which state that “An applicant is required to demonstrate that the proposed activity will not unreasonably interfere with existing scenic and aesthetic uses of a scenic resource” as defined. Chapter 315.5.H (Definitions) defines a scenic resource as “Public natural resources or public lands visited by the general public, in part for the use, observation, enjoyment, and appreciation of natural or cultural visual qualities.”

This VA confirmed that the Expansion will satisfy the above-referenced standards.

I. Executive Summary

The proposed Expansion has been studied through computer-generated and photo-simulation modeling with ground-based confirmation to assess and approximate the appearance of the Expansion from selected vantage points. The study was performed using U. S. Forest Service standards, and guidelines in MEDEP Chapter 315, *Assessing and Mitigating Impacts to Existing Scenic and Aesthetic Uses*. Stakeholders, including state agencies, surrounding municipalities, and the Penobscot Indian Nation, were engaged to determine the presence of public viewing areas “within 2,000 feet” of the facility, the specified area identified by MEDEP’s Chapter 400.4.F(3)(b) and the City of Old Town’s Ordinance, and other areas of potential scenic significance. In response to questions raised in Public Milestone Meeting #2 on October 16, 2014 about the possibility of views from the western shore of Pushaw Lake and vicinity, the study area was conservatively expanded to 6 miles to include this vantage point.

No “public viewing” areas as defined were identified within 2,000 feet of the facility. Potential scenic resources within the study area include Pushaw Lake, Pushaw Stream, Penobscot River, Stillwater River, Hirundo Wildlife Refuge, Sunkhaze Meadows National Wildlife Refuge, and Mud Pond (*aka* Perch Pond and the Perch Pond Recreational Trails). Of these, Pushaw Lake, Sunkhaze Meadows National Wildlife Refuge, Hirundo Wildlife Refuge, and Perch Pond Recreational Trails, are all arguably , as defined in MEDEP Chapter 315.10 ‘Scenic Resources’ (please refer to **MEDEP VISUAL EVALUATION FIELD SURVEY CHECKLIST following this narrative**). To be conservative, these additional locations were also considered in the course of this VA. This VA determined that defined or potential scenic resources within the area as described above either do not have views to the landfill, or are at such distance (“background” as defined by USFS) that the views to the landfill have no unreasonable visual impact. Views of the facility from area roadways within 6 miles include those from Route 16 (intermittent and infrequent), from I-95 southbound (broken by roadside vegetation and distant), and from Route 43 (effectively screened by plantings previously installed as a visual buffer by the Applicant) and are not defined public viewing areas, scenic resources, or scenic byways.

Therefore, the Expansion is determined to have “no unreasonable adverse effect on existing uses and scenic character”, will not “unreasonably interfere with views from



established public viewing areas", nor will it "unreasonably interfere with existing scenic and aesthetic uses of a scenic resource".

## II. Introduction

SMRT, Inc. (SMRT) has been retained by NEWSME and BGS to conduct a visual impact analysis in accordance with Maine Department of Environmental Protection (MEDEP) and City of Old Town solid waste licensing requirements as stated above and elsewhere in this application. The following details and summarizes the process, findings, and conclusions of this analysis.

## III. Background

The original design and permitting for the JRL, a new landfill facility in west Old Town, Maine (James River Paper Company landfill) took place in the early 1990's. In fulfillment of DEP Solid Waste Management Act and City of Old Town permitting requirements, a visual impact assessment (VIA) was performed by Maine registered landscape architect Dennis V. Jud, ASLA, Principal of the firm of Environmental Analysis and Design in Portland, Maine ("Visual Impact Assessment, West Old Town Landfill Facility, James River Paper Company, Inc., submitted to Sevee & Maher Engineers, Inc.", dated July 31, 1991).

An application for Amendment to the MEDEP license for JRL was sought in 2003 by the State Planning Office (SPO), though its agent NEWSME, which was selected by the State to operate the landfill. The State, through SPO, acquired JRL pursuant to a Maine legislative Resolve in early 2004. An updated visual study was prepared for the application by Mr. Jud, by then a Principal at SMRT, Inc. ("Updated Visual Impact Assessment, West Old Town Landfill, Amendment Application for a Vertical Increase and Change to Landfill Operations", dated October 31, 2003). The vertical amendment application proposed a finished height of elevation 390' above mean sea level (MSL) from the prior 270', plus some operational revisions. An Amendment Order With Conditions (MEDEP #S-020700-WD-N-A) was issued by the DEP on April 9, 2004. Two conditions pertained to the facility's visual impact:

22. *The applicant shall conduct a future visual analysis, performed when the final elevation of the landfill reaches 330 feet, and demonstrate that the results agree with the projections provided in the application. If that demonstration cannot be made, the applicant shall propose alternative mechanisms for meeting the visual impact standards of the Rules within 1 month of the date of the visual analysis.*
  
23. *The applicant shall negotiate in good faith with the Route 43 landowner for permission to plant a tree screen in the location identified in the visual impact assessment.*

The landfill reached the 330 foot elevation in early April 2014, and NEWSME contacted and retained SMRT to perform the visual analysis as described in condition 22 above. Condition 23 was met by NEWSME, establishing a visual screen in 2008. Mark G. Johnson, ASLA, Senior Landscape Architect, a Maine registered landscape architect, of SMRT performed the analysis, Mr. Jud having retired some years prior. The resulting study concluded that the conditions of approval as defined above had been met. The MEDEP concurred with the study conclusion and issued a Condition Compliance Order # S-020700-WD-BH-C on October 7, 2014.

In 2014, Mr. Johnson was retained by NEWSME to perform the VIA for the JRL Expansion as proposed in this application.

#### IV. Process Overview

Mr. Johnson, a registered landscape architect since 1982, has practiced in the state of Maine since 1986. Prior to that, his experience in visual impact analysis included work on the George Washington National Forest with the U.S. Forest Service based in Harrisonburg, VA, utilizing the Bureau of Land Management VIA methodology. He was briefly involved with the original 1991 VIA as a consultant to Mr. Jud.

Preparation of this study included the following:

1. Review of existing documentation: This included reports and supporting materials from the 1991 and 2003 efforts.
2. GIS-based modeling of the JRL site and identification of locations with potential views of the landfill.
3. Correspondence with municipalities, state agencies, and the Penobscot Indian Nation to determine potential for visual impact.
4. Temporary installation of weather balloons to model proposed maximum landfill elevation.
5. Assessment of potential viewpoints and photo-documentation of the site from them (if visible) with temporary balloon installation in place.
6. Integration of CAD generated modeling of the full landfill build-out into photo-documentation of the site.
7. Assessment of potential visual impact.
8. Reporting of findings, conclusions, and recommendations.

V. Methodology

This assessment is conducted in the manner of an “expert study” wherein practices previously defined and accepted in the industry are employed. This assessment is based in part on the parameters and findings previously established in prior studies performed for the JRL facility, and incorporates them by reference. The methods utilized for this study and assessment of the proposed expansion are as follows.

- a. Computer Model: The engineers of record for the facility - Sevee & Maher Engineers, Inc., Cumberland, Maine - provided SMRT with AutoCAD drawing files (.dwg) of the existing site and proposed expansion. A computer generated surface was created in AutoCAD Civil 3D utilizing the proposed topographic contours.
- b. GIS Simulation: The purpose of this simulation was to create a guidance mechanism that would point to potential viewing points to the proposed Expansion site in the surrounding landscape. This method is the current technological equivalent for determination of potential viewsheds by the “line-of-site-profile” (MEDEP Chapter 315, Appendix A), or other geometric and trigonometric methods such as the “similar triangles” method (Jud 4). Geographic Information System (GIS) files for topography, roads, and other features in the vicinity surrounding the JRL site were downloaded from the Maine Office of GIS (MeGIS) website and assembled utilizing the ESRI ArcView GIS program. Vegetative land cover for the area was obtained from the joint



federal-state sponsored Maine Landcover database (2004). The data sets were combined to create a surface approximating terrain plus vegetation elevation. Vegetation types were defined and average elevations conservatively set as follows. (Note: Forest cover in the area was observed to be generally second or later growth with heights typically in excess of 40').

- i. Forest: 40' height (minimum conservative dimension)
- ii. Scrub/shrub: 10' height
- iii. Crops/farmland: 1' height

Using the ArcView software, the top of the Expansion was set as a viewing point, a non-regulatory 6-mile distance zone from the landfill was established in response to questions raised in Public Milestone Meeting #2 on October 16, 2014 about the possibility of views from the western shore of Pushaw Lake and vicinity. Therefore the study area was conservatively expanded to 6 miles to include this vantage point in response to this inquiry. Areas within that zone that could be seen from the landfill top were identified (**please refer to attached Figure 2**). The "viewable" areas appear as bright green squares singly or in clusters. The squares result from the way GIS databases are created and displayed based on 100 meter by 100 meter data "cells". These areas, therefore, are those from which the landfill potentially could be seen according to the model, and large concentrations of them (large green areas) are areas of more pronounced visibility. They were then compared with mapped features and sites identified as being potential public areas. Only those areas that were both identified as being a potential public viewing area or a scenic resource (as defined in Chapter 315) and a modeled view area were visited in the field.

- c. Stakeholder Engagement: Municipalities falling within the 6-mile distance zone as defined above and state agencies with jurisdiction over "public viewing areas" and scenic resources were identified. The Penobscot Indian Nation also fell within the view zone. These entities were notified about the Expansion and requested to provide information regarding potential impact areas. One township, Argyle Township, lies within the area and was not contacted because it is largely uninhabited (less than 300 persons according to the 2010 Census), and an unorganized township without accessible scenic resources. Those contacted include:
  - i. City of Old Town
  - ii. Town of Alton
  - iii. Town of Glenburn
  - iv. Town of Greenbush
  - v. Town of Hudson
  - vi. Town of Milford
  - vii. Penobscot Indian Reservation
  - viii. Maine Bureau of Parks and Lands

ix. Maine Department of Transportation

A copy of the sample contact letter and responses are appended to this report (please see Appendix C). Of those entities contacted, all but the Penobscot Indian Reservation (after repeated contact) responded.

- d. Physical Simulation: In addition to computer modeling, the proposed landfill expansion was simulated in the field. Two 5.5-foot diameter weather balloons (color: red) were floated at strategically located points and elevations corresponding to the future ridgeline of the Expansion landfill (please see Figure 3). The southernmost balloon was set at a height corresponding to elevation 390' MSL and represented the southern end of the Expansion and final landfill elevation. The northernmost balloon was set at an elevation of 386' above MSL and represented the northern end of the Expansion ridgeline. Using these as visual markers, coordination of the computer model and photographic image could reasonably be achieved. Coordinates and elevations of the final balloon locations were obtained using GPS equipment in the field. Potential viewing locations, as identified by stakeholders, were visited in addition to the previously established Rt. 43 (Hudson Road) location to determine actual field visibility of the proposed landfill expansion.
- e. Photographic Documentation: Potential viewing locations identified by area stakeholders and which coincided with modeled view areas as described above were visited to confirm if views to the Expansion were possible. At locations with views to the Expansion and confirmed by balloon simulation, photographs were taken to simulate "normal" viewing angles and heights. "Normal" vision is best simulated using a 58 mm lens with a standard 35 mm camera or its modern equivalent, the digital single-lens reflex camera with full-frame sensor, as described below.
- Time/conditions: Sites were visited and photographs captured on April 9, 2015. Weather conditions were overcast in the morning and early afternoon with a high cloud ceiling (allowing clear sight to the balloons), temperatures in the 40's F, and light winds generally from the south. Conditions gradually cleared to mostly sunny and warming to the 50's F. The ground was partially snow-covered and, because it was very early spring, exposed ground was predominantly shades of brown, and deciduous trees were leafless. Photographing during this time of year was deemed to be best, exemplifying "worst case" conditions where, because of lack of leaf cover, the Expansion could most readily be seen.
  - Instrument:
    - Camera: Canon 6D DSLR (digital single-lens reflex with full-frame sensor); 21 megapixel
    - Image format: Initial image capture in camera RAW file format

- Lens: Canon EF 28-105mm f4.0
- Focal length: Approximately 58mm (“normal” view). NOTE: zoom lens settings are variable and presetting specific focal lengths is approximate. Metadata from gathered imagery indicated that zoom setting was 60 mm.
- Exposure: ISO 200
- Aperture: f8
- Shutter speed: varies
- Height of instrument:
  - “eye level” (standing): 5’-8”
  - “eye level” (standard automobile height): 4’-6” (6” added to account for road and shoulder crown)

Images were taken at each location with camera set and leveled on a tripod. A camera height of 4’-6” was used to best and most accurately simulate the view as seen by the “average viewer” in a standard automobile traveling north on Route 43. A height of 5’-8” was used elsewhere to simulate eye level for a 6-foot tall individual.

- f. Photographic Simulation: View locations from which the Expansion could be seen were recorded and entered into the AutoCAD computer model. From them, computer-generated views of the proposed landfill surface model were created and rendered. These views were then exported as image files, rendered using Adobe Photoshop CS5.1 software to closely approximate surface texture, color, contrast, and lighting, then combined as a photomontage with the corresponding photographs taken in the field to create a simulation of how the Expansion ultimately will appear.
- g. Assessment: The resulting photographic simulations were assessed based upon factors including contrast/congruity, scale, form, orientation, line, color, and texture.

## VI. Findings:

Viewpoint locations: Responses received from local and state agencies, with two exceptions, (Towns of Alton and Milford), indicated that there were no “public viewing areas” as defined within their jurisdictions or boundaries. The distance zones defined on the study maps include the 2,000 foot zone from the project site as required by Chapter 400, and the 6-mile zone from the project site described earlier. It should be noted that objects located greater than 4-miles from a viewer are classified as “background” as established by the U.S. Forest Service (USFS 4-4, 4-12) in which viewer positions are defined relative to distance from observed elements as follows:



- Immediate foreground (0' - 300')
- Foreground (0 - 0.5 mile)
- Middleground (0.5 - 4 miles)
- Background (4 miles - horizon)

In the landscape, the background consists of broadly discerned patterns and forms, lack of depth and detail, and an overall “simplified” character. Any viewing location, then, between the mandated 2,000-foot limit and 4-miles (i.e., in the middleground) could be considered as potentially more significant (when compared with other contributing factors) than a viewing location beyond 4-miles which would place the facility in the background.

It should be reemphasized here that the state’s Chapter 400 rules require study to only within 2,000 feet of the project.

The following lists sites considered as potentially impacted by the two municipalities (Alton and Milford), and a discussion of each (please refer to Figure 2).

- Alton
  - Hirundo Wildlife Refuge: This site is located off the Hudson Road proximate to Pushaw Stream and is approximately 3 miles from the project boundary and outside the 2,000 foot distance zone. Public access to the site is via one of three gated trails off the north side of the road. The area consists generally of a mix of wooded and wetland landscape. The GIS model indicated sporadic single-pixel cells of potential viewing areas. For this study, the closest access point to the JRL facility - Gate #1 - was investigated to a point approximately .25 mile into the site to a large open area designated for temporary parking. At no point did views open to the JRL site. If views can be had, it is likely that they are limited due to intervening vegetation and landform, and experienced by a small population segment. Therefore, it is concluded that this site will not be unreasonably impacted by the proposed Expansion.
- Milford:
  - Sunkhaze National Wildlife Refuge: This site, located to the east of JRL, lies mostly outside the assessment’s 6-mile distance zone including the primary public access points which lie off the County Road. The site was not visited for this reason. If views to the landfill exist they are likely limited, in the extreme background, and would comprise a very small angular portion of the observer’s field of view. Therefore, it is concluded that this site will not be unreasonably impacted by the proposed Expansion.
  - Downtown Milford Sites: Three sites were identified in this area and include the old Milford Dam, the Milford Playground located

immediately to the east of the dam, and the Lewis Libby School and Field approximately 0.2 mile further to the east. The dam site, as accessed from Davenport Street was signed as private property and so was not considered "public". No views to the JRL site were noted from the playground and school and were effectively blocked by intervening landform and vegetation. Therefore, it is concluded that these sites will not be unreasonably impacted by the proposed Expansion.

- North Milford Sites + Penobscot River: The river corridor, the Costigan Historical Cemetery, and the Public Boat Launch all along Rt. 2 were identified. The latter two sites were in close proximity to the intersection of Greenfield Road. No views to the JRL facility were noted at the sites or along the corridor and were effectively blocked by intervening landform and vegetation. Therefore, it is concluded that these sites will not be unreasonably impacted by the proposed Expansion.
- Rt. 43 / Hudson Road: Photo-documentation was performed of the proposed Expansion from points approximately 2,800 feet from the site as described above (**please refer to photosimulation exhibits in Appendix B**). View locations were proximate to CMP utility poles numbered 25, 26, and 27, corresponding to those studied in prior assessments (Jud, 1991; Johnson, 2014). The proposed Expansion extends the landfill form in a south-to-north direction with minimal east-west expansion of the apparent profile as viewed from the south. Therefore, the planned upper limit of elevation 390' will appear no different from what has been previously modeled, reviewed, and approved by the MEDEP and the City. Further, the planted screening previously installed by the Applicant along the northerly edge of Rt. 43 in this area will, as confirmed in prior assessments, effectively buffer views to the landfill as the plants continue to grow, and mitigate its visual impact upon those traveling northbound. Therefore, it is concluded that the Rt. 43 corridor in this area will not be unreasonably impacted by the proposed Expansion.
- Pushaw Lake Area: The area west of Pushaw Lake was studied by travel along Rt. 221 south from the Town of Hudson. Rt. 221 was left approximately 6.5 miles south of Hudson at Glenburn Center to proceed east on Lakeview Road. No views to the Expansion were observed along these roads. The GIS model indicated a concentration of potential viewing areas along the southwest shore of the lake. Though no "public viewing" areas as defined exist there, a number of private businesses catering to the public do. A location on Lucky's Landing - a private seaplane base - was chosen to study as being representative of potential views in the vicinity (**please refer to photosimulation exhibits in Appendix B**).

Binoculars were required to confirm siting of the landfill and balloons which could be seen low on the horizon. Human physiology creates a “binocular” cone of vision (both eyes overlapping individual visual fields) of approximately 166 degrees with the head being stationary (Swarden 40-42). Peripheral vision (monocular for each individual eye) adds to this for a resultant total field of vision of approximately 208 degrees. For reference, at a focal length of 60 mm, the camera “sees” a field of view of approximately 34 degrees. The width of the landfill Expansion from this viewing location is approximately 2500’ wide as appears above the tree line. At approximately 6 miles distance, this equates to a horizontal angle of approximately 4 degrees, or around 2.5% of the observer’s binocular field of view.

The Expansion from this viewing point appears low on the horizon, its contrast/congruity, scale, form, orientation, and line, are consistent with the surrounding landscape; and its color and texture do not create significant contrast. Therefore, it is concluded that the Pushaw Lake area will not be unreasonably impacted by the proposed Expansion.

- o Other scenic areas: In addition to agency and municipal contacts, state sponsored studies of lakes and rivers were reviewed. No lakes within the assessment area were identified as scenic. Note that, though listed in the lakes study, Pushaw Lake is identified only for wildlife, fisheries, botanic, and cultural resources, with “No significant (scenic) features reported.” (Parkin, Lortie, Humphrey, DiBello 62). No rivers within the assessment area were identified as scenic (Maine Department of Conservation). Therefore, it is concluded that no other potential scenic resources are unreasonably impacted by the proposed Expansion.

## VII. Conclusions:

No “public viewing areas” as defined according to Chapter 400 lie within 2,000 feet of the proposed landfill expansion. Further, no significant viewing locations or identified scenic resources from which the public in general could view the landfill exist within the conservative, and non-regulatory, distance of 6 miles of the site. Vehicular ways that may have visual connection to the landfill are not regarded by state standards for landfill licensing as “public viewing areas” or as identified “scenic byways”. Those that do have views - most notably Rt. 43 - are either visually screened and buffered, or as with Rt. 16 and I-95, have infrequent and intermittent views.

Because the landfill falls above the threshold (30 seconds of arc) for “normal” detection by the unaided eye (Swardon 45) when viewed from the 6-mile range, other factors must be considered to determine visual impact. The proposed Expansion is not a radical departure from that which has been and is currently permitted. As concluded



in the original visual assessment and supported in succeeding studies, the landfill when completed, capped, and vegetated “will appear highly congruous with the existing landscape in having a similar height, scale, form, orientation, and line as nearby hillsides, within existing landscape lines. The proposed landfill will be less than fully congruous with the existing forest character in color and texture.” (Jud 19). With respect to color and congruity, this last aspect refers to the basic difference in hue, saturation, and luminosity or brightness inherent to objects or surfaces. Ultimately, the Expansion will be closed and its surface fully planted in a grass mix and maintained. By nature, though planted, this surface will be different, but not totally inconsistent, with respect to color when compared to the surrounding landscape of mixed forest and fields.

During construction and operation of the landfill, the color and form will be different. As discussed in earlier studies, the operating landfill will have a generally gray color with operating equipment in view. It will gradually grow over time to its permitted final elevation. Prior to final capping, closed cells will be covered in black protective membrane. The relative contrast of these two conditions varies with season, weather, lighting, and distance. In winter, closed cells with snow cover blend with other snow-covered land forms, and the lighter gray operating areas will be more pronounced but will blend in with the warmer tones of intervening areas of leafless deciduous trees. At other times, the dark membrane may contrast more with the surroundings when viewed from the fore or middle ground, or when brightly front lit. These operational conditions are not inconsistent with those at present, which have been determined to not have an unreasonably adverse visual impact.

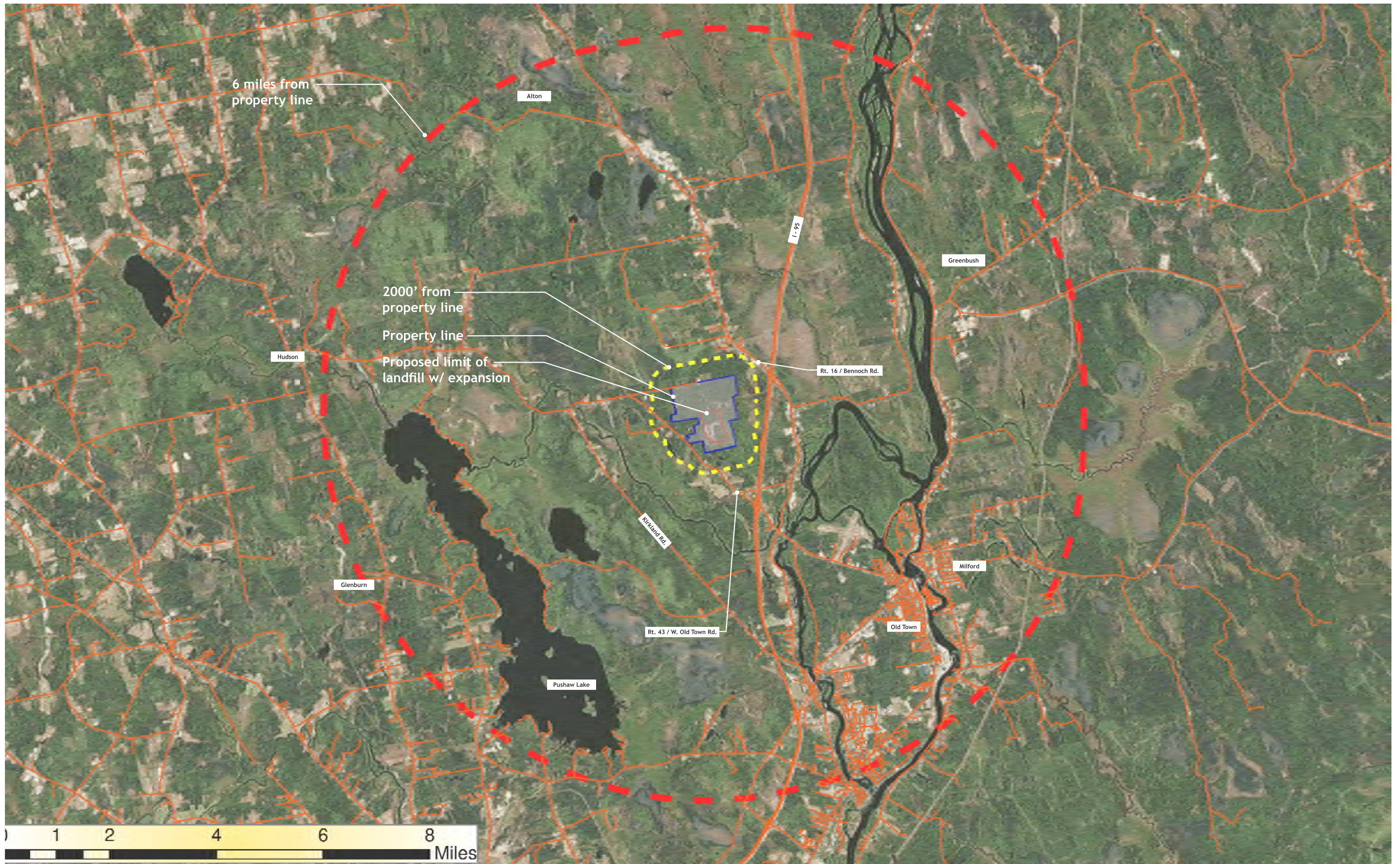
Therefore, and as presented herein, the proposed Expansion will not have an unreasonable adverse effect on existing uses, scenic character, and scenic resources in the area, and will not unreasonably interfere with views from established public viewing areas.

Citations:

1. Jud, Dennis V., *Visual Impact Assessment, West Old Town Landfill Facility, James River Paper Company, Inc.*, 1991; as amended.
2. Johnson, Mark G., *Maine Department of Environmental Protection - Condition Compliance, Solid Waste Order Amendment #S-020700-WD-N-A*, 2014
3. Smarden, Richard C., *Foundation for Visual Project Analysis*, United States, John Wiley & Sons, Inc., 1986
4. USDA Forest Service, *Landscape Aesthetics, A Handbook for Scenery Management*, 1995
5. Parkin, Lortie, Humphrey, DiBello; *Maine's Finest Lakes - The Results of the Maine Lakes Study*; Maine State Planning Office Critical Areas Program; 1989
6. Maine Department of Conservation, et al; *Maine Rivers Study - Final Report*; 1982





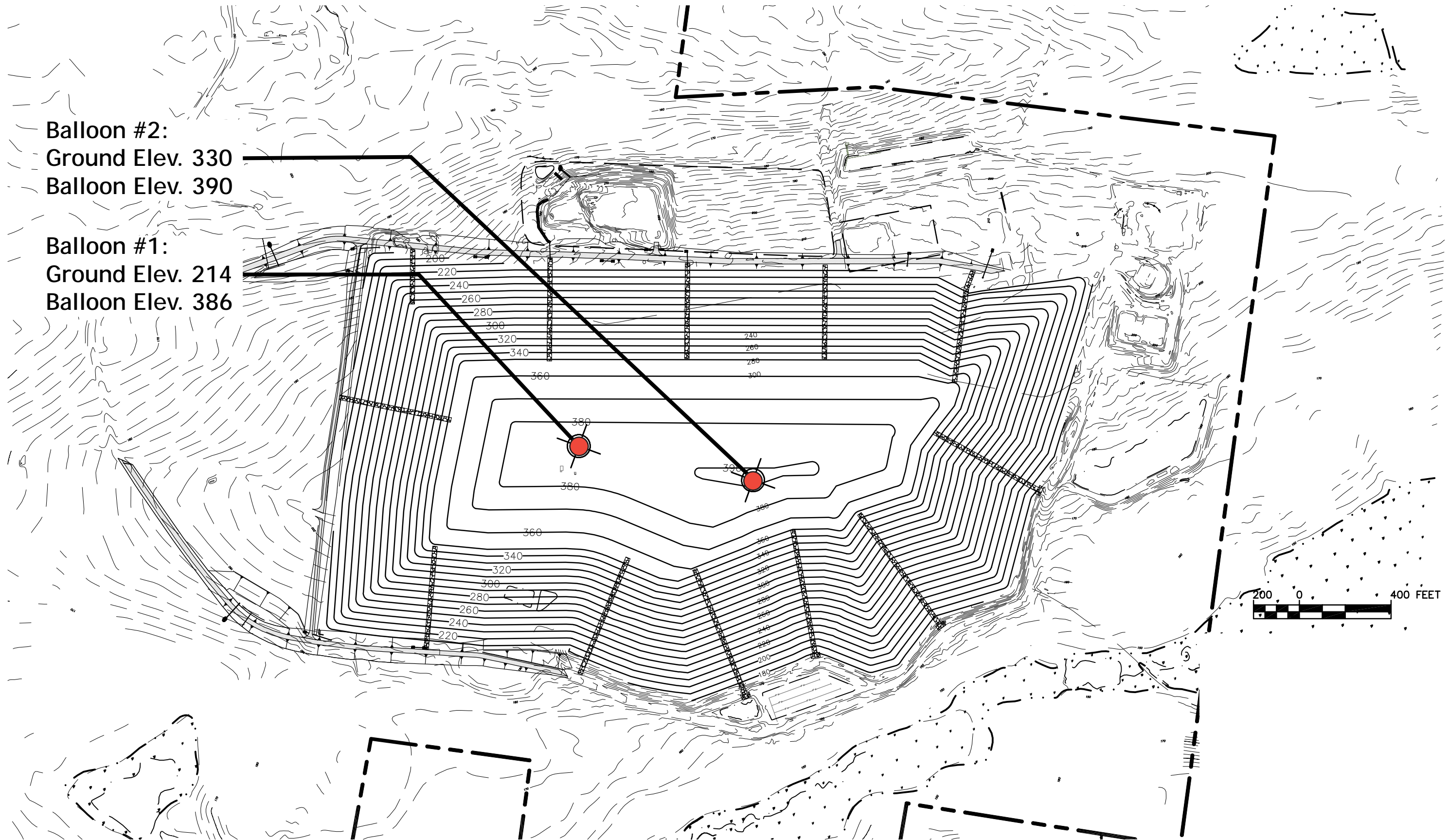


VISUAL ANALYSIS  
 FIGURE 1: CONTEXT PLAN









Balloon #2:  
 Ground Elev. 330  
 Balloon Elev. 390

Balloon #1:  
 Ground Elev. 214  
 Balloon Elev. 386

200 0 400 FEET



NEWSME Landfill Operations, LLC  
 Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
 FIGURE 3: BALLOON LOCATION PLAN







Camera Height ("eye level") = 4'-6"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Rt. 43 (Pole 25-26): Current

NTS  
14145  
JULY 2015





Camera Height ("eye level") = 4'-6"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Rt. 43 (Pole 25-26): Post-Closure

NTS  
14145  
JULY 2015





Camera Height ("eye level") = 4'-6"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Rt. 43 (Pole 26): Current

NTS  
14145  
JULY 2015





Crest of Expansion

Camera Height ("eye level") = 4'-6"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Rt. 43 (Pole 26): Post-Closure

NTS  
14145  
JULY 2015





Camera Height ("eye level") = 4'-6"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Rt. 43 (Pole 27): Current

NTS  
14145  
JULY 2015





Camera Height ("eye level") = 4'-6"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Rt. 43 (Pole 27): Post-Closure

NTS  
14145  
JULY 2015





Camera Height ("eye level") = 5'-8"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Lucky's Landing: Current

NTS  
14145  
JULY 2015



Camera Height ("eye level") = 5'-8"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
Telephoto View @ Lucky's Landing: Current

NTS  
14145  
JULY 2015





Camera Height ("eye level") = 5'-8"



NEWSME Landfill Operations, LLC  
Juniper Ridge Landfill Expansion

VISUAL ANALYSIS  
View @ Lucky's Landing: Post-Closure

NTS  
14145  
JULY 2015





November 20, 2014

John Banks, Director  
Department of Natural Resources  
Penobscot Indian Nation  
Tribal Administration  
12 Wabanaki Way,  
Indian Island, Maine 04468

Re:    Juniper Ridge Landfill  
      Old Town, Maine  
      SMRT Project #14145

Dear Mr. Banks,

We are preparing submission information for a permit amendment application to the State for the above-referenced facility for which an approximately 54-acre expansion is being proposed.

We request a letter of determination from your office addressing the presence and location of any "public viewing area" generally within a 4-mile radius, and specifically within 2000 feet, of the facility property (please see attached location map). Per Maine Department of Environmental Protection Chapter 400 rules, a public viewing area is defined as "*an area designated for the public to view scenic areas, historical sites, unusual natural features or public monuments. These areas include but are not limited to scenic highways; public easements; scenic turnouts; public monuments; and national, state or municipal parks.*"

Please let us know if you have any questions or require further information at this time.

Sincerely,  
SMRT

A handwritten signature in black ink, appearing to read "Mark G. Johnson", is written over a horizontal line. The signature is stylized and cursive.

Mark G. Johnson, ASLA  
Senior Landscape Architect  
Maine Registered Landscape Architect

144 Fore Street  
P.O. Box 618  
Portland, ME 04104  
p 207.772.3846 f 207.772.1070 email: mjohnson@smrtinc.com

Encl. Site Location Map

cc. file 14145/241







# Old Town

265 MAIN STREET \* OLD TOWN, MAINE 04468-1497

October 7, 2014

Mark Johnson  
SMRT  
144 Fore Street  
P.O. Box 618  
Portland, Maine 04104

**RE: SMRT Project # 14145. Scenic Viewing Area determination for JRL.  
2828 Bennoch Road, Old Town, Maine (Tax Map 003, Lot 001)**

Dear Mr. Johnson,

As per your request I am notifying you in writing as to the presence of any public viewing areas generally within a 4-mile radius, and specifically within 2,000 feet, of the Juniper Ridge Landfill facility property. After reviewing the City's tax maps, road maps and in speaking with staff with historical knowledge of the area, I find that there are no such viewing areas that the proposed, approximately 54 acre expansion, would effect.

If you have any questions or concerns, please feel free to contact me at the numbers listed below.

Sincerely,

David C. Russell  
Code Enforcement Officer

Cc: City Manager

David C. Russell, Code Enforcement Officer  
207-827-3965 x 205 Cell: 570-6798 Fax: 207-827-3966  
[drussell@old-town.org](mailto:drussell@old-town.org)

## Mark Johnson

---

**From:** Michael Falvey <falveym@glenburn.net>  
**Sent:** Tuesday, October 21, 2014 6:43 PM  
**To:** Mark Johnson  
**Subject:** Juniper Ridge

Dear Mr. Johnson,

In reference to your letter dates October 17, 2014. The Town of Glenburn does not have an area designated for the public viewing of scenic areas. To my knowledge there are no public viewing areas.

Regards,

**Michael Falvey**  
CEO/LPI/Building Official  
144 Lakeview Road  
Glenburn, ME 04401  
[falveym@glenburn.net](mailto:falveym@glenburn.net)  
Telephone:207-942-2905  
Fax:207-990-2953

Confidentiality Statement: The information contained in this electronic message, including attachments, is privileged and confidential information and is intended only for the use of the individual(s) to whom this electronic message is intended to be addressed. If you are not the intended recipient, do not read, print, or save this email. Any unauthorized review, use, disclosure or distribution of this email, its contents or the attachments, is strictly prohibited. If you have received this electronic communication in error, you should immediately notify the sender and delete the message.



cc: File 14145/241

**Mark Johnson**

---

**From:** Mike Polyot <mpolyot1@gmail.com>  
**Sent:** Thursday, October 30, 2014 9:39 AM  
**To:** Mark Johnson  
**Subject:** Juniper Ridge Expansion

Dear Mr. Johnson,

I have checked with The Hudson Selectpersons and the Planning Board members and local records about public viewing areas and find that there are no Public Viewing Areas in Hudson within 4 miles or specifically within 2000 ft. of the facility.

Sincerely,

Mike Polyot  
Code Enforcement Officer  
Hudson, Maine



STATE OF MAINE  
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY  
22 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333-0022

PAUL RICHARD LePAGE  
GOVERNOR

WALTER E. WHITCOMB  
COMMISSIONER

November 7, 2014

Mark G. Johnson, ASLA  
SMRT  
144 Fore Street  
P.O. Box 618  
Portland, ME 04104

RE: Request for Comment  
Juniper Ridge Landfill Expansion, Old Town, Maine

Dear Mr. Johnson,

The Bureau of Parks and Lands has reviewed the proposed expansion of the Juniper Ridge Landfill in Old Town, and has determined there are no public viewing areas designated at any parks, public lands, or historic sites under our authority in the vicinity of, or within view of this project.

Sincerely,

A handwritten signature in cursive script that reads "Katherine Eickenberg".

Katherine Eickenberg  
Chief of Planning and Acquisitions  
Bureau of Parks and Lands

Cc Mari-Wells, DACF

File 1445/241

# THE TOWN OF ALTON, MAINE

A Little Town Of Neighbors

**Town Clerk**

3352 Bennoch Rd  
Alton, Maine 04468  
PH: (207) 394-2601  
Fax: (207) 394-3271

November 11, 2014

NOV 14 2014  
SMITH JAC

SMRT, Inc  
Attn: Mark G Johnson  
PO Box 618  
Portland, ME 04104

Letter of Determination

Greetings Mr. Johnson,

As per your letter dated, October 17<sup>th</sup>, 2014, to the Town Official of Alton, Maine, asking us to identify any "public viewing area" within a 4-mile radius of the Juniper Ridge Landfill, we have concluded as follows.

Within the 4-mile radius as outlined in your "Context Plan" map, Hirundo Wildlife Refuge is located northwest of the Juniper Ridge Landfill. Hirundo Wildlife Refuge is a land and water mass that the public is invited to view its scenic and historic sites. Most every weekend the people that manage the Refuge conduct tours for bird watching, mushroom identification, and canoe trips. The management at Hirundo Wildlife Refuge encourages the general public to visit their compound and explore their unusual natural features.

If we can be of further assistance, please contact us.

Sincerely,

Alton Board of Selectmen



Keith Feero, Chairman

Brian Engstrom



Ronald Borja



## Mark Johnson

---

**From:** Code Enforcement <ceo@milfordmaine.org>  
**Sent:** Wednesday, November 19, 2014 3:04 PM  
**To:** Mark Johnson  
**Subject:** RE: JRL letter?

Mr. Johnson,

I did indeed receive your letter and have reviewed its content.

Frankly, I have found it difficult to determine impact based on the limited information that was provided.

Areas of Possible impact to the Town of Milford include but are not limited to:

- Sunkhaze National Wildlife Refuge.
- The Milford Dam, which is I believe on the Historical Register.
- The Milford Boat Launch located on Route 2.
- The Milford Playground, located on Davenport Street.
- The Doctor Lewis Libby School & Chaisson Field, located on County Road.
- Costigan Historical Cemetery, located on Route 2 near the Penobscot River.
- The Penobscot River Corridor.

Please feel free to contact me should you require further information.

### *Andrew Fish*

Code Enforcement Officer  
Local Health Officer  
Town of Milford Maine

Voice: 207.827.2072  
Fax: 207.827.1524  
Email: [ceo@milfordmaine.org](mailto:ceo@milfordmaine.org)

---

**From:** Mark Johnson [mailto:MJohnson@SMRTInc.com]  
**Sent:** Wednesday, November 19, 2014 13:05  
**To:** 'tax@milfordmaine.org'  
**Subject:** JRL letter?  
**Importance:** High

Greetings Mr. Fish,

I sent a letter requesting your input regarding a proposed expansion of the Juniper Ridge Landfill a while back (see attached copy). Have you had a chance to review and may we expect your response soon?

We're trying to put together a tour of the area to photo-document potential viewing locations and your input will be valuable.

Please let me know if you have questions or need further information at this time.

Thanks,

**Mark G. Johnson ASLA, LEED AP**  
**CLARB Certified Landscape Architect**  
*Senior Landscape Architect*  
Maine Licensed Landscape Architect

**SMRT**  
144 Fore Street, PO Box 618 Portland, Maine 04104  
p 207.772.3846 f 207.772.1070  
[www.smtinc.com](http://www.smtinc.com)

## Mark Johnson

---

**From:** Cooper, Kent <Kent.Cooper@maine.gov>  
**Sent:** Thursday, November 20, 2014 8:36 AM  
**To:** Mark Johnson  
**Subject:** RE: Juniper Ridge, Old Town

Hi, Mark: I have sent your inquiry to Fred Michaud in our Planning section, Bob Moosmann in M&O, and Larry Johannesman another Multimodal LA--- there seem to be no conflicts as such nor officially sanctioned "scenic" designation here other than the view from 95 probably including the area in question. Please let me know if you need anything further. kc

Kent Cooper  
Transportation Landscape Architect  
Multimodal Program / Project Development  
Maine Department of Transportation  
207-624-3085 cell 207-592-0771  
[kent.cooper@maine.gov](mailto:kent.cooper@maine.gov)

---

**From:** Mark Johnson [mailto:MJohnson@SMRTInc.com]  
**Sent:** Wednesday, November 19, 2014 3:09 PM  
**To:** Cooper, Kent; Johannesman, Lawrence  
**Subject:** Juniper Ridge, Old Town  
**Importance:** High

Gents,

We are preparing submission information for a permit amendment application to the State for the Juniper Ridge Landfill facility in Old Town for which an approximately 54-acre expansion is being proposed.

We request a letter of determination from your office addressing the presence and location of any "public viewing area" generally within a 4-mile radius, and specifically within 2000 feet, of the facility property (please see attached location map). Per Maine Department of Environmental Protection Chapter 400 rules, a public viewing area is defined as "an area designated for the public to view scenic areas, historical sites, unusual natural features or public monuments. These areas include but are not limited to scenic highways; public easements; scenic turnouts; public monuments; and national, state or municipal parks."

I have reached out also to surrounding municipalities and the Bureau of Parks and Lands.

I've sent this as a formal letter, too. Please let me know if you have questions or need further information at this time.

Thanks,

**Mark G. Johnson** ASLA, LEED AP  
CLARB Certified Landscape Architect  
*Senior Landscape Architect*  
Maine Licensed Landscape Architect



## Mark Johnson

---

**From:** Cooper, Kent <Kent.Cooper@maine.gov>  
**Sent:** Thursday, November 20, 2014 8:37 AM  
**To:** Mark Johnson  
**Subject:** FW: Juniper Ridge, Old Town

fyi. kc

---

**From:** Moosmann, Robert  
**Sent:** Wednesday, November 19, 2014 3:31 PM  
**To:** Cooper, Kent; Michaud, Fred  
**Cc:** Johannesman, Lawrence; Riley, Kevin  
**Subject:** RE: Juniper Ridge, Old Town

Both rest areas on the interstate near this location are closed to the public as functioning rest areas. The SB side is an active weigh station for the state police. There is no view shed from that rest area to the west. Route 16 and Route 43 are mostly wooded and I am not aware of any issues on either of those roads.

---

**From:** Cooper, Kent  
**Sent:** Wednesday, November 19, 2014 3:20 PM  
**To:** Michaud, Fred  
**Cc:** Johannesman, Lawrence; Moosmann, Robert; Riley, Kevin  
**Subject:** FW: Juniper Ridge, Old Town  
**Importance:** High

anone care to comment or run with this.....? anyone's jurisdiction? .... kc

---

**From:** Mark Johnson [<mailto:MJohnson@SMRTInc.com>]  
**Sent:** Wednesday, November 19, 2014 3:09 PM  
**To:** Cooper, Kent; Johannesman, Lawrence  
**Subject:** Juniper Ridge, Old Town  
**Importance:** High

Gents,

We are preparing submission information for a permit amendment application to the State for the Juniper Ridge Landfill facility in Old Town for which an approximately 54-acre expansion is being proposed.

We request a letter of determination from your office addressing the presence and location of any "public viewing area" generally within a 4-mile radius, and specifically within 2000 feet, of the facility property (please see attached location map). Per Maine Department of Environmental Protection Chapter 400 rules, a public viewing area is defined as "an area designated for the public to view scenic areas, historical sites, unusual natural features or public monuments. These areas include but are not limited to scenic highways; public easements; scenic turnouts; public monuments; and national, state or municipal parks."

I have reached out also to surrounding municipalities and the Bureau of Parks and Lands.

I've sent this as a formal letter, too. Please let me know if you have questions or need further information at this time.

---

Thanks,

## Mark Johnson

---

**From:** Cooper, Kent <Kent.Cooper@maine.gov>  
**Sent:** Thursday, November 20, 2014 8:37 AM  
**To:** Mark Johnson  
**Subject:** FW: Juniper Ridge, Old Town

fyi. kc

---

**From:** Michaud, Fred  
**Sent:** Wednesday, November 19, 2014 3:39 PM  
**To:** Moosmann, Robert; Cooper, Kent  
**Cc:** Johannesman, Lawrence; Riley, Kevin  
**Subject:** RE: Juniper Ridge, Old Town

The top of Mt. Juniper Ridge can be seen from the southbound lane immediately south of Alton Stream and through most of the Alton Bog portion on I95. Looks like a big hill and blends in much more nicely than Mt. Sawyer in Hampden.

I do not see any issues related to scenic vistas.

Fred Michaud  
Scenic Byways Program Coordinator  
Policy Development Specialist  
Maine Department of Transportation  
16 State House Station  
Augusta, ME 04333-0016

Telephone: 207-624-3279  
Fax: 207-624-3099  
Cell: 207-446-7000

[fred.michaud@maine.gov](mailto:fred.michaud@maine.gov)

**From:** Moosmann, Robert  
**Sent:** Wednesday, November 19, 2014 3:31 PM  
**To:** Cooper, Kent; Michaud, Fred  
**Cc:** Johannesman, Lawrence; Riley, Kevin  
**Subject:** RE: Juniper Ridge, Old Town

Both rest areas on the interstate near this location are closed to the public as functioning rest areas. The SB side is an active weigh station for the state police. There is no view shed from that rest area to the west. Route 16 and Route 43 are mostly wooded and I am not aware of any issues on either of those roads.

---

**From:** Cooper, Kent  
**Sent:** Wednesday, November 19, 2014 3:20 PM  
**To:** Michaud, Fred  
**Cc:** Johannesman, Lawrence; Moosmann, Robert; Riley, Kevin  
**Subject:** FW: Juniper Ridge, Old Town  
**Importance:** High

arone care to comment or run with this.....? anyone's jurisdiction? .... kc

---

**From:** Mark Johnson [<mailto:MJohnson@SMRTInc.com>]  
**Sent:** Wednesday, November 19, 2014 3:09 PM  
**To:** Cooper, Kent; Johannesman, Lawrence

cc: file 14145 / 241

**Mark Johnson**

---

**From:** Jerry Davis <greenbh1@midmaine.com>  
**Sent:** Friday, December 19, 2014 1:14 PM  
**To:** Mark Johnson  
**Subject:** RE: JRL letter?

Mark, We cannot see juniper Ridge Landfill, there is no Public Viewing area issues per DEP/chapter 400 rules. Thank,  
You Jerry

---

**From:** Mark Johnson [mailto:MJohnson@SMRTInc.com]  
**Sent:** Friday, December 19, 2014 12:54 PM  
**To:** 'greenbh1@midmaine.com'  
**Subject:** FW: JRL letter?  
**Importance:** High

Hi Jerry,

Thanks for your assistance with this. Please let me know if you have any questions.

Best,

**Mark G. Johnson ASLA, LEED AP**  
**CLARB Certified Landscape Architect**  
*Senior Landscape Architect*  
Maine Licensed Landscape Architect

**SMRT**  
144 Fore Street, PO Box 618 Portland, Maine 04104  
207.772.3846 / 207.772.1070  
[www.smrtinc.com](http://www.smrtinc.com)

---

**From:** Mark Johnson  
**Sent:** Wednesday, November 19, 2014 12:53 PM  
**To:** 'greenbh1@midmaine.com'  
**Subject:** JRL letter?  
**Importance:** High

Greetings,

I sent a letter requesting your input regarding a proposed expansion of the Juniper Ridge Landfill a while back (see attached copy). Have you had a chance to review and may we expect your response soon?

We're trying to put together a tour of the area to photo-document potential viewing locations and your input will be valuable.

Please let me know if you have questions or need further information at this time.

Thanks,



**APPENDIX B**

**NRPA PERMIT BY RULE NOTIFICATION FORM**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**NRPA PERMIT BY RULE NOTIFICATION FORM**  
 (For use with DEP Regulation, Natural Resources Protection Act-Permit by Rule Standards, Chapter 305)

PLEASE TYPE OR PRINT IN **BLACK INK ONLY**

<b>Name of Applicant (owner)</b>	Maine Bureau of General Services	<b>Name of Agent:</b>	NEWSME Landfill Operations, LLC		
<b>Applicant Mailing Address:</b>	77 State House Station	<b>Agent Phone # (include area code):</b>	207-862-4200, ext. 230		
<b>Town/City:</b>	Augusta	<b>PROJECT Information Name of Town/City:</b>	Juniper Ridge Landfill, Old Town, ME		
<b>State and Zip code:</b>	Maine, 04333	<b>Name of Wetland or Waterbody:</b>	Unnamed Wetlands		
<b>Daytime Phone # (include area code):</b>	207-624-7360	<b>Map #:</b>	003	<b>Lot #:</b>	1 & 1A
<b>Detailed Directions to Site:</b>	I-95 North to Exit 199. Left off ramp and first left into Juniper Ridge Landfill. Follow access road to scale and gate. SVP is approximately 1,500 feet northeast of the scale, about 250 feet northeast of existing gravel yard.				
<b>Description of Project:</b>	Proposed expansion of landfill. Associated electrical line will result in clearing of ~0.29ac of critical habitat surrounding an SVP. No impacts to pool depression. Impacts are ~6.4% of total habitat.				
<b>Part of a larger project? (check one) →</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>After the Fact? (check one) →</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Check one →</b> This project <input type="checkbox"/> does (or) <input checked="" type="checkbox"/> does not involve work below mean low water (average low water).	

**NRPA PERMIT BY RULE (PBR) SECTIONS: (Check at least one)**

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Rules, Chapter 305. I and my agents, if any, **have read** and will comply with all of the standards in the Sections checked below.

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Sec. (2) Act. Adj. to Protected Natural Res. | <input type="checkbox"/> Sec. (10) Stream Crossing                                | <input type="checkbox"/> Sec. (17) Transfers/Permit Extension  |
| <input type="checkbox"/> Sec. (3) Intake Pipes                        | <input type="checkbox"/> Sec. (11) State Transportation Facil.                    | <input type="checkbox"/> Sec. (18) Maintenance Dredging  |
| <input type="checkbox"/> Sec. (4) Replacement of Structures           | <input type="checkbox"/> Sec. (12) Restoration of Natural Areas                   | <input checked="" type="checkbox"/> Sec. (19) Activities in/on/over significant vernal pool habitat  |
| <input type="checkbox"/> Sec. (5) REPEALED                            | <input type="checkbox"/> Sec. (13) F&W Creation/Enhance/Water Quality Improvement | <input type="checkbox"/> Sec. (20) Activities located in/on/over high or moderate value inland water-fowl & wading bird habitat or shore-bird feeding & roosting areas |
| <input type="checkbox"/> Sec. (6) Movement of Rocks or Vegetation     | <input type="checkbox"/> Sec. (14) REPEALED                                       |  |
| <input type="checkbox"/> Sec. (7) Outfall Pipes                       | <input type="checkbox"/> Sec. (15) Public Boat Ramps                              |  |
| <input type="checkbox"/> Sec. (8) Shoreline stabilization             | <input type="checkbox"/> Sec. (16) Coastal Sand Dune Projects                     |  |
| <input type="checkbox"/> Sec. (9) Utility Crossing                    |   |  |

**NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:**

- Attach** a check for the correct fee, payable to: "Treasurer, State of Maine". The current fee for NRPA PBR Notifications can be found at the Department's website: <http://www.maine.gov/dep/feesched.pdf>
- Attach** a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.
- Attach** Proof of Legal Name if applicant is a corporation, LLC, or other legal entity. Provide a copy of Secretary of State's registration information (available at <http://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x>). Individuals and municipalities are **not** required to provide any proof of identity.
- Attach** photos of the proposed site where activity will take place as required in PBR Sections checked above.
- Attach** all other required submissions as outlined in the PBR Sections checked above.

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that **this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.**

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in the rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

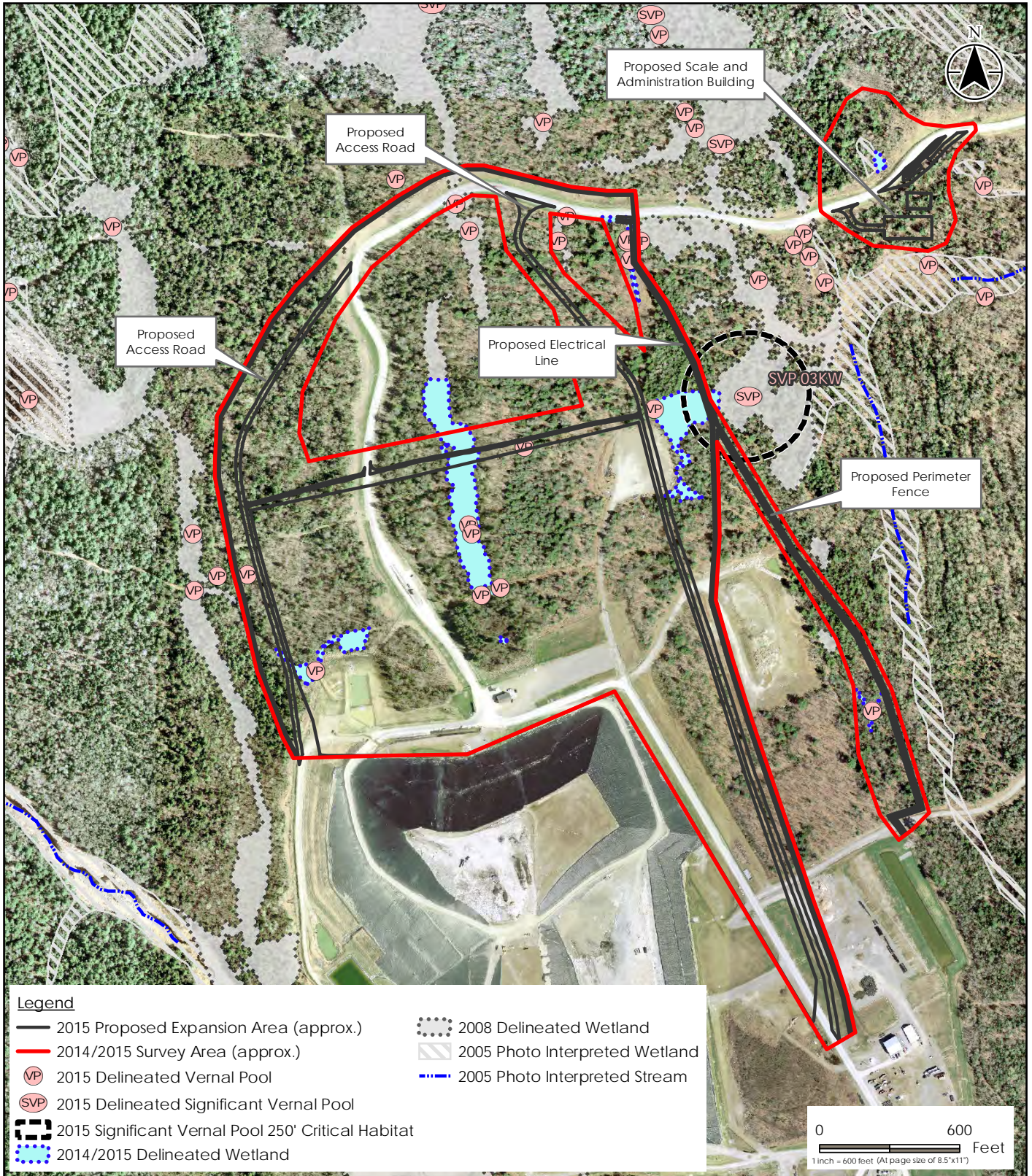
<b>Signature of Agent or Applicant:</b>		<b>Date:</b>	7/7/15
---	---	--------------	--------

Keep a copy as a record of permit. Send the form with attachments via certified mail or hand deliver to the Maine Dept. of Environmental Protection at the appropriate regional office listed below. The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. **Work carried out in violation of any standard is subject to enforcement action.**

AUGUSTA DEP 17 STATE HOUSE STATION AUGUSTA, ME 04333-0017 (207)287-3901	PORTLAND DEP 312 CANCO ROAD PORTLAND, ME 04103 (207)822-6300	BANGOR DEP 106 HOGAN ROAD BANGOR, ME 04401 (207)941-4570	PRESQUE ISLE DEP 1235 CENTRAL DRIVE PRESQUE ISLE, ME 04769 (207)764-0477
--	---	---	---

OFFICE USE ONLY	Ck.#	Date	Staff	Staff	
PBR #	FP		Acc. Date	Def. Date	After Photos





30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

Prepared by DLJ on 2015-06-10  
 Reviewed by BPE on 2015-06-16

00983\_01\_PBR.mxd

**Notes**

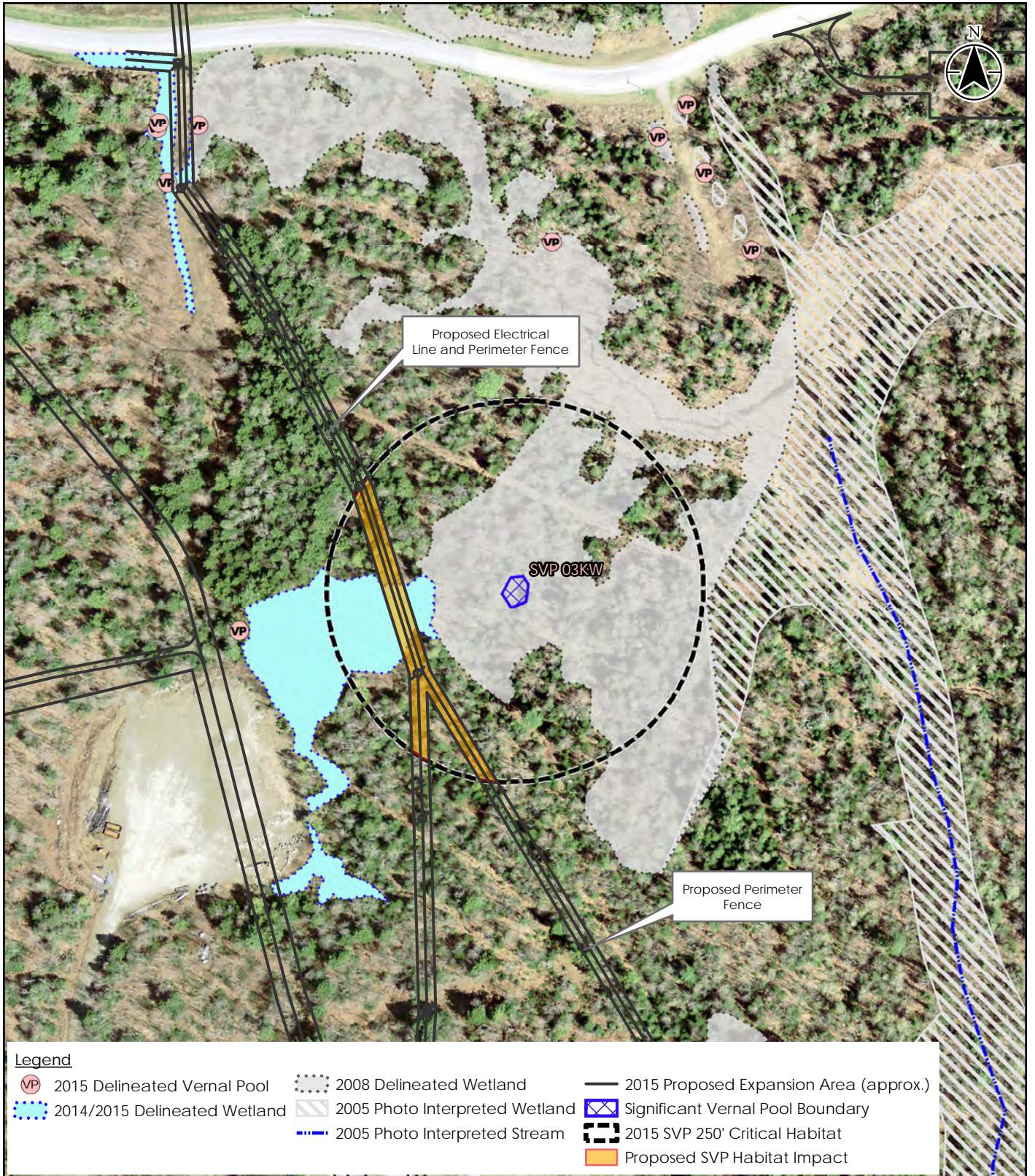
1. Wetland boundaries delineated in accordance with USACE Wetland Delineation Manual (1987) or subsequent versions.
2. Vernal pools surveyed in accordance with Maine Association of Wetland Scientists Vernal Pool Technical Committee Vernal Pool Survey Protocol, April 2014.
3. Wetland and vernal pool boundaries were located utilizing a Trimble Geo-XH GeoExplorer 6000 Series Receiver. Expected accuracy of GPS data is within 1 meter of actual position.
4. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
5. Orthophotography from 2013 provided by Maine Office of GIS.

Client/Project 195600983  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine

Figure No.  
 1

Title  
 SVP 03KW Location Map  
 6/29/2015





**Legend**

- 2015 Delineated Vernal Pool
- 2008 Delineated Wetland
- 2014/2015 Delineated Wetland
- 2005 Photo Interpreted Wetland
- 2005 Photo Interpreted Stream
- 2015 Proposed Expansion Area (approx.)
- Significant Vernal Pool Boundary
- 2015 SVP 250' Critical Habitat
- Proposed SVP Habitat Impact

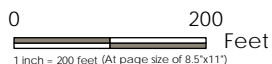


30 Park Drive  
 Topsham, ME USA 04086  
 Phone (207) 729-1199

Prepared by DLJ on 2015-06-12  
 Reviewed by BPE on 2015-06-16

00983\_02\_PBR\_Impacts.mxd

Area of Total SVP Habitat = 5.28 ac.  
 Area of Existing Clearing = 0.00 ac.  
 Area of Proposed Clearing = 0.29 ac.  
 Total Net Clearing = 0.29 ac. (5.5% of Habitat Buffer)



Client/Project 195600983  
 NEWSME Landfill Operations LLC  
 Juniper Ridge Landfill Expansion  
 Old Town, Maine

Figure No.  
 2

Title  
 SVP Impact Map  
 SVP 03KW  
 6/29/2015



Juniper Ridge Landfill Expansion Project  
NRPA Permit By Rule Attachment – SVP 03KW



**Photo 1:** SVP\_03KW.  
Date: May 5, 2015. Stantec.



**Photo 2:** SVP\_03KW.  
Date: May 20, 2015. Stantec.





**Photo 3:** Wetland portion of SVP\_03KW critical habitat at location of proposed impact.  
Date: May 14, 2015. Stantec.



**Photo 4:** Wetland portion of SVP\_03KW critical habitat at location of proposed impact.  
Date: May 14, 2015. Stantec.