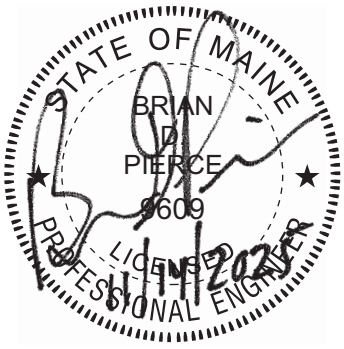
PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
VOLUME IV – OPERATIONS MANUAL

Prepared for

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



November 2025

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SEVEE & MAHER
ENGINEERS

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PHASE II EXPANSION APPLICATION
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1.0 INTRODUCTION

This document serves as the amended Operations Manual (Manual) for the Juniper Ridge Landfill (JRL) solid waste disposal facility located in Old Town, Maine. This Manual was prepared on behalf of NEWSME Landfill Operations, LLC (NEWSME) by Sevee & Maher Engineers, Inc. (SME) and includes descriptions of operations of the original landfill, the Phase I Expansion, and the Phase II Expansion. This document is being submitted as part of the Phase II Expansion Application pursuant to Ch. 401.2.L of the Maine Solid Waste Management Rules (Rules) and will become the certified Manual upon acceptance of the Application by the Maine Department of Environmental Protection (MEDEP). The current JRL and the Phase II Expansion are located in Old Town, Maine. JRL can be accessed using a 2-mile primary access road located off Route 16 in Alton, Maine (see Figure 1-1). JRL is owned by the Maine Bureau of General Services (BGS) and is operated by NEWSME.

Landfill operations at the JRL are regulated pursuant to the Rules, Chapters 400, 401, and 405, administered by the MEDEP, pursuant to a solid waste facility license. A listing of JRL MEDEP operating permits is included in Appendix A. Additionally, copies of JRL permits are kept on file in the office of NEWSME's Environmental Compliance Manager (ECM), at 358 Emerson Mill Road in Hampden, Maine.

According to Ch. 401.4.A of the Rules, NEWSME is required to review this Manual annually, and update it to reflect changes that have occurred throughout the year. These updates may include but are not limited to changes in landfill licensing, construction, and operational practices. This Manual supersedes all previous versions, including the last update completed in April 2025, which included the operation of the newly constructed Cell 16. This Manual addresses operations of the originally permitted JRL (approximately 68 acres); the previously approved Phase I Expansion (approximately 54 acres); and the proposed Phase II Expansion, which will include five new landfill cells and will expand the landfill solid waste boundary by an additional area of approximate 57 acres. The majority of the current operating policies and procedures will remain the same during the development of the Phase II Expansion. This Manual contains cell development plans for Cells 15 and 16, which are currently active; and the proposed Phase II Expansion cells. Additional, more detailed cell development plans will be added as the final cell of the Phase I Expansion, Cell 17, and each of the Phase II cells, is constructed. Unless otherwise specified, references in the Manual to JRL or the landfill should be deemed to include the existing permitted landfill and the Phase II Expansion.

Conceptual development plans for Cells 18-22 of the Phase II Expansion cells are included in Appendix D.

Cell 18 will be the first cell constructed for the Phase II Expansion and is tentatively scheduled for construction in the summer of 2027.

To provide a document that contains both current and historical information about the landfill operations, the Manual includes information on the original permitted landfill (Cells 1-10); the Phase I Expansion (Cells 11-17); and the Phase II Expansion (Cells 18-22). The Manual provides information on the historical filling and closure of the various landfill cells as well as the cells that are currently receiving waste.

1.1 Site History

The JRL was originally owned and operated by Fort James Operating Company (Fort James) (formerly known as James River Paper Company) and subsequently by Georgia-Pacific Corporation (GP).

The landfill has been designed and constructed as a secure solid waste disposal facility in that the groundwater beneath and adjacent to the site is protected by a composite liner and a leachate collection system for the originally permitted JRL cells, and a double-composite liner system with leachate collection and leak detection systems for the Phase I and Phase II Expansion cells. Leachate generated at the site is collected, stored, and transported to the ND OTM LLC (ND Paper) wastewater treatment plant in Old Town for treatment. Additionally, the JRL utilizes Anson-Madison Sanitary District (AMSD) as a backup disposal site for leachate, as needed.

Fort James/GP operated the JRL from December 1996 until February 2004. On February 5, 2004, the operating licenses of the JRL were transferred to the Maine State Planning Office (SPO) as part of a purchase and sales agreement between the State of Maine and Fort James/GP. Maine's Bureau of General Services (BGS) currently manages the site on behalf of the State because the SPO was eliminated by the Legislature. On February 5, 2004, the State of Maine, through the SPO, finalized an operating services agreement (OSA) with NEWSME for the operation of the JRL.

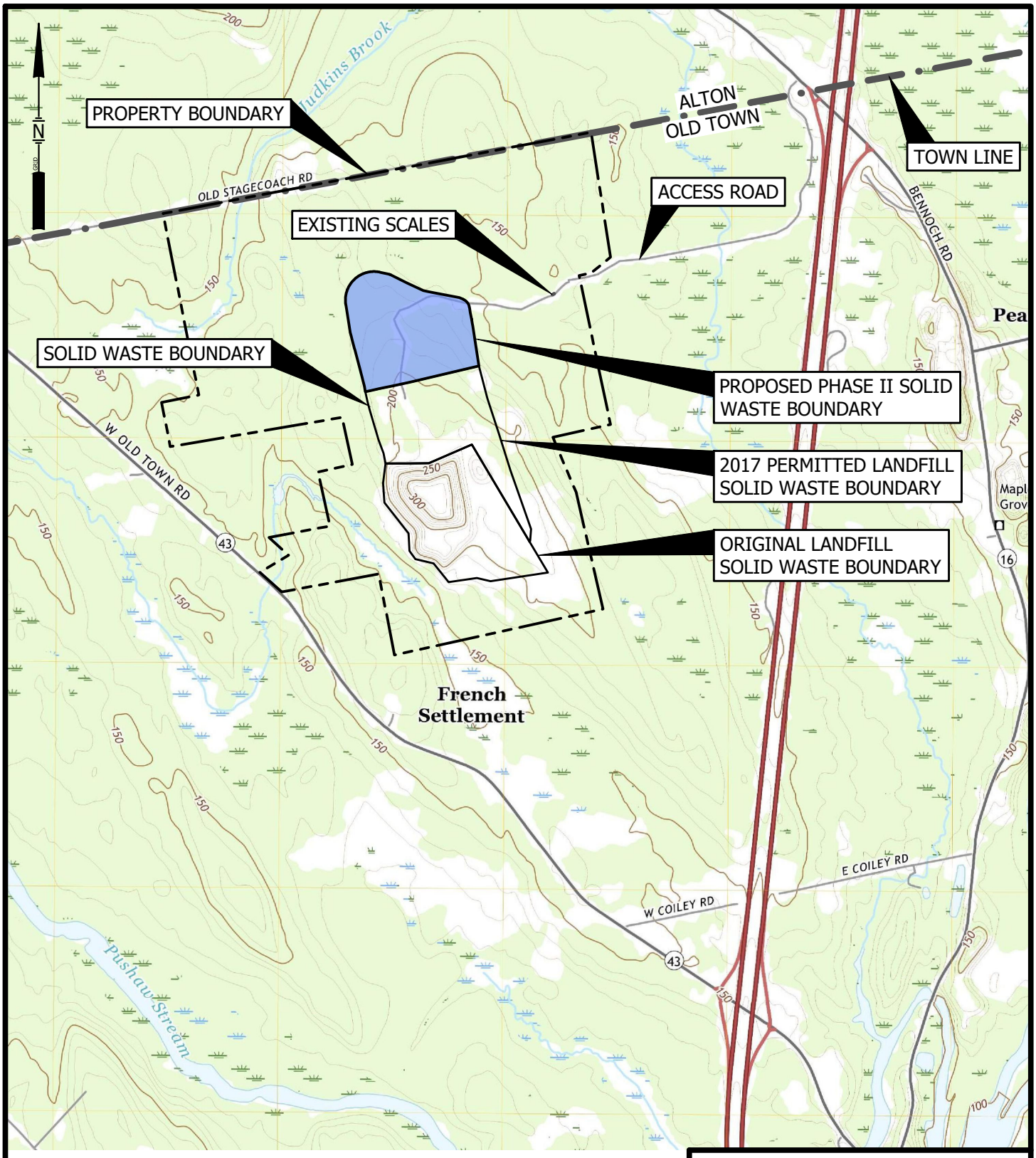
The facility was originally permitted for the disposal of pulp and papermaking residuals from the Fort James/GP's Old Town mill (primarily wastewater treatment plant sludge), bottom ash from Lincoln Pulp & Paper, and burn pile ash from the City of Old Town transfer station. In addition to the waste streams historically disposed of at the landfill, the landfill is now permitted to receive non-hazardous solid waste streams generated in Maine (ref. Solid Waste Amendment Order #S-020700-WD-N-A & #S-020700-WD-BI-N).

With the approval of the Phase I Expansion in 2017, JRL's permitted solid waste footprint increased to approximately 122 acres. After construction of the five additional cells, as part of the Phase II Expansion, the permitted landfill will encompass approximately 179 acres. This area includes but is not limited to the twenty-two landfill cells, supporting site infrastructure, and perimeter roadways. Original Landfill cells (Cells 1-10) have a combined footprint area of approximately 68 acres and were constructed between

1996 and 2017. Cells 11 through 16 of the Phase I Expansion were constructed between 2018 and 2024 and have a combined footprint of approximately 47 acres. Cell 17 is anticipated to be constructed in 2026, which will increase the Phase I Expansion cell footprint to approximately 54 acres. Phase II Expansion cells (Cells 18-22) will have a combined footprint of approximately 57 acres and are anticipated to be constructed beginning in 2027 and last through approximately 2040 based on the current waste filling rates at the JRL.

The existing landfill infrastructure includes a 2-mile-long primary access road, a maintenance/ administration building, several storage buildings, a dual scale house, a former leachate storage pond now used for stormwater detention, a leachate storage tank, five primary leachate pump stations, one leachate haul truck loading rack, one water haul truck loading rack, multiple detention/sedimentation ponds, a construction material laydown area, Thiopaq® and Sulfa Treat gas scrubbing systems, a storage/processing pad for clean wood debris and railroad ties, a perimeter access road, a newly constructed Renewable Natural Gas (RNG) Processing Facility, owned and managed by Archaea Energy (Archaea), which began operations in July 2024, and two landfill gas flares (one belonging to JRL, and the other to the owners of the RNG Processing Facility).

As Cell 17 (Phase I Expansion) and Cells 18 through 22 (Phase II Expansion) are constructed, an additional 4,900 linear feet of perimeter road will be constructed along the western, northern, and eastern sides of the landfill. Existing Detention Pond 11 will be relocated, and three additional detention ponds will be added. A second leachate tank will be added west of the existing leachate tank and will share an expanded secondary containment berm, and a Per- and polyfluoroalkyl substances (PFAS) treatment plant will be installed. The new infrastructure is shown on Figure 1-2. Monitoring wells within the Phase II footprint will be abandoned in accordance with Ch. 405 guidelines, and six additional monitoring well pairs will be installed downgradient of the expansion. The overall site development, including the Expansion cells, are shown on Figure 1-2.



BASEMAP ADAPTED FROM 7.5 MIN USGS TOPO QUADS
OLD TOWN, ME - 2024

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

SME
SEVEE & MAHER ENGINEERS

DWG: SITELOC-EXPANSION LMN: NONE CTB: SME-STD.CTB JOB#: 240100.00 REV: 4/15/2025

\\Nserver\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad\Figures\SITELOC-EXPANSION.dwg, A_FIG 1-1, 4/15/2025 7:47:55 AM, sjm

NOTE:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BORINGS AND TEST PIT LOCATIONS FIELD SURVEYED BY SEVEE & MAHER ENGINEERS, INC. OF CUMBERLAND, MAINE.
4. BASE GRADES REPRESENT THE PREPARED SUBGRADE SURFACE BELOW THE UNDERDRAIN OR AUGMENTED LAYER. IN LOCATIONS THAT ARE NOT IDENTIFIED TO RECEIVE UNDERDRAIN OR AUGMENTED LINER, ONE FOOT OF NATIVE SOILS SHALL REMAIN IN PLACE ABOVE THE BASE GRADE. THE BASE LINER SYSTEM SHALL BE CONSTRUCTED ON THE RESULTING GRADE ABOVE THE UNDERDRAIN, AUGMENTED LINER, OR ONE FOOT OF NATIVE SOILS.
5. CELL 17 BASE GRADES REPRESENT PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE LINER SYSTEM WITHIN THE LANDFILL LINER LIMITS. CELL 17 BASE GRADE SHOWN OUTSIDE THE LANDFILL REPRESENT THE PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE ACCESS ROAD. CELL 17 HAS NOT BEEN CONSTRUCTED AT THE TIME THESE DRAWINGS WERE PREPARED.
6. SPECIAL FLOOD HAZARD ZONE PER FEMA PANEL 23019C1926D.

EXISTING SCALE HOUSE INFRASTRUCTURE AREA
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT (TYP)
BEDROCK OUTCROP (TYP)
PROPERTY LINE (TYP)
END OF EXISTING LEACHATE FORCE MAIN
DETENTION POND 11R
PROPOSED SOLID WASTE LIMIT (TYP)
EXISTING OVERHEAD ELECTRIC LINE (TYP)
PERMITTED TILL BORROW PIT
PERMITTED WOOD WASTE HANDLING AREA
PROPOSED WOOD STORAGE LOT
SUBSURFACE WASTEWATER DISPOSAL FIELD
APPROXIMATE LOCATION OF PROPOSED PFAS TREATMENT PLANT
26'-WIDE PAVED ACCESS ROAD (TYP)
CELL 18 PUMP STATION
GRAVEL UTILITY ACCESS ROADS (TYP)
VERNAL POOL (TYP)
LFG KNOCKOUT STRUCTURE (TYP)
CELL 14 PUMP STATION
CELL 13 PUMP STATION
CELL 12 PUMP STATION
PRIMARY ACCESS ROAD (TYP)
FORCE MAIN VAULT (TYP)
CATCH BASIN AND CULVERT (TYP)
DETENTION POND 10
DETENTION POND 9
WOOD STORAGE FACILITY 2 ACRE
1 ACRE
MAINTENANCE BUILDINGS
RNG TREATMENT FACILITY POND
LFG TREATMENT FACILITY
WATER SUPPLY WELL
RENEWABLE NATURAL GAS (RNG) FACILITY
LFG FLARE LOCATION
LIMIT OF BRI WETLANDS DELINEATION (TYP) SEE NOTE 2
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT (TYP)
DETENTION POND 14
RIPRAP DITCH (TYP)
DETENTION POND 11
RIPRAP CB INLET
CELL 11 PUMP STATION
LEACHATE STORAGE TANK PUMP STATION
LEACHATE STORAGE TANK 1
PROPOSED LEACHATE STORAGE TANK 2
PROPOSED LEACHATE STORAGE TANK
PROPOSED GUARDRAIL (TYP)
PROPOSED LANDFILL BASE GRADES (TYP) SEE NOTE 4
PROPOSED CELL LIMITS (TYP)
LIMIT OF PHASE I EXPANSION LINER (TYP)
24" LFG HEADER (TYP)
LFG KNOCKOUT STRUCTURE (TYP)
UTILITY MANHOLE (TYP)
DETENTION POND 6
CELL 8 PUMP STATION
EXISTING CELLS LINER LIMIT (TYP)
(2) 24" HDPE CULVERTS
PERMANENT LANDFILL ACCESS ROAD
100-YEAR FLOOD ZONE SPECIAL FLOOD HAZARD AREA (TYP) SEE NOTE 6
DETENTION POND 13
CELL 20 PUMP STATION
25-FOOT SETBACK FROM WOSS
FENCE (TYP)
8"x12" LEACHATE FORCEMAIN
PROPERTY LINE (TYP)
ELECTRICAL MANHOLE (TYP)
20'-WIDE GRAVEL ACCESS ROAD (TYP)
DEED RESTRICTION (TYP)
DETENTION POND 2
UNDERGROUND ELECTRIC (TYP)
LFG KNOCKOUT STRUCTURE AND VALVES
CELL 5 PUMP STATION
CELL 4 PUMP STATION
DETENTION POND 1A
CELL 19 PUMP STATION
DETENTION POND 12
CELL 16 PUMP STATION
EXISTING EMH (TYP)
CELL 17 BASE GRADES (SEE NOTE 5)
EXISTING FORCEMAIN VAULT (TYP)
CELL 15 PUMP STATION
RIPRAP DITCH (TYP)
EXISTING 24" DIA LANDFILL GAS PIPE
8" GRAVITY SEWER IS ABANDONED
WATER LOADING RACK
DETENTION POND 1
25-FOOT STREAM SETBACK

200 0 400 FEE

DWG: BASE LMN: SITE-DEV-FIG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

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

SME
SEVEE & MAHER ENGINEERS

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2.0 CERTIFIED COPIES AND ANNUAL REVIEW

NEWSME maintains a total of seven certified copies of this Manual. A "Certified Copy" is defined in Ch. 400.1.X of the Rules as "a copy of the MEDEP-approved Manual implemented by the Owner/Operator of a landfill facility that is assigned to be updated and tracked by a person specified by the Owner/Operator." That person for the JRL is the ECM. Additionally, certified copies of this Manual are distributed to the MEDEP (3 copies), the City of Old Town (1 copy), NEWSME's Operations Manager (OM) (1 copy), and BGS (1 copy). Digital copies are provided with the physical copies, and a digital control and original copy are maintained by the ECM. Upon approval by the MEDEP of the Phase II Expansion, this version of the Manual, with MEDEP comments incorporated, will be issued to the above list as the Certified Copy.

Ch. 401.4.A(2) of the Rules requires that the certified copies of the Manual reflect operational changes made at the facility, and that these changes be distributed to those individuals whose job assignments require them to be aware of the changes. At a minimum, the Manual is reviewed by NEWSME on an annual basis and updated as necessary to reflect changes to the facility. Annual updates to the certified copies are provided to the parties listed above, via the Annual Report, to be incorporated into each Manual. These changes/additions should be placed in each Manual by responsible individuals.

NEWSME also performs an annual self-audit of landfill operations as required by Ch. 401.4.D(1)(b) of the Rules. Included in Appendix B is a compliance self-audit checklist that is used for the audit. A copy of the completed audit is included with the Annual Report submitted to the MEDEP.

3.0 OPERATOR TRAINING AND CERTIFICATION

As required by Ch. 401.4.B of the Rules, NEWSME provides a minimum of 8 hours of training annually to at least two key personnel in landfill operations and has at least one key employee maintain a valid certification as a Manager of Landfill Operations from the Solid Waste Association of North America (SWANA) or equivalent certification. Trained individuals may include the ECM, the Region Engineer (RE), the General Manager (GM), and the Operations Manager (OM). The topics covered for the site-specific training are presented in the outline contained in Appendix C. The training addresses issues relating to landfill operations and the regulatory requirements for the landfill facility. Documentation of training for the key personnel is kept on file at the facility for a minimum of five years. The documentation includes the name of the individual(s), their position, the type of training, and the date of the training.

4.0 JRL ORGANIZATIONAL STRUCTURE

4.1 Organization Responsibilities

Proper operation and maintenance of the landfill facilities are the responsibility of NEWSME and its employees. Other entities indirectly involved with the landfill operation include the BGS, the MEDEP, and the City of Old Town. Specific employees of NEWSME involved with landfill operation and maintenance, along with the responsibilities of each employee and other relevant entities, are described in the following paragraphs:

- BGS. Maine Bureau of General Services (BGS) is the owner and licensee of the landfill.[1]
- NEWSME. NEWSME is the operator of the landfill and is responsible for the operation and maintenance of the landfill. NEWSME is the full-time employer of the OM, Equipment Operators, Laborers, and any other personnel deemed necessary to operate the landfill. The GM, ECM, and Facility Manager (FM) are also employed by NEWSME. NEWSME is a wholly owned subsidiary of Casella Waste Systems, Inc.
- MEDEP. The MEDEP is responsible for the licensing, assistance, and inspection of the landfill. The MEDEP inspects the facility on a regular basis to ensure that operations are in conformance with current laws and regulations.
- City of Old Town Code Enforcement Officer. The City of Old Town Code Enforcement Officer (CEO) is responsible for enforcing the City of Old Town's ordinances and any conditions contained in Planning Board approvals.

4.2 Personnel and Responsibilities

Specific employees of NEWSME responsible for operation of the landfill include the GM, ECM, FM, Environmental Analyst (EA), Site Safety Officer (SSO), OM, Lead Scale Master, Equipment Operators, Mechanics, and Laborers. Each position has the following responsibilities for operations of the facility:

General Manager. The GM of NEWSME has the overall responsibility for supervision and management of site operations, staffing, construction, budgets, and compliance. With respect to the landfill operation, the GM's responsibilities include the following:

- Maintain liaison with the MEDEP, BGS, and the City of Old Town to ensure that the landfill is being operated in accordance with state and local requirements;

[1] Pursuant to P.L. Chapter 655, Sec GC-69, on July 1, 2012, the Bureau of General Services in the Department of Administrative and Financial Services became the owner and licensee of JRL. From February 4, 2004 to July 1, 2012, JRL was managed for the State by the Maine State Planning Office.

- Address staffing and equipment needs of the facility and establish budgets for its operations; and
- Coordinate construction activities.

Environmental Compliance Manager. The ECM is responsible for the site's compliance with state, federal and local permits and licenses; applicable federal regulations; site inspections; approving waste streams; state and federal reporting; and environmental training. The ECM also acts as the MEDEP contact for waste acceptance, inspections, permitting, and reporting.

Facility Manager. The FM is responsible for the oversight and maintenance of several key environmental systems at the JRL facility. These systems may include but are not limited to: leachate management, gas collection, gas treatment, and stormwater controls.

Environmental Analyst. The EA is responsible for performing the various facility inspections, sampling, and data collection for reporting purposes.

Site Safety Officer. The SSO is responsible for coordinating all safety-related issues at the JRL site, including safety training, addressing safety issues, and updating the Site Safety Manual.

Operations Manager. The OM is responsible for coordinating landfill operations and ensuring that the facility is operating properly and in compliance with current laws and regulations. The OM's responsibilities include site maintenance and waste placement, street sweeping, mowing, erosion control, odor control, stormwater and leachate collection system maintenance, and site repairs.

Lead Scale Master. The Lead Scale Master is responsible for supervising the state-certified scales, scale personnel, and 24-hour site security.

Equipment Operators. The Equipment Operators' duties include operating necessary equipment to transport, place, and compact wastes placed in the landfill, apply daily cover, complete road construction, install gas collection infrastructure, and perform general site construction. Heavy equipment operation, general knowledge of earthwork and road construction, and the ability to perform routine maintenance and make minor repairs to equipment are desirable skills for an equipment operator.

Mechanics. The Mechanics' duties include repair of landfill operating equipment and mechanical infrastructure, as well as operating necessary equipment to transport, place, and compact wastes placed in the landfill, apply daily cover, complete road construction, install gas collection infrastructure, and perform general site construction, should it be necessary, similarly to the Equipment Operators.

Laborers. The Laborers' duties can vary depending on the need, but include installation, maintenance, and troubleshooting of gas collection infrastructure, landfill equipment operation, various site construction activities, landfill monitoring under the supervision of the ECM, and general landfill site upkeep and cleanliness.

In addition, NEWSME may elect to conduct certain operational functions by contract with local contractors. Such functions may include, but are not necessarily limited to, environmental monitoring, construction of landfill cells, roads, stormwater structures, and placement of temporary and final landfill cover systems. A responsible NEWSME employee (i.e., Manager or operator) will be on-site during all operating hours.

5.0 JRL DEVELOPMENT OVERVIEW

This section provides a general overview of the entire JRL development with cell development plans related to the Expansion found in Appendix D of this Manual.

5.1 Cell Construction

JRL's permitted solid waste footprint currently consists of approximately 122 acres. Sixty-eight acres (Cells 1-10) were included in the original permitted solid waste footprint at JRL, with an additional 54 acres (Cells 11-17) approved as the first expansion. Waste will be placed in the cells to a final elevation of 390 feet for the existing permitted landfill. The Phase II Expansion will consist of 57 additional acres (Cells 18-22) that, once completed, will have a final elevation of 380 feet. Table 5-1 summarizes the landfill cell and cover construction for the entire site, including the original permitted landfill, the Phase I landfill expansion, and the Phase II landfill expansion.

Figure 5-1 depicts anticipated existing conditions at the time of Cell 18 construction. Landfill cells are generally constructed by excavating to depths of approximately 0 to 16 feet, although other areas of the cells may receive fill to achieve the proper base grading of the cell. As generally required by previous permit approvals, at least four months prior to any new cell construction and related infrastructure, a detailed design package will be submitted to the MEDEP for review and approval. The submittal will contain the information required by the Rules, including, but not limited to an engineering report, construction contract bid documents consisting of technical specifications, drawings, contract administrative documents, a Quality Assurance/Quality Control Plan (QA/QC Plan), an Erosion and Sedimentation Control Plan (ESCP), and Stormwater Management Plan (SMP). Once each landfill cell construction has been completed, a Construction Documentation Report will be prepared and submitted to the MEDEP. Typical cell construction details are in the JRL Permit Application Design Report submitted in the Phase II application. Complete copies of the Landfill's Permit Applications, including the Design Reports for each cell, and Construction Documentation Reports for each cell are maintained by the ECM.

Cells 1-10 were constructed with underdrain systems to relieve upward groundwater pressure as appropriate. The cells also contain leachate and gas management transport systems.

Cell 1 has a composite liner system consisting of the following:

- 12 inches of leachate collection sand and pipes;
- Non-woven geotextile;
- 80-mil HDPE geomembrane liner; and
- 24 inches of compacted low permeability barrier soil.

TABLE 5-1

LANDFILL CELL CONSTRUCTION
SOLID WASTE LANDFILL
JUNIPER RIDGE LANDFILL

	Cells	Size (Acres)	Date of Construction	Leachate Collection (LC)	Liner System	Leak Detection (LD)	Underdrain	Active Years	Date of Closure	Installed Cover System	Permit Number
Original Permit											
	1	7.8	1996	Yes	Composite	No	Yes	1996-Present	Active	Intermediate Cover	S-020700-7A-A-N
	2	6.7	2000	Yes	Composite	No	Yes	2000 - Present	Active	Intermediate Cover	S-020700-WD-J-M
	3A	4.1	2005	Yes	Composite	No	Yes	2005 - Present	Active	Intermediate Cover	S-020700-WD-P-M
	3B	6.1	2006	Yes	Composite	No	Yes	2006 - Present	Active	Intermediate Cover	S-020700-WD-S-M
	4	5.8	2008	Yes	Composite	No	Yes	2008 - Present	Active/Partial	Final Composite Cover[1]	S-020700-WD-AB-M
	5	7.7	2009	Yes	Composite	No	Yes	2009 - Present	Active/Partial	Final Composite Cover[1]	S-020700-WD-AH-M
	6	3.8	2010	Yes	Composite	No	Yes	2010 - Present	Active/Partial	Final Composite Cover[1]	S-20700-WD-AO-M
	7	6.6	2011	Yes	Composite	No	Yes	2011 - Present	Active	Intermediate Cover	S-020700-WD-AT-M
	8	7.5	2012	Yes	Composite	No	Yes	2012 - Present	Active/Partial	Final Composite Cover[1]	S-020700-WD-AY-M
	9	6.5	2015	Yes	Composite	No	Yes	2015 - Present	Active/Partial	Final Composite Cover[1]	S-020700-WD-BD-C
	10	5.4	2017	Yes	Composite	No	Yes	2017 - Present	Active/Partial	Final Composite Cover[1]	S-020700-WD-BJ-C
Phase I Expansion											
	11	9.3	2018	Yes	Double Composite[2]	Yes	No	2018 - Present	Active	Intermediate Cover	S-020700-WD-BI-N
	12	9.6	2020	Yes	Double Composite	Yes	Yes	2020 - Present	Active	Intermediate Cover	S-020700-WD-CB-C
	13	7.3	2021	Yes	Double Composite	Yes	Yes	2021 – Present	Active	Intermediate Cover	S-020700-WD-CL-C
	14	7.6	2022	Yes	Double Composite[2]	Yes	Yes	2022 – Present	Active	Intermediate Cover	S-020700-WD-CP-C
	15	6.7	2023	Yes	Double Composite[2]	Yes	No	2023 – Present	Active	Intermediate Cover	S-020700-WD-CR-C
	16	6.2	2024	Yes	Double Composite[2]	Yes	No	2025 – Present	Active	N/A	S-020700-WD-CU-C
	17	6.8	(2026 Anticipated)	Yes	Double Composite[2]	Yes	No			N/A	
Phase II Expansion											
	18	15.3	(2027 Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
	19	11.2	(2029 Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
	20	16.9	(2031 Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
	21	7.6	(2033 Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
	22	5.6	(2035 Anticipated)	Yes	Double Composite	Yes	Yes			N/A	

Notes:
[1] A portion of these cells received final composite cover in 2023 and 2024.
[2] A portion of these cells have an augmented secondary clay barrier soil layer (i.e., a GCL and an additional 12-inch layer of compacted barrier soil beneath the secondary barrier soil layer).
GCL = Geosynthetic Clay Liner
Intermediate Cover = Either an 18-inch layer of compacted low permeability soil or a 40-mil HDPE geomembrane cover.
Final Composite Cover = (top to waste) 18-inch vegetative cover soil layer, drainage geocomposite/piping, 40-mil LLDPE textured geomembrane, GCL, 12-inch layer of barrier soil, 6-inch base grade barrier layer (Construction Demolition Debris (CDD) fines or sand).
Composite Liner = (top to bottom) 12-inch layer of LC sand/pipes, drainage geocomposite, 80-mil HDPE geomembrane, GCL, 24-inch compacted barrier soil.
Double Composite Liner = (top to bottom) 12-inch layer of LC sand/pipes, drainage geocomposite, 80-mil geomembrane, GCL, 12-inch compacted barrier soil, 12-inch layer LD sand/pipes, drainage geocomposite, 60-mil HDPE geomembrane, 12-inch compacted barrier soil, (GCL and additional 12-inch augmented barrier soil layer as needed).

Cells 2-10 have a composite liner system consisting of the following layers (from top to bottom), and as shown in Figure 5-2:

- 12 inches of leachate collection sand and pipes;
- Drainage geocomposite;
- 80-mil HDPE geomembrane liner;
- Geosynthetic clay liner; and
- 24 inches of compacted low permeability barrier soil.

Landfill Expansion Cells 11-16 were also constructed as secure solid waste landfill cells with leachate and gas collection and transport systems, but included a double-composite liner system with the following layers (from top to bottom), and as shown in Figure 5-2:

- 12 inches of leachate collection sand and pipes;
- Primary liner system drainage geocomposite;
- 80-mil HDPE primary geomembrane liner;
- Primary liner system GCL;
- 12 inches of compacted barrier soil;
- 12 inches of leak detection sand and pipes;
- Secondary liner system drainage geocomposite;
- 60-mil HDPE secondary geomembrane liner; and
- 12 inches of compacted barrier soil.

In areas where distance from the bottom of the liner system to bedrock was anticipated to be less than 10 feet, an augmented liner was installed consisting of a GCL layer under the secondary geomembrane liner and an additional 12-inch-thick layer of barrier soil under the secondary liner system barrier soil, for a total of 24 inches of barrier soil in the secondary liner. The augmented double composite liner system consists of the following layers (from top to bottom), and as shown in Figure 5-2:

- 12 inches of leachate collection sand and pipes;
- Primary liner system drainage geocomposite;
- 80-mil HDPE primary geomembrane liner;

- Primary liner system GCL;
- 12 inches of compacted barrier soil;
- 12 inches of leak detection sand and pipes;
- Secondary liner system drainage geocomposite;
- 60-mil HDPE secondary geomembrane liner;
- Secondary liner system GCL; and
- 24 inches of compacted barrier soil.

Cell 17 and the Phase II Expansion cells (Cells 18-22) will be constructed in the same manner as Cells 11-16.

To increase travel times in areas with exposed bedrock, the secondary liner will be augmented as specified in the Rules by using a total of two feet of compacted barrier soil for the secondary liner and placing a GCL under the secondary geomembrane as shown in Figure 5-2. This augmented secondary liner will be used in approximately 2.7 acres of the Phase II Expansion. A granular underdrain collection system will be installed under approximately 36.2 acres of the Phase II Expansion where the landfill base grade is located below the site's phreatic surface (water table). Figure 5-3 shows the locations of these layers.

Leachate generated within the cells is managed by leachate sumps that are designed and constructed to handle the leachate flow from one or a series of cells. Pump stations are designed and constructed at each sump to accommodate the predicted volume of leachate from the collection area. Each pump station transfers the leachate to one of two approximately 921,000-gallon aboveground storage tanks for temporary storage prior to treating the leachate in the PFAS treatment plant. Once the PFAS are treated in the PFAS treatment plant, the treated leachate is stored in a third tank until it can be trucked to ND Paper's WWTP in Old Town for additional treatment.

A more detailed description of the design and construction of the facility's leachate collection and storage systems may be found in Section 7.10 of this report and in the Construction Documentation Reports for the individual cells, which are on file with the ECM.

5.2 Landfill Cell Intermediate Cover

As each base landfill cell reaches its interim operational grade, operations are moved into a new cell and intermediate cover is placed over the filled area. Intermediate cover generally consists of installing vertical landfill gas (LFG) collection wells, shaping all surface areas to appropriate grades, and installing the intermediate cover systems. Intermediate cover systems consist of a soft waste (ash or wood fines) or sand layer, covered with 18 inches of low permeability soil or a 40-mil HDPE geomembrane cover. If soil

is utilized, the final surface is seeded and mulched to establish vegetative growth for sedimentation and erosion control purposes. Stormwater controls are designed and constructed to handle clean stormwater runoff from the intermediate cover.

5.3 Final Cover System

The proposed final cover system for the landfill will use similar engineered components (i.e., textured geomembrane and drainage geocomposite), and earthen materials (i.e., granular drainage sand, compacted barrier soil, and vegetative cover soil) that will be used in the landfill construction. Placement of the proposed final cover system will comply with similar material installation specifications and follow the same quality control/quality assurance protocol as used for the cell construction. The final cover system proposed for the landfill is as follows (from the top down), and as shown in Figure 5-2:

- 18 inches of a vegetative cover soil;
- Drainage geocomposite and piping;
- 40-mil LLDPE textured geomembrane;
- GCL;
- 12 inches of compacted barrier soil; and
- 6 inches of sand or CDD construction fines (base grade bedding layer)

Prior to placing any final cover material, a design report, detailed design drawings, and technical specifications will be prepared and submitted to the MEDEP for review and approval similar to the submissions for landfill cell construction.

5.4 Stormwater/Erosion Control Systems

These plans were developed based on the MEDEP Best Management Practices (BMPs) for Stormwater and Erosion Control (2016). Updated plans will be included as part of any construction project. A copy of the Stormwater Management Plan and Erosion Control Plan for the Phase II Expansion, which considers the entire site development, is contained in Volume I Appendices K and L of the Phase II Expansion Permit Application.

LEGEND

- WETLAND
- 12 — CELL IDENTIFICATION
- 100-YEAR FLOOD LIMITS (SEE NOTE 5)

NOTE:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLIGSA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BORINGS AND TEST PIT LOCATIONS FIELD SURVEYED BY SEVEE & MAHER ENGINEERS, INC. OF CUMBERLAND, MAINE.
4. GRADES SHOWN WITHIN THE PERMITTED SOLID WASTE BOUNDARY REPRESENT ANTICIPATED GRADES AT THE BEGINNING OF PHASE II EXPANSION (CELL 18) CONSTRUCTION.
5. SPECIAL FLOOD HAZARD ZONE PER FEMA MAP PANEL 23019C1926D.

EXISTING SCALE HOUSE INFRASTRUCTURE AREA
FEMA FLOOD HAZARD ZONE (TYP)
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT
BEDROCK OUTCROP (TYP)
EXISTING OVERHEAD ELECTRIC LINE (TYP)
LIMIT OF BRI WETLANDS DELINEATION (TYP) SEE NOTE 2
VERNAL POOL (TYP)
PERMITTED TILL BORROW PIT
PERMITTED WOOD WASTE HANDLING AREA
PROPERTY BOUNDARY
PROPOSED WOOD STORAGE LOT
SUBSURFACE WASTEWATER DISPOSAL FIELD
DETENTION POND 9
WOOD STORAGE FACILITY
RNG TREATMENT FACILITY POND
LFG TREATMENT FACILITY
WATER SUPPLY WELL
RENEWABLE NATURAL GAS (RNG) FACILITY
MAINTENANCE BUILDINGS
LFG KNOCKOUT STRUCTURE (TYP)
END OF EXISTING LEACHATE FORCE MAIN
PRIMARY ACCESS ROAD (TYP)
CELL 14 PUMP STATION
CELL 13 PUMP STATION
CELL 12 PUMP STATION
PRIMARY ACCESS ROAD (TYP)
DETENTION POND 10
LFG FLARE LOCATION
DETENTION POND 11
RIPRAP CB INLET
CELL 11 PUMP STATION
LANDFILL ACCESS ROAD (TYP)
LEACHATE STORAGE TANK PUMP STATION
LEACHATE STORAGE TANK
STAGE 3 FINAL COVER
24" LFG HEADER (TYP)
PERMITTED LANDFILL BOUNDARY (TYP)
100-YEAR FLOOD ZONE SPECIAL FLOOD HAZARD AREA (TYP) SEE NOTE 5
STAGE 1 FINAL COVER
DETENTION POND 6
CELL 8 PUMP STATION
EXISTING CELLS LINER LIMIT (TYP)
PERMANENT LANDFILL ACCESS ROAD
PROPERTY LINE (TYP)
25-FOOT SETBACK FROM WOSS FENCE (TYP)
ANTICIPATED OPERATIONAL WASTE GRADES (TYP) SEE NOTE 4
STAGE 2 FINAL COVER
8"x12" LEACHATE FORCEMAIN
DETENTION POND 2
CELL 15 PUMP STATION
CELL 15 LFG 24" DIA HEADER
DEED RESTRICTION (TYP)
DETENTION POND 1A
CELL 16 PUMP STATION
EXISTING EMH (TYP)
EXISTING FORCEMAIN VAULT (TYP)
CELL 16 LFG 24" DIA HEADER
CELL 5 PUMP STATION
CELL 4 PUMP STATION
25-FOOT STREAM SETBACK
EXISTING 24" DIA LANDFILL GAS PIPE
WATER LOADING RACK
DETENTION POND 1

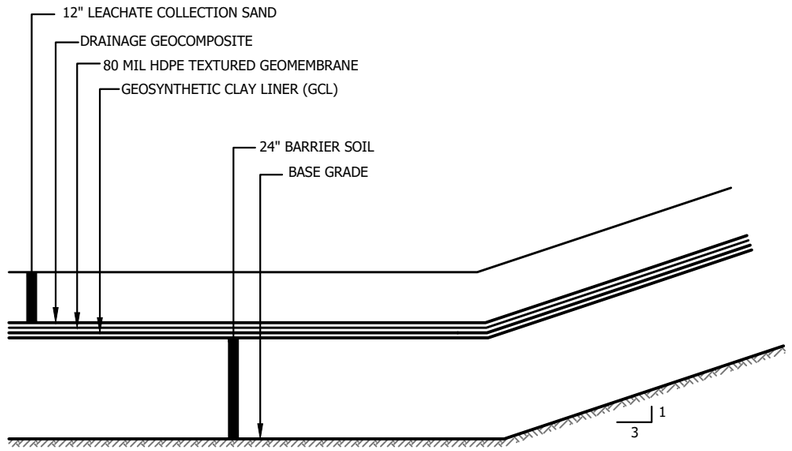
200 0 400 FEET

FIGURE 5-1
2027 CONDITIONS PLAN
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

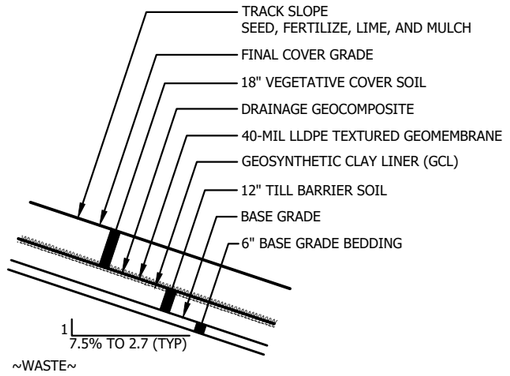
SME
SEVEE & MAHER ENGINEERS

DWG: EXCON LMN: EXCON CTB: SME-STD.CTB JOB#: 240101 REV: 11/6/2025

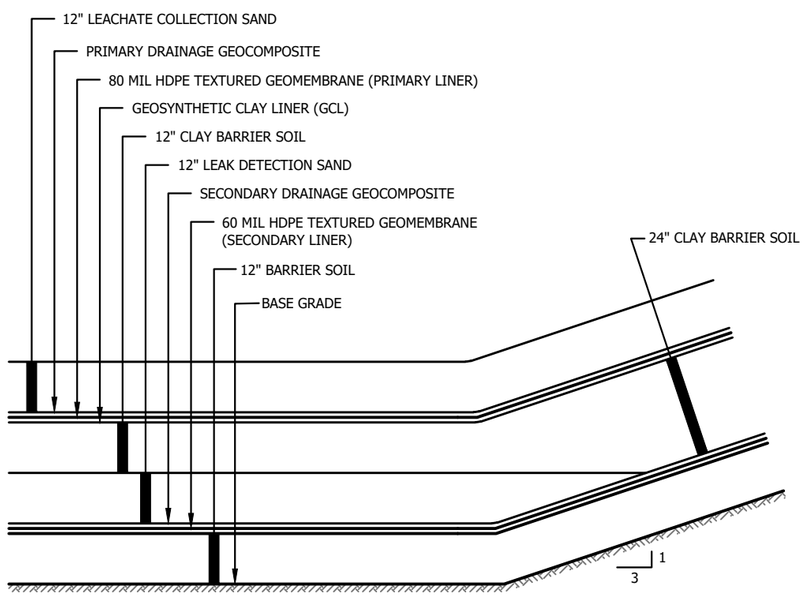
\\Server\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad\Figures\EXCON.dwg, B_FIG 5-1, 11/6/2025 12:19:09 PM, sjm



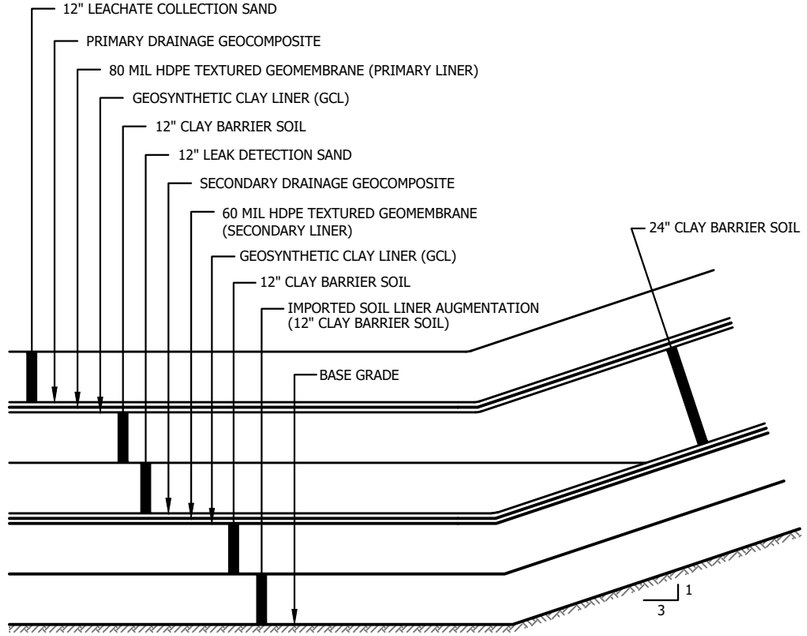
CELLS 1-10 BASE LINER SYSTEM
NTS



FINAL COVER SYSTEM
NTS



CELLS 11-22 BASE LINER SYSTEM
NTS



AUGMENTED LINER SYSTEM
NTS

FIGURE 5-2
LINER AND COVER SYSTEMS
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: OM-DETAILS LMN: OM-DETAILS CTB: SME-STD.CTB JOB#: 240101 REV: 5/2/2025

\\Server\cfs\Casella\OldTownLandfillExpansion\Phase II Expansion\Acad\Figures\OM-DETAILS.dwg, B_FIG 5-2, 5/2/2025 7:04:38 AM, sjm

LEGEND

12 CELL IDENTIFICATION

WETLAND DELINEATED

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASE GRADES IN PHASE II REPRESENT THE PREPARED SUBGRADE SURFACE BELOW THE UNDERDRAIN OR AUGMENTED LAYER. IN LOCATIONS THAT ARE NOT IDENTIFIED TO RECEIVE UNDERDRAIN OR AUGMENTED LINER, ONE FOOT OF NATIVE SOILS SHALL REMAIN IN PLACE ABOVE THE BASE GRADE. THE BASE LINER SYSTEM SHALL BE CONSTRUCTED ON THE RESULTING GRADE ABOVE THE UNDERDRAIN, AUGMENTED LINER, OR ONE FOOT OF NATIVE SOILS.

LIMIT OF BRI WETLANDS DELINEATION (TYP)
VERNAL POOL (TYP)
LIMIT OF PHASE II AUGMENTED LINER (TYP)
DETENTION POND 11R
250' SIGNIFICANT VERNAL POOL SETBACK
EXISTING OVERHEAD ELECTRIC LINE (TYP)
PRIMARY ACCESS ROAD (TYP)
DETENTION POND 14
DETENTION POND 13
LIMIT OF PHASE I EXPANSION LINER (TYP)
LIMIT OF UNDERDRAIN AREA (TYP)
FENCE (TYP)
LIMIT OF PHASE II AUGMENTED LINER (TYP)
DEED RESTRICTION (TYP)
DETENTION POND 12

11 7 3B 3A 22 21 18 14 13 12 20 19 17 16 15

200 0 400 FEET

FIGURE 5-3
UNDERDRAIN AND
AUGMENTED LINER LOCATION
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: OM-SITE-DEV LMN: AUGM-LINR-LOC CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 6/3/2025

\\Nserver\cfs\Casella\OldTown\Landfill\Expansion\Phase II Expansion\Acad\Figures\OM-SITE-DEV.dwg, B_FIG 5-3, 6/3/2025 12:22:12 PM, jrl

6.0 JRL DEVELOPMENT PLANS

This section describes the general development of landfill cells and includes the conceptual development of the Phase II Expansion cells. The Phase II Expansion's cell development plans are included in Appendix D of this Manual. Detailed cell development plans and landfill gas infrastructure plans will be developed as part of the detailed design of each landfill cell and submitted to the MEDEP prior to construction of the cell.

Each of the originally permitted landfill base cells, Cells 1-10, were generally filled to an approximate elevation of 325 feet above Mean Sea Level (feet-MSL) before operations moved into the next cell. Operations commenced on the second elevation (elevation above 325 feet-MSL) once enough of the base cells were constructed. This provided an adequate operational area for originally permitted cells to a final waste grade elevation of 390 feet-MSL. The Phase I Expansion cells, Cells 11-17, are permitted to be filled to an approximate waste grade elevation of 390 feet-MSL. Each cell was generally filled to an elevation of 350 feet-MSL before operations were moved into the next cell. The development of all Phase II Expansion cells will be similar to other past waste filling operations. Phase II Expansion cells will be filled to initial waste filling heights before operations are moved into the next cell. Once enough base cells are constructed, final permitted waste grade elevations of approximately 385 feet-MSL will be achieved.

Operations begin in each new landfill cell by placing an approximately 5-foot-deep soft layer of approved waste material. If waste placement is not to begin in a newly constructed cell prior to the winter months, a frost layer consisting of a one-foot-thick layer of bark (or other MEDEP-approved material) is placed over the leachate collection pipes. As the soft layer is placed in each cell, an access road is constructed with tipping pads to accommodate waste deliveries. As elevations increase in each cell, varying access road configurations are utilized to allow safe access into the active portions of the cell for depositing wastes.

Landfill cells were built sequentially and filled in lifts to allow for proper commingling and compaction of wastes. Section 7.0 of this Manual provides more specific details pertaining to the waste placement operations. As each cell was filled, a horizontal gas collection system was installed at designed elevations to control fugitive landfill gas (LFG) emissions and the resulting odors. Vertical landfill gas wells are then installed on landfill sideslopes and on top of each landfill cell after interim or final grades are reached. These wells are connected to the LFG collection system. In some of the original cells (Cells 1-10), a series of collection structures and drainage piping were installed as cells were filled with waste. This generally consisted of a series of vertical chimney drainage layers (tire chips) within the interior of the waste mass and extensions of the leachate collection system piping to collect contaminated stormwater at higher elevations around the inside perimeter of the cell. These drainage layers and chimneys were found to be unnecessary as the waste mix changed from papermill waste to primarily construction and demolition debris and their use was discontinued. More detailed discussions on LFG and leachate collection systems are in Section 7.0 of this Manual.

The development and operations of the permitted JRL cells were done in a sequential manner as shown in Cell Development Plans contained in previous Operations Manuals. The plans were designed to meet the standards in Chapter 401.2.D(6) of the Rules. As various phases of the landfill were developed, intermediate and/or final cover was applied as either interim or final grades were reached.

NEWSME will construct and operate the Phase II Expansion in the same manner as the Phase I Expansion, constructing and operating a series of five landfill cells. Each landfill cell is sized to have approximately two years of capacity with a new cell construction occurring every other year. Each cell will generally be filled to an elevation of 320 to 350 feet-MSL before operations move into the next cell based on a two-year volume for waste filling. Once enough base cells are constructed to provide a large enough operational area, final waste grade elevations of 385-feet-MSL will be achieved. The cell development concept also incorporates a phased final cover construction over the existing and future JRL landfill cells. The cover construction will generally occur in alternating years between cell base construction projects. The actual timing for both cells and cover construction will depend on the yearly capacity consumption reviews and the projection of when new cell disposal capacity will be needed.

NEWSME anticipates the construction of the first Phase II Expansion cell (i.e., Cell 18) of the five planned cells in 2027. Appendix D includes the overall Phase II Expansion conceptual cell development plans (Cells 18-22). Typical operational development details for the Phase II Expansion cells are included in Appendix E. Final waste grade elevations for the entire landfill, including the Phase II Expansion cells, are shown on Figure 6-1.

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLIGSA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014 AND 2015, AND BRI ENVIRONMENTAL IN 2024.
3. GRADES SHOWN REPRESENT THE TOP OF THE PROPOSED FINAL WASTE GRADES FOR THE PHASE II EXPANSION AT THE JUNIPER RIDGE LANDFILL

RNG TREATMENT FACILITY POND

DETENTION POND 9

APPROXIMATE LOCATION OF PROPOSED PFAS TREATMENT PLANT

LFG TREATMENT FACILITY

DETENTION POND 10

DETENTION POND 11R

DETENTION POND 14

DETENTION POND 13

RENEWABLE NATURAL GAS (RNG) FACILITY

LEACHATE STORAGE TANKS

FINAL LANDFILL ACCESS ROAD (TYP)

7.5% MIN (TYP)

10H:1V (TYP)

FINAL WASTE GRADES (TYP)

2.7H:1V (TYP)

DETENTION POND 6

DETENTION POND 12

DETENTION POND 2

DETENTION POND 1

DETENTION POND 1A
(FORMER LEACHATE POND)

200 0 400 FEET

FIGURE 6-1
PROPOSED LANDFILL
FINAL WASTE GRADES
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: FINAL WASTE GRADES LMN: FWG CTB: SME-STD JOB#: 240101 REV: 11/6/2025

\\Server\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad\Figures\FINAL WASTE GRADES.dwg, B_FIG 6-1, 11/6/2025 12:17:43 PM, sjm

7.0 OPERATING PROCEDURES

This section describes standard operating procedures for the JRL facility in accordance with Rules Chapter 401.4(C).

7.1 Acceptable Solid Wastes and Waste Characterization

The JRL is licensed to accept in-state non-hazardous waste streams as identified in its operating permits and licenses. Accepted wastes are commingled within the active operating cells of the landfill. The ongoing landfill operations at the JRL have demonstrated that the wastes received for disposal are compatible with the existing landfill's liner and leachate collection systems. The waste streams delivered to the JRL are also compatible with each other as demonstrated by past and present commingling of these waste streams. The JRL waste stream currently delivered to the JRL consists mainly of the following non-hazardous waste materials:

- Ash;
- Miscellaneous wastes;
- Oil spill debris;
- Contaminated soils;
- CDD process fines used for daily cover;
- WWTP biosolids and miscellaneous sludge;
- Oversized bulky waste;
- Municipal solid waste by-pass from MSW incinerators or Coastal Resources of Maine (CRM); and
- CDD.

Table 7-1 lists the acceptable wastes for disposal at the JRL as presented in the Waste Characterization and Acceptance Plan for JRL (see Appendix G).

TABLE 7-1

SUMMARY OF WASTE ACCEPTED AT THE JUNIPER RIDGE LANDFILL

ASH - BURN PILE/BIOMASS, COAL, & MULTI-FUEL BOILER/MSW & BIOMEDICAL INCINERATOR
BURNED STRUCTURES
CATCH BASIN GRIT & STREET SWEEPINGS
CONSTRUCTION DEMOLITION DEBRIS (CDD) & PROCESSING RESIDUE - MIXED CDD, BULKY WASTE, & FINES
CLEAN WOOD DEBRIS (FOR BENEFICIAL USE)
CRUSHED GLASS
DEAD ANIMALS (ON A CASE-BY-CASE BASIS)
FILTER MEDIA FROM NON-AMBIENT SOURCES
FRONT-END PROCESSING RESIDUES (FEPR)
INDUSTRIAL SLUDGES
LIME & MUD GRIT
MANUFACTURED GAS PLANT (MGP) SOIL & DEBRIS
MANUFACTURING WASTES (REFRACTORY BRICK, CASTING SANDS, SLAG, SWART, RESIDUE, BAGHOUSE DUST, RESINS, DEBURRING OR ABRASIVE MEDIA, AND GRINDINGS OR SHAVINGS)
MARIJUANA, HEMP, & INVASIVE PLANT SPECIES-RELATED WASTES
METAL IMPACTED SOIL & DEBRIS
MUNICIPAL SOLID WASTE (MSW) - BYPASSED FROM MAINE INCINERATORS AND/OR CRM PROCESSING FACILITY
NON-FRIABLE ASBESTOS
NON-HAZARDOUS CHEMICAL RELATED
OFF-SPEC FOOD OR PRODUCT
OIL SPILL DEBRIS
OIL & GASOLINE CONTAMINATED SOIL & DEBRIS
OTHER APPROVED SPECIAL WASTES (LAND UTILIZATION WASTES, DREDGED SPOILS FROM WATERWAYS, LEATHER SCRAPS, RAILROAD TIES, ETC.)
PIGEON DROPPINGS
POLYCHLORINATED BIPHENYL (PCB)-IMPACTED SOIL & DEBRIS
PULP MILL WASTE & SLUDGE
REMEDIATION SITE SOIL & DEBRIS
SANDBLAST GRIT
SHORT-PAPER FIBER & SLUDGE
SPOILED FOODS
SULFUR SCRUBBING RESIDUALS
TANK BOTTOM SLUDGE
TIRE CHIPS - OVERSIZED & TYPE B
TREATED BIOMEDICAL WASTE
TREATED WOOD STORAGE SOIL & DEBRIS
URBAN FILL SOIL & DEBRIS
WASTEWATER TREATMENT PLANT SLUDGE & GRIT SCREENINGS
WOOD BRUSH & STUMPS (GRINDING)

In addition to the above waste streams, the JRL can accept individually permitted wastes approved for the facility, which are typically from one-time events. The individual waste disposal permits are kept on file with the ECM.

The procedures for characterizing (i.e., testing) and accepting waste streams at the JRL are identified in the Waste Characterization and Acceptance Plan, which is presented as Appendix G of this Manual. The plan includes acceptance criteria for both individual permits and blanket permit approvals for various wastes. Records of waste acceptance data is kept on file at JRL and is available for viewing by the MEDEP during normal business hours. Additionally, monthly waste activity reports submitted to the MEDEP, BGS, and the City of Old Town provide pertinent data regarding all waste deliveries to the JRL for the previous month. The monthly report data includes the following information:

- Date of delivery;
- Approval (manifest) number;
- Waste description;
- Quantity delivered in tons;
- Transporter name;
- Generator name; and
- Waste origin (Maine county).

7.2 Facility Access/Hours of Operations

Access to the facility is achieved through a gated primary access road that enters the site from Route 16 in Alton, Maine, ensuring that access is controlled. The paved site access road is approximately 2 miles in length between Route 16 and the entrance into the permitted boundary of the landfill. NEWSME has located a scale and attendant facility at the entrance to the landfill that is currently occupied 24 hours per day, and seven days per week.

The access road is maintained by landfill personnel and remains accessible for traffic year-round. Only authorized employees of NEWSME and certain contractors have unrestricted access to the landfill facility. All others are required to receive clearance through NEWSME administration or the Scale House Attendant. Required signs are posted at the entrance to the facility near the scale house. While operating hours at the landfill may vary from season to season, the normal hours of operation at the facility are:

- Monday through Friday 6:00 A.M. - 5:00 P.M.
- Saturday 7:00 A.M. – 12:00 P.M. (closed Saturdays in January and February)
- Sunday Closed

Some waste streams may require 24-hour per day disposal service. Delivery of these wastes, and minimum landfill operations to place these wastes, may occur outside of the standard hours of operations.

NEWSME maintains the site's internal access roads to prevent the accumulation of dust, mud, and waste on public roads. Maintenance activities include sweeping, applying water to roadways to prevent dust generation, and maintaining gravel roadway surfaces to prevent mud accumulation on public roads. Calcium chloride may be applied to roads within the landfill footprint for dust control.

With the exception of CDD and MSW Bypass, only materials that have been pre-approved by NEWSME administration will be allowed access to the landfill. Waste hauling vehicles will be monitored by the scale house and landfill operators upon entry to the landfill and during off-loading to assure that no unacceptable wastes are present, and materials are as identified, described, and certified.

7.3 Open Burning

Open burning of waste or any other material is strictly prohibited at the JRL Facility. Use of open flames for construction related activity is by permit only, obtained through NEWSME's SSO.

7.4 Hot Loads

If a hot load such as incinerator ash is delivered to the landfill, the waste will be managed in accordance with Ch. 401.4.C(4) of the Rules. A separate gravel or ash pad area will be sited within the confines of the operating cell to properly manage hot loads. The material will be offloaded onto the pad and handled appropriately to allow cooling. Burning material will be extinguished immediately by spraying water as necessary or covering with soil-based material to smother the flames. Once the material has cooled, it will be transferred to the active disposal area of the cell to be commingled with the other wastes or used as daily cover material.

7.5 Setbacks and Buffer Strips

The landfill is sited to minimize adverse effects on the existing natural environment and existing uses, scenic characteristics, and natural resources of the neighboring locality.

NEWSME will maintain the existing natural buffer strips between the facility's solid waste boundaries and public roads, property boundaries, and residences, as approved in the original License. Activities such as additional tree clearing or disturbance of vegetation beyond the permitted development will not occur without first obtaining approval from the MEDEP. All setbacks to the solid waste boundary meet or exceed the required MEDEP criteria, as listed in Table 7-2.

TABLE 7-2

SUMMARY OF SOLID WASTE BOUNDARY SETBACKS AT JUNIPER RIDGE LANDFILL

	Original Setback (ft)	Phase I Expansion Setback (ft)	Phase II Expansion Setback (ft)	MEDEP Minimum Setback (ft)
Public Roads	2,000	2,400	1,300	300
Private Residences	1,500	2,100	1,760	1,000
Private Water Supply	1,500	2,100	1,670	1,000
Classified Surface Water	300	950	712	100
Airport	+/- 13,000	+/- 13,000	+/- 15,000	5,000-10,000
Property Boundary	500	420	513	300

7.6 Cell Development Plans

General Cell Development Plans for Cells 18-22 of the Phase II Expansion are provided in Appendix D. These plans show the sequence for development of the facility including placement of cover materials. Detailed cell development plans for each cell will be developed and submitted to the MEDEP prior to their construction. Approved plans will then be included in this Manual. The plans will cover two years of landfill operations and include specific information on waste lift thickness and sequencing of waste placement in the individual cells.

7.7 Compaction (Waste Placement)

Waste entering the landfill will be unloaded at a designated unloading area as directed by the landfill operator. Trucks shall only travel on the landfill in areas where more than 5 feet of waste has been placed. Waste shall be placed in the landfill in a manner that enables the operator to facilitate commingling the waste. Like waste loads shall be evenly distributed throughout the active landfilling area. Wastes shall be placed and spread using a solid waste compactor and bulldozer in layers 5 to 8 feet thick to optimize waste density and compaction effort.

After the waste is placed, it will be compacted using a solid waste compactor. A minimum of three successive passes (one pass equals back and forth) shall be made over the entire waste area to be compacted. Additional passes may be required to achieve the proper compaction. As waste is placed and compacted, the sideslopes are created using appropriate stable waste. Outer sideslopes shall be graded to 2.7 horizontal to 1 vertical (2.7H:1V) using approved material as specified below. Inner waste sideslopes can be graded to 2H:1V with approved material. Lifts of waste shall be placed in this manner in each cell.

Several operational details are common to all waste placement within the landfill, as follows:

- All outer waste sideslopes shall be graded to achieve a final grade of 2.7H:1V. The outer sideslopes are defined as the slope ending at the top of the perimeter drainage stone at the perimeter dikes.

- Unmixed sludges and other low-strength wastes shall not be placed closer than 50 feet from the exterior sideslopes. Sludges and other low-strength waste may be placed between 50 and 25 feet from the exterior sideslopes if they are mixed with higher strength wastes such as CDD, ash, OBW, etc. Mixed waste should have a consistency that allows landfill compaction equipment to travel over it after it has been placed.
- The daily working open waste placement area shall be limited to 2 acres or less, if possible. The area containing daily cover materials shall be limited to 15 acres or less, if possible. During the short period where an additional area is opened to facilitate final waste grading prior to a planned final closure, the 15-acre open area can be exceeded.
- Prior to waste placement over the bottom of the cell, a 5-foot-thick layer of bypass MSW, FEPR, MSW incinerator ash, or other approved "soft" waste shall be spread over the leachate collection sand to protect it. CDD and OBW shall not be placed within 5 feet of the liner.
- Within one compactor width from the outer sideslope and within six feet of the top of waste, all waste shall be placed in two-foot-thick lifts and compacted with three passes (each back and forth) of the compactor. Care should be taken to ensure that no large pieces of CDD or OBW are placed such that they could protrude into the outer five feet of waste.
- Waste shall be graded in the active fill area to promote positive surface water drainage to the exterior of the cell where it can be collected and transported to the leachate collection sump. A minimum 6-foot horizontal setback from the leachate collection sand at the top of the berm shall be maintained at the outer edge of the waste to contain surface water runoff, allowing it to infiltrate into the waste.
- Waste placed below landfill access roads constructed on the exterior waste slopes shall be high strength waste, such as CDD. High strength waste does not include materials such as sludge or other high-moisture content materials.
- As outside slopes are brought to final waste grade, they shall be temporarily covered with a minimum 18-inch intermediate soil cover or a minimum (30-mil) temporary synthetic cover as soon as practical to control leachate generation and odor, to the extent permitted by seasonal conditions.

At the completion of each cell, the outer sideslopes shall be covered with intermediate cover. Other areas to be temporarily closed shall be graded and covered with intermediate cover so that clean water is shed from the landfill area. If an intermediate soil cover is utilized, it shall be seeded and mulched as soon as practical in accordance with the MEDEP BMPs. Typical operational development details (i.e., cell access road entrance, waste setbacks, operation berms, etc.) are attached in Appendix E.

Any portions of the landfill reaching final grade, and the area not being proposed for future expansion or development, shall receive final closure in accordance with Ch. 401.5.B of the Rules upon approval of the closure design plan by the MEDEP.

7.8 Cover

Three types of cover will be utilized on the landfill: daily, intermediate, and final cover. Only cover materials approved by the MEDEP will be placed. Prior to installation of any cover material, the waste will be inspected for proper compaction and proper grading to shed water. The OM will examine the waste surface to be covered. Areas found to be soft or unstable will be corrected by re-compaction and/or reinforcement with more stable waste. The operator may be required to cut or fill to acquire the grades necessary to shed water off the landfill once the cover is installed. Prior to placement of intermediate or final cover**,** the waste grades will be set to direct runoff to stormwater controls, such as stormwater diversion berms, diversion ditches, riprap downspouts, and riprap ditches. The waste surface shall be examined for protruding objects that may inadvertently puncture the synthetic cover.

7.8.1 Daily Cover

Cover will be placed daily over all areas receiving FEPR, MSW Bypass, sludge, and other wastes with odor generating potential. Daily cover will primarily consist of 9 inches of ash, CDD processing fines, wood chips, contaminated soil, soil-related materials, or soil equivalent foam applied to the manufacturers' recommended thickness, as approved by the MEDEP. The purpose of the daily cover will be to control odors, windblown litter, and to limit vectors.

7.8.2 Intermediate Cover

Intermediate cover will be placed on areas that have reached interim grades where no additional wastes will be placed for a period of at least six months. The cover will consist of a MEDEP-approved synthetic cover material (minimum 30-mil) or 18 inches of soil material having a minimum of 35 percent fines and no rocks greater than 4 inches. If soil is used, it will be placed, compacted, seeded, and mulched in accordance with the MEDEP BMPs. This cover will allow the diversion of clean surface water runoff from the areas of the landfill that have reached final operational grade. Areas that will receive intermediate cover at the end of each cell's construction are shown on the Cell Development Plans in Appendix D.

7.8.3 Final Cover

Final cover will be applied and comply with the design standards contained in Ch. 401.5.E of the Rules. Prior to the placement of final cover, detailed design plans will be submitted to the MEDEP for approval as required in the Rules.

7.9 Stormwater Management and Erosion Control

Stormwater management and erosion control practices are implemented at the JRL in accordance with MEDEP BMPs as part of the routine operations at the site. The management of stormwater and erosion control is addressed in each design report and set of construction documents prepared for individual cell development at the site.

Stormwater drainage, detention, and collection structures are inspected on a weekly basis as part of the routine inspection of the facility. The inspections are performed by the OM, FM, EA, and/or the ECM. Any damage to stormwater structures identified during these inspections is remedied as soon as practical. Drainage restrictions that develop over time are abated on an ongoing basis to maximize the efficiency of stormwater structures and conveyance systems.

Erosion control measures undertaken at the facility during the placement of intermediate cover material include a combination of temporary and permanent features such as seeding and mulching and the use of hay bales, stone check dams, riprap, and erosion control matting. A copy of the Phase II Expansion's Stormwater Management and Erosion and Sedimentation Control Plans are contained in Appendices K and L of the Phase II Expansion Permit Application.

7.10 Leachate Management

Leachate generated on-site will be contained, collected, and stored until it can be transported off-site for proper treatment. Leachate is collected within the landfill cells by a series of collection and transport pipes that are provided with cleanouts along the perimeter of the cell. Leachate is then directed to an internal sump and pumped directly to one of the two on-site aboveground storage tanks with a designed usable capacity of approximately 1,842,000 gallons to allow an excess capacity of more than 25 percent as required by the Rules. The storage tanks will be the primary source of on-site leachate storage.

Leachate storage tanks are approximately 81 feet in diameter, 25 feet high, constructed from steel, and covered with a glass coating. Beneath the base of each tank, from top down is a concrete tank foundation with leak detection pipes, a granular drainage layer, a GCL and a compacted soil barrier layer. The pipes provide a location to monitor potential leaks from the storage tank. The tanks are equipped with a galvanic anode cathodic protection system that is designed to protect the wetted portion of the tank. The tanks are also equipped with level controls that will automatically cut off power to the leachate collection sump pumps if a tank becomes full and will then restart the pumps when tank capacity becomes available. Both audible and visual alarms will sound when pumps are cutoff. An overflow structure is provided as a backup to the automatic control systems. The storage tanks are contained within a secondary containment dike that is lined with a GCL and barrier soil. The secondary containment dike is sized to provide 110 percent of the tanks' capacity. Piping between tanks has been designed to eliminate the possibility of a piping failure that would affect both tanks at the same time. The leachate tanks are inspected on a regular basis

as described in Section 8.0. An Operations and Maintenance Manual provided by the manufacturer is attached in Appendix H for the leachate storage tanks. Table 7-3 presents typical failure mode and the appropriate response plan for the mode of failure.

TABLE 7-3

TYPICAL LEACHATE MANAGEMENT FAILURE MODES AND CORRESPONDING RESPONSE PLAN

Failure Mode	Response Plan
Plugging of leachate collection or transport piping, resulting in leachate head build-up in leachate collection layer.	Pipes would be cleaned by either water jetting, rodding, or acid cleaning.
Malfunction of leachate pump in internal sump resulting in ponding of water within the sumps.	Pump can be removed from sumps and replaced with new pump. Each leachate sump has two pumps with one serving as an immediate backup pump.
Power failure such that pump cannot be operated.	A site backup generator is utilized to supply power to pump stations.
High leachate flows sustained for a long period of time such that the on-site leachate storage capacity is exceeded.	Increase the number of leachate trucks hauling leachate from the site. Alternatively, the leachate can be recirculated into the landfill or pumps can be run less frequently for a period of time.

Systems will be monitored according to the schedule found in Section 8.0 (Facility Inspection and Maintenance). Leachate will be loaded into tank trucks and transported to the ND Paper WWTP in Old Town (or to AMSD as a backup disposal site) for proper treatment.

7.11 Landfill Gas Management

NEWSME has installed an active gas management system at the JRL. The site's gas management system includes a candle stick flare and an active gas collection (both horizontal and vertical) piping system. A second flare is anticipated to be installed during the construction of the Phase II Expansion cells, as needed. As each cell reaches its final grade, and intermediate or final cover is applied, a gas control system is installed to properly manage gas generation from within the cell. A copy of the LFG System Design Report and Operations Manual are in Appendix J. Appendix D contains the conceptual plans for the installation of the landfill gas infrastructure for the Phase II Expansion Cells.

Monitoring gases in ambient air at the JRL site is performed for two reasons: (1) for employees' safety when working in or around confined spaces, including leachate manholes and pump stations; and (2) to evaluate the potential for migration of landfill gases away from the landfill site and applying mitigation strategies. The NEWSME SSO is responsible for coordinating any activities associated with confined spaces. The potential for landfill gas to migrate away from the landfill is evaluated through sampling of the site monitoring wells, and at selected gas monitoring locations around the site property boundaries.

As required by Ch. 401.4.C(11) of the Rules and Condition 4.F of the Public Benefit Determination (S-020700-WS-CV-N, signed October 2, 2024), JRL will monitor methane concentrations around the landfill

two additional times per year for a total of six times per year. Normal quarterly surface emissions monitoring (SEM) scans will be performed and satisfy the requirements from 40 Code of Federal Regulations (CFR) Part 60 Subpart XXX (the New Source Performance Standards [NSPS] for Municipal Solid Waste [MSW] landfills) and 40 CFR Part 63 Subpart AAAA (the National Emission Standards for Hazardous Air Pollutants [NESHAP] for MSW landfills). The two additional surface scans per year will use similar methods to normal SEM scans, or some other method approved by the Department. Additional scans of the landfill intermediate cover will be completed during periods of low barometric pressure if possible. If fugitive landfill gas emissions are found, repairs will be made to cover materials in a timely matter to help reduce odors. The Rules also require that immediately upon detection of explosive gas levels exceeding 25 percent of the lower explosive limit for the gases in the landfill structures or 100 percent of the lower explosive limit for the gases at the property boundary, the operator shall take necessary steps to protect human health and notify the MEDEP. The operator shall also record the methane level, the time the MEDEP was notified, and the protective steps taken at the time of detection. In addition, within 60 days of detection, the operator shall implement a remediation plan to control the release of gases and submit the plan to the MEDEP.

7.11.1 Location

If entry into a confined space is necessary, gases within the confined space will be monitored in accordance with the landfill's confined-space entry program as outlined in the Landfill Safety Manual. Whenever possible, samples from confined spaces will be taken without entering the area. The monitoring of landfill gases to evaluate their potential migration from the site is also done in the site monitoring wells and at four stationary H_2S monitoring locations near the property boundaries (ref. Odor Complaint, Management, and Response Plan, Appendix K).

7.11.2 Frequency

The groundwater sample collection from monitoring wells will be conducted three times per year. During sample collection, the well shall be monitored for methane equivalent, hydrogen sulfide, and carbon dioxide using a meter such as a Landtec GEM-2000, GEM-5000, Elkins Env200 meter or equivalent.

7.12 Inspections

To assure proper operations at the landfill, NEWSME will perform routine inspections and monitoring at the site. Various components of the facility will be inspected as part of the routine operations, while others will be inspected and documented at a specific frequency. Facility inspections and maintenance is discussed in greater detail in Section 8.0 of this Manual.

7.13 Dust Control

Dust control measures will be implemented at the facility by utilizing water spray trucks to wet secondary roads during dry weather months, and a road sweeper to minimize dirt buildup on paved roadways.

Additional measures such as applying calcium chloride may be required on an as-needed basis on roads within the landfill footprint. Dust control measures will be applied as needed. The primary access road to the facility and the landfill's east perimeter road have been paved to reduce dust generation near local residences.

7.14 Equipment

Equipment will be maintained in proper working order with preventative maintenance completed regularly. Equipment is cleaned on a regular basis to prevent clogging of engine compartments or radiators with dirt or solid waste, which could cause overheating of equipment or fires. Equipment shall be regularly inspected to ensure that safety and noise control devices work properly. Back-up equipment is readily available through local equipment suppliers if it is required. Typical equipment used in the landfill operations is listed below.

Large equipment for ongoing landfill operations typically includes:

- Two CAT 836H Compactors,
- One CAT 836G Compactor,
- One CAT 966G Loader,
- Three CAT D6 Bulldozers,
- Two John Deere 850J Bulldozers (both spare machines),
- One Water Truck,
- Two John Deere 400 Haul Trucks, and
- Two CAT 330 Excavators.

Only one piece of equipment can be operated at a time between the hours of 7:00 P.M. and 7:00 A.M., which is considered night time operations.

7.15 Fire Protection

Fire protection and prevention measures applicable to the facility are as follows:

- NEWSME will be responsible for the development of a fire-protection program and will provide necessary firefighting equipment;
- Access to all available firefighting equipment will be maintained;
- Firefighting equipment will be conspicuously located; and

- Firefighting equipment will be periodically inspected and maintained in operating condition. Defective equipment will be immediately replaced.

Landfill personnel shall be made aware of potential fire danger at the landfill site and shall be prepared to act quickly to contain a fire.

To Prevent Fire:

- An operable, portable, chemical fire extinguisher will be placed in an easily accessible location within on-site vehicles;
- An operable fire extinguisher will be readily accessible at site buildings;
- A hot-load area will be provided for depositing smoldering materials;
- A stockpile of soil-based material will be available for use in covering smoldering materials and hot ashes;
- Storage of combustible material (e.g., paints or fuels) will be located securely away from equipment operations;
- Smoking shall not be allowed in any active portions of the landfill and shall only be allowed in safe, designated smoking areas;
- A telephone or radio will be kept in an easily accessible place with the telephone numbers of the local fire, police, and ambulance prominently displayed;
- Protective gear will be available to site personnel; and
- Application of daily cover material will serve as a firebreak.

In the event of a fire, site personnel shall act immediately to contain the fire and take the following steps:

- Contact the Old Town Fire and Police Departments immediately;
- Clear the site of users;
- If the burning material can be pulled away from the working area, do so;
- Remove combustible materials in the immediate area to a safe distance from the burning materials;
- Cover the burning materials with ash, soil, or other acceptable material. The use of large quantities of water to smother and cool a landfill fire is not always successful but may be useful as a first step to prevent the spreading of flames; and
- The point of smoke emergence from a subsurface fire is not necessarily near the source of the fire. Smoke will follow the route of greatest permeability.

7.16 Hazardous and Special Waste Handling and Exclusion Plan

The JRL is not permitted to accept hazardous or toxic substances and can only dispose of MEDEP-approved non-hazardous in-state solid or special wastes. Because the JRL receives wastes such as MSW bypass and CDD from non-regulated residential sources, there is always the possibility that an unacceptable material may be found in the waste stream. Due to this possibility, NEWSME has instituted a waste inspection plan to assure that unacceptable materials are kept out of the incoming waste streams to the fullest extent possible. The waste inspection plan is in Appendix L.

7.16.1 Identification of Hazardous and Non-permitted Special Waste

Only haulers with wastes that have been pre-approved for disposal at the landfill are allowed access to the site. The scale house operator verifies that each load of waste material has been approved for disposal at the site. Deliveries entering the landfill that do not require pre-approval (e.g., MSW bypass, CDD) are monitored closely by NEWSME staff from arrival to offloading. As with every load, the landfill operators scan the deliveries as each load is being offloaded to assure that hazardous materials are not present. If a suspected non-permitted special or hazardous waste is observed during this process, the equipment operator will stop operations and request that the OM, FM, EA, or ECM inspect the suspicious material to verify its acceptability. The driver of the vehicle that delivered the material will not be allowed to leave the landfill until it has been determined that the material is acceptable. The OM, FM, EA, or ECM will try to safely identify labeling; determine if the waste is a solid, liquid, or gas; and estimate the quantity and condition of the material. If in the OM, FM, EA, or ECM's judgment the material in question could be hazardous, the area will be secured and evacuated. Three of the more obvious hazardous materials that may pose a risk to personnel, if they should come into contact are as follows:

Non-Treated Biomedical Waste

Blood or body-fluid-containing material and needles or any sharp material (i.e., broken glass or any material that can cause puncture).

> Danger: Contact with a biohazard could result in contact with various viruses or bacteria. Any red trash bag that comes from doctors' offices that has bio-hazardous material inside will have a biohazard symbol on the outside of the bag. Employees are advised that if they come across a red bag with this symbol on the side, they shall NOT pick it up.

The symbol looks like this:

Flammable Substances

Flammables can come from many different sources, from paint thinners to containers of gasoline. Employees are advised to be aware of the smell of vapors and the type of symbols on the label.

Danger: Fires and burns.

Corrosive Materials

Corrosive materials can be very dangerous. Direct contact can cause serious burns. Battery acid in containers, leaking or not, is dangerous. Some cleaning fluids can be corrosive.

Danger: Serious burns.

Hazardous Materials Mixed with Construction & Demolition Debris

Any hazardous material observed at the landfill should be isolated. If it is still in the container or on the truck, it will be the responsibility of the generator or the hauler to take the material with them when they leave the landfill.

If the material has been unloaded and the employees have not been exposed, they shall isolate the material by rope or hazard tape and contact the OM, FM, EA, or ECM, so that they can further identify the material. If necessary, an appropriate hazardous materials contractor will be called in to manage and dispose of the material.

If the employees have been exposed to the material, they will be sent to NEWSME's preferred health care provider. The material will be identified as soon as possible, and the information will be sent to the health care provider. NEWSME will then identify the source of the material and take action to correct the problem, including turning over the matter to the authorities. Costs for cleanup will be the responsibility of the generator.

7.16.2 Handling of Hazardous or Non-permitted Special Waste

At the JRL, non-permitted materials that are visually identifiable as posing no immediate threat to employees will be segregated and removed to containers supplied by the facility. Unidentified potentially hazardous materials will be left where discovered and the OM, FM, EA, or ECM will be contacted to coordinate the proper handling and disposal of the material. If it has been determined by the ECM or EA that a hazardous waste is or has the potential to impact human health or the environment through leakage, they will immediately notify the MEDEP's Emergency Spill Unit (1-800-482-0777), the National Response Center (1-800-424-8802), the Old Town Fire Department (207-827-3400), and the Maine State Police (1-800-452-4664).

7.16.3 Storage, Transportation, and Disposal of Hazardous or Non-permitted Special Waste

Storage of non-permitted wastes at the landfill is not allowed by NEWSME. Visually identifiable non-permitted special waste will be removed and immediately directed to appropriate solid waste containers. The ECM or EA will be responsible for coordinating removal and disposal of the material. Only personnel from companies contracted with NEWSME (e.g., Clean Harbors, EPI) who are trained in the proper handling and management of hazardous waste will be permitted to perform cleanup or decontamination of hazardous waste on-site. They will provide the necessary protective clothing, breathing apparatus, containment and removal equipment, and other supplies appropriate to the handling of the hazardous waste involved.

Hazardous waste will not be stored on-site. Containers for the containment and removal of hazardous waste will have warning labels as required. The removal contractor will be responsible for removing contaminated clothing and disposables from the JRL site along with the hazardous waste as part of the clean-up activity. Arrangements for transport and ultimate disposal of potentially hazardous materials will be undertaken immediately by the ECM or EA. Only transporters certified in the transportation of hazardous materials and licensed disposal sites will be contracted.

7.16.4 Emergency Notification Procedures

Emergency notifications from the landfill will be made to the OM via radio communication, cellular phone, telephone maintained in the landfill's equipment garage, or any other appropriate means. Subsequently, the ECM, EA, and GM will be notified by the OM. The following telephone numbers are available at JRL for responsible personnel to use in emergency situations:

- MEDEP Bureau of Remediation and Waste Management: 941-4570
- MEDEP Emergency Spill Number: 1-800-482-0777
- National Response Center: 1-800-424-8802
- Old Town Fire Department: 827-3400 or 911
- Old Town Police Department: 827-3984 or 911
- Ambulance: 827-3400 or 911
- Maine State Police: 1-800-452-4664
- Maine Poison Center: 1-800-222-1222
- Eastern Maine Medical Center: 973-7000

7.16.5 Written Reports

Within 15 days of any incident involving a hazardous material, a written report will be filed with the MEDEP Bureau of Remediation and Solid Waste Management, and will include the following information:

- Date and time of incident;
- Location;
- Description of unacceptable material;
- Amount of unacceptable material;
- Cause of incident;
- Corrective actions taken;
- Clean-up methods used;
- Disposition of recovered material;
- List of agencies notified; and
- Time agencies responded on-site.

Please reference Appendix M, Facility Notification Procedures, for complete emergency notification details.

7.17 Litter Control Plan

NEWSME places daily cover on all active portions of the landfill at the end of each workday to control windblown litter. A series of litter control fences are installed around each active operating area of the

facility to assist in the management and control of litter. NEWSME also contracts with a temporary labor agency that provides routine litter patrols to pick up and clean around the facility on an as-needed basis.

7.18 Environmental Monitoring Plan

The Environmental Monitoring Plan (EMP) for the JRL facility is in Appendix I of this Manual. This plan describes the existing monitoring locations as well as locations proposed for the Phase II Expansion. Analytical parameters and sampling and reporting procedures are fully described in the EMP.

7.19 Geotechnical Monitoring Plan

The current Geotechnical Monitoring Plan for the JRL is in Appendix N of this Manual.

7.20 Operation Records

Operational records will be maintained for the facility and will primarily consist of the following:

- Waste types and volumes received;
- Equipment operation and maintenance;
- Leachate volumes;
- Inspection reports;
- Equipment and personnel; and
- Unusual operating events.

In addition, copies of annual reports submitted to the MEDEP shall be kept on file and/or made available electronically, as requested.

7.21 Operation of Waste Storage and Processing Areas

Only MEDEP-approved waste storage and/or processing areas are allowed outside of the landfill's solid waste boundary. JRL has a MEDEP-approved clean wood waste storage pad located east of the current solid waste boundary. Clean wood waste, clean CDD, brush, stumps, and railroad ties are received at the location separated by waste type. Wood wastes are typically chipped/shredded, then reused within the landfill footprint as cover material, or possibly as erosion control mix if the material is clean and suitable (possibly with brush or stumps).

7.22 Vector Control

Vectors are controlled at JRL by assuring that all waste materials within the active portions of the landfill are appropriately covered each workday. Additionally, NEWSME maintains a contract with Modern Pest Control to supply vector control services on an ongoing basis.

Gulls are controlled by:

- Limiting the area of waste that is opened every day;
- Limiting the working area;
- Use of a Zon Gun to scare the birds;
- Use of devices to inhibit perching;
- Use of lethal depredation methods in accordance with the federal permit; and
- Site visits as needed by third party wildlife experts who assess and recommend strategies to minimize the gull population.

7.23 Additional Requirements for Disposal of Asbestos

JRL only accepts non-friable asbestos, primarily consisting of roofing, siding, and soil contaminated with non-friable asbestos material. The non-friable asbestos received at the JRL facility is handled in accordance with the MEDEP Asbestos Management Rules, then deposited in the landfill and covered to prevent airborne contaminants during compaction.

7.24 Winter Weather Operations

During winter operations, special planning and scheduling considerations by the OM and equipment operators will be required. Snow removal, shorter daylight, placement of temporary cover, and equipment startup and daily maintenance are among the major considerations that should be planned for in advance of the winter season.

Prior to and during landfill operating hours, the access road, perimeter road, and interior roads shall be plowed and sanded. Special consideration shall be given to sharp curves and narrow perimeter roads to prevent users from sliding into the perimeter ditches.

Installation of intermediate cover material during the winter months shall be avoided, unless damaged areas require immediate attention or nuisance odors dictate response actions. If the installation of intermediate cover is required in the winter months, it will be necessary to remove accumulated snow from the waste surface prior to application of the cover. Safety of the workers deploying the cover

material will require special attention. The nature of the synthetic material and frozen and slippery surfaces will dictate installation procedures.

Operations of the leachate collection and transport system are of particular importance during the winter months. Facility staff shall pay close attention to the performance of the system. Prior to the onset of cold weather, the operator shall ensure that a one-foot-thick bark mulch frost protection layer is placed over the leachate collection piping systems in any new cell not being operated to provide an insulating layer to keep the system from freezing. Also, surface water drainage and leachate structures should be kept clear of snow and ice such that they remain free flowing, particularly during spring thaw conditions.

7.25 Odor Control

Hydrogen sulfide is the landfill gas associated with a rotten-egg-like odor. The human olfactory nerve, which is responsible for the sense of smell, typically detects H_2S presence in air at concentrations as low as 8 to 130 parts per billion (ppb).[2] The low concentration needed for human detection of H_2S causes the odor of landfill gas to be sensed at considerable distances from its source. NEWSME routinely monitors for H_2S presence in ambient air at four permanent off-site air monitoring stations using Honeywell Analytics MDA Single Point Monitor (SPM) instrumentation. The SPMs are capable of detecting H_2S at concentrations as low as 2 ppb, which is at least four times lower than the concentration that the human nose is capable of detecting. Figure 7-1 shows the permanent H_2S monitoring locations relative to the landfill. Additional discussion of the permanent H_2S monitoring locations and monitoring equipment is presented in Appendix K.

At the JRL, the SPMs are programmed to measure for H_2S presence at 15-minute intervals on a continuous basis. The H_2S measurements are recorded using electronic data logging techniques and are transmitted to the JRL scale house for real time evaluation by JRL staff. Any H_2S measurements exceeding 15 ppb are immediately reported to JRL's supervisory staff for implementation of corrective action. By agreement, NEWSME provides the City of Old Town with monthly status reports of the H_2S monitoring including identification of all measurements equal to or greater than 15 ppb. Additionally, NEWSME immediately alerts the City of Old Town's Code Enforcement Officer of any H_2S detections at concentrations greater than 30 ppb. NEWSME reported that there were no H_2S detections above 30 ppb in 2024.[3] In the event an odor complaint is made relative to the JRL, NEWSME will implement its Odor Complaint Management and Response Plan, which is included in Appendix K.

Routine scans for CH_4 presence are made on the landfill surface to check the effectiveness of the landfill gas extraction system and evaluate the performance of intermediate and permanent cover systems relative to gas migration. The CH_4 measurements are used to detect landfill surface areas where a

[2] https://nj.gov/health/eoh/rtkweb/documents/fs/1017.pdf
[3] Juniper Ridge Landfill 2024 Annual Air Monitoring Evaluation, SME, April 2025

potential explosion hazard could exist. A flame ionization detector (e.g., Micro FID or similar device) is used for measuring

CH_4 concentrations at the landfill surface. In 2024, the JRL reported that CH_4 measurements at the landfill surface exceeded 500 parts per million (ppm) on 23 individual readings during quarterly surface scans.[4] A CH_4 concentration of 500 ppm is equivalent to 1 percent (by volume) of the Lower Explosive Limit (LEL) for methane. CH_4 is considered to be explosive when its concentration in air is 5 to 15 percent by volume. NEWSME also routinely checks manholes, monitoring well headspace, and other site enclosures for methane presence as matter of safe landfill operations relative to potential fires and to identify areas exhibiting potential respiratory health concerns.

7.26 Leak Response Action Plan

The Phases I and II Expansion cells have dedicated leak detection systems that monitor the performance of the primary liner system. A Leak Response Action Plan (LRAP) describing the procedures to monitor the leak detection system and appropriate, trigger response activities in the event a leak of potentially significant environmental consequences is included in Appendix P.

[4] Juniper Ridge Landfill 2024 Annual Air Monitoring Evaluation, SME, April 2025.

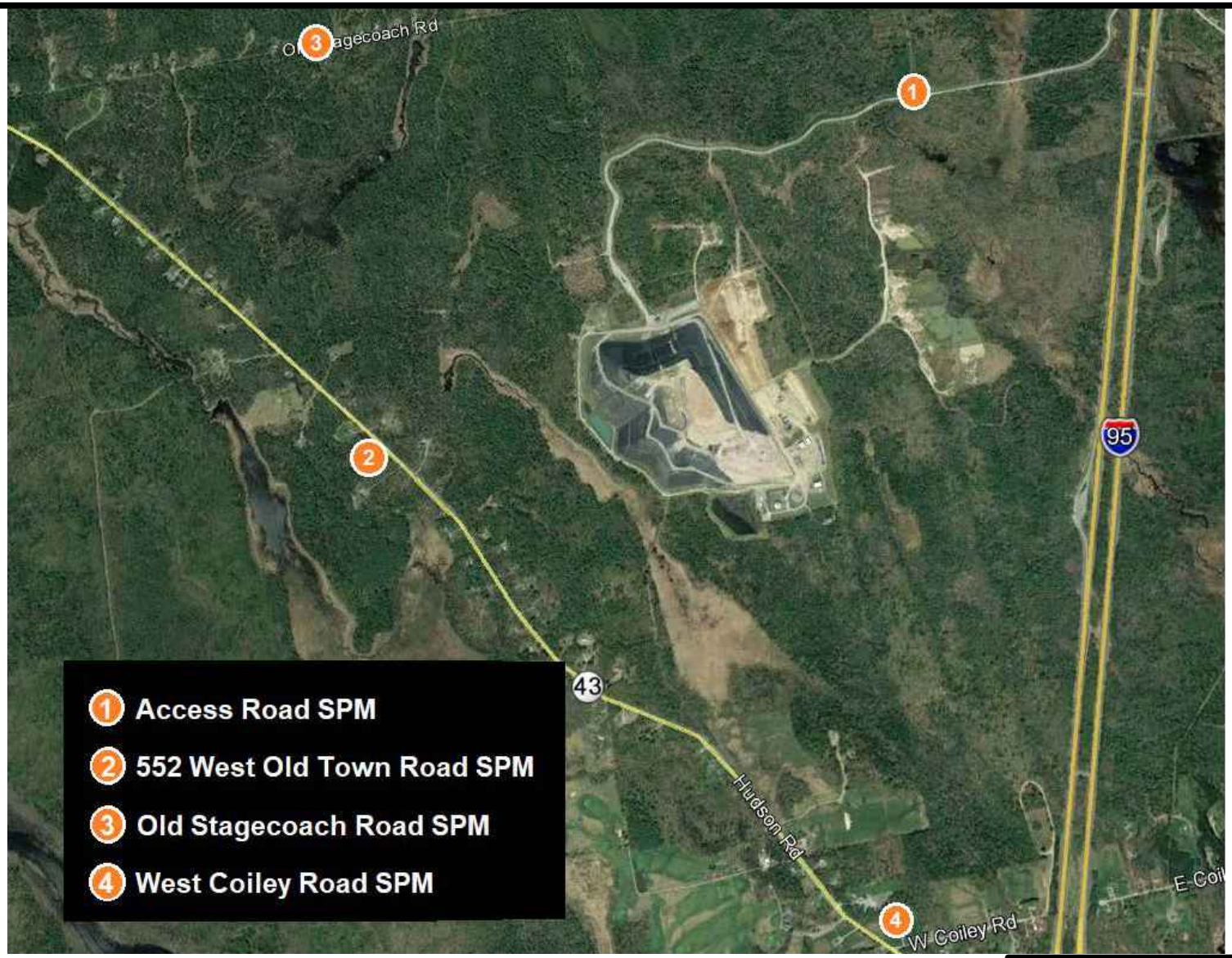


FIGURE 7-1
JUNIPER RIDGE LANDFILL H_2S SINGLE POINT MONITORING LOCATIONS
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: OM-SITE-DEV LMN: LMN CTB: SME-STD.CTB REV: 6/3/2025

\\Nserver\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad\Figures\OM-SITE-DEV.dwg, A_FIG 7-1, 6/3/2025 12:22:41 PM, jrl

8.0 FACILITY INSPECTION AND MAINTENANCE

Proper operations of the landfill require that routine inspection and monitoring be performed on-site to ensure that facility components are operating properly. This section describes the schedule and procedures that the OM shall follow to keep the landfill functioning as designed. These schedules for inspection and monitoring are considered a minimum. If unusual events or observations occur, the operator shall check systems that may be affected prior to resuming normal operations. Inspection forms for the JRL facility are included in Appendix O. The following descriptions explain the components of the facility that shall be checked.

8.1 Inspection Frequency

Table 8-1 summarizes the items to be checked and the inspection frequency for the various landfill facilities and components. In addition, NEWSME personnel shall observe site conditions and report unusual conditions to the OM immediately as part of routine operations. Included in Appendix O are inspection checklists for the various site facilities. The completed checklists shall be maintained on file at the facility. The remainder of this section describes what shall be checked for the individual locations at the facility.

TABLE 8-1

FREQUENCY OF ROUTINE LANDFILL SYSTEM INSPECTIONS

	Weekly	Monthly	Quarterly	Annual[1]
Leachate Collection Piping and Inlet Structures			X	
Leak Detection System		X		
Surface Water Inlets & Outlets	X			
Pump Stations	X			
Force Main Pressure Gauges, Air Release, Valves and Sewer Manholes			X	X
Gas Management Piping		X		
Leachate Force Main Shut Off Valves				X
Surface Drainage Ditches & Downspouts	X			
Access Roads – Mud	X			
Access Roads - Pavement/Rutting	X			
Daily Cover	X			
Intermediate Cover	X	X		
Final Cover			X	
Erosion Control Structures	X			
Leachate Storage Tank and Loading Facilities	X			
Stormwater Detention Basin	X			

Note:
[1] Annual inspection to be performed at location which require confined space entry procedures.

8.2 Leachate Collection and Leak Detection

Inspection of the leachate collection and leak detection piping systems shall include regular observation of the ditches within the landfill cell for signs of ponding leachate, and review of the pumping volumes at both the leak detection and leachate pump stations for indications of unusual changes in flow that are not the result of weather conditions. If restrictions of leachate flow are indicated by either of these inspection methods, clean-out covers along the leachate lines shall be removed and the inspector will listen for the sounds of flowing leachate. This may give an indication of the location of any blockages. When a blockage is located, the affected lines shall be cleaned utilizing conventional sewer cleaning equipment such as a plumber's snake or pressurized water. If increased flows are noted in the leak detection system, the cleanouts for the leak detection system should be used to check for potential sources of the increased leak detection flows. This can be done by using a camera inserted in the leak detection pipes through the cleanouts to find areas of higher-than-normal leachate flow. Other potential sources of flow to the leak detection system should also be investigated, such as possible damage to the liner system along the perimeter of the landfill.

8.3 Detention Pond 1A

Detention Pond 1A was initially used as a leachate pond. The pond's leak detection and underdrain system shall be inspected monthly, including observations of the system outlets for flow and monitoring water quality of the discharge for field parameters, as described in the site's EMP.

8.4 Pump Stations and Force Mains

Pump station inspections include observation of the control panel to assure that pumps and the flow meter are operating correctly, exercising valves to assure they are functioning, and observation of the flow into the station, the condition of the equipment and supports (i.e., corrosion or loose connections), and the operation of the flow meter. During the inspection, power to the pumps will be shut off and all valves within and entering the station will be opened and closed (or closed and opened) to keep the closure mechanisms from freezing due to corrosion. The operation will be performed in a manner that will not result in a discharge of leachate to the environment.

Force main inspection shall consist of a check of the pressure gauges (where applicable) at each manhole in the force mains. A high reading in the pressure gauges may be indicative of a leak in the force main. Any leakage detected shall be reported immediately to the ECM. If a high pressure reading is noted, the pressure between the pipes shall be released and a check made to see if the pressure is the result of a leak. If not, the gauge shall be replaced and rechecked daily until the problem is identified and solved, or until the high pressures are no longer noted. If the high pressure is the result of a leak, the affected pipeline shall be repaired.

8.5 Leachate Storage Tanks and Loading Rack

The leachate storage tanks and associated systems shall be inspected for possible leaks, corrosion of tank parts, icing of inlets and outlets, uneven settlement of tank foundation, and erosion or damage to the secondary containment system. Apparent structural failure of the tank and/or the foundation shall be reported immediately to the GM. Leaks detected shall be reported to the ECM. The leachate storage tanks are equipped with leak detection piping at the base of each tank. These leak detection pipes shall be checked for any sign of leakage. If any fluid is observed in the piping system, the specific conductance of the fluid shall also be measured, and it shall be reported immediately to the ECM. Operations and Maintenance Manuals provided by the manufacturer for the leachate storage tanks are included in Appendix H.

8.6 Annual Inspection of Leachate and Leak Detection Collection Piping and Leachate Transport Piping

NEWSME will complete an annual inspection of the leachate and leak detection collection and leachate transport lines. The inspection will include a systematic review of the flow data from the facility and visual inspection of the inlets and outlets of the piping systems and manual opening and closing of the leachate control valves. If these inspections suggest a blockage is occurring in these lines, the lines will be cleaned using conventional sewer cleaning equipment. NEWSME will implement a periodic cleaning of the leachate collection and transport piping systems on-site. Leachate lines will be cleaned a minimum of once every three years during operation. If necessary, more frequent cleanings will be conducted.

8.7 Active Gas Management System

Gas piping system components consist of gas extraction wells, horizontal gas collection, gas conveyance piping, knockout structures, and a blower and flare station. Inspection and maintenance of this system shall be done in accordance with the active gas monitoring and maintenance manual included as Appendix J. For landfill gas treatment, please refer to the Thiopaq Operations and Maintenance Manual included as Appendix Q.

An RNG plant has been installed on-site and is owned and operated by Archaea.

8.8 Surface Drainage System and Erosion Control

The surface drainage systems around the perimeter of the landfill shall be inspected for sediment or vegetation buildup and undermining of the ditches, which could adversely affect the flow of water in the ditch.

The upslope stormwater diversion ditches and berms shall be checked regularly to ensure that they are conveying water away from operational areas of the landfill. The entire length of these facilities shall be

checked for signs of ponding water or breaches in the temporary covers. Repairs shall be made to the area as soon as possible.

8.9 Stormwater Catch Basins

The stormwater catch basins are inspected weekly. Inlets into the basin shall be free of litter, silt, and other debris that may block the inlets. Silt that builds up in the base of the catch basins shall be removed as needed to maintain State of Maine Stormwater BMPs. The catch basin outlet control structures shall be kept free of litter, silt, and other debris that may block the openings.

8.10 Access Roads

Access roads will require inspections for breakup of the paved road surface or rutting of gravel access ways. Repairs to the access roads will be made as necessary. Periodic sweeping will prevent mud from building up on site access roads.

8.11 Daily Cover

A minimum depth of 6 inches of daily cover material will be applied at the end of each day over all exposed waste. Materials utilized must be able to control nuisance odors, dust, litter, and vectors. These materials may include virgin soils, CDD processing fines, clean wood fines, soil equivalent foam, or other MEDEP alternative daily cover materials. If alternative daily cover materials are utilized, material must not exceed 9 inches in depth after compaction. If the cover material is inspected and not effectively controlling these conditions, changes will be made to the type or amount of daily cover being used. If any previously covered areas appear to need additional daily cover, more will be added.

8.12 Intermediate and Final Cover

Intermediate cover material will be placed when final waste grades have been reached or on areas where disposal will not take place within the next six months. When these conditions occur, intermediate cover must be placed within 30 days after cessation of disposal, or as soon as weather conditions allow. Intermediate cover must remain in-place until waste filling resumes or final cover is installed. Intermediate cover must consist of 18 inches of soil or a geosynthetic cover material with a minimum thickness of 30 mils. The soil must be a clay or well-graded till with a minimum of 35 percent fines and no stones larger than 4 inches. It must be placed and compacted in at least two lifts. Other cover systems may be proposed for approval by the MEDEP. Intermediate cover must completely and effectively cover the solid waste and be graded to limit infiltration and promote runoff off the landfill site. If soil is used for intermediate cover, these areas must be seeded and mulched to prevent erosion.

Intermediate cover and final cover systems will be inspected for signs of erosion from runoff, grass kill, or gas venting in accordance with Table 8-1. Runoff erosion will be corrected by restoring the soil and re-seeding the area during the appropriate season. Jute mat or other erosion control measures will be utilized if the grade of the landfill indicates that surface runoff is directed towards the area of repair and a repeat of the erosion is likely. If a geomembrane is used as an intermediate cover, it will be inspected for rips, holes, tears and anchoring of material. Defects noted during inspection will be repaired, as necessary. Holes shall be repaired with a patch or seam stitching. The repairs shall be done by an individual with prior experience or training in the handling of this material.

Phased final cover systems will be installed throughout the operational life of the landfill, approximately every other year, typically alternating from years that cell construction occurs. Other schedules may be proposed to the MEDEP for approval if needed. The phased cover system must be constructed and documented in accordance with the approved plans and specifications. An engineering report, construction contract bid documents, quality assurance plan, and erosion/sedimentation control/stormwater management plans must be submitted to MEDEP for review and approval at least four months prior to each proposed application of final cover.

The final cover includes an impermeable geomembrane. A drainage system is constructed over the geomembrane to manage any stormwater that infiltrates through the vegetative cover. The cover drainage system shall be inspected to ensure that it is functioning correctly. The inspection will include checking the outlets where the drainage pipes discharge into the cover downspouts. The entire final cover will be checked for signs of ponding water or sloughing, which may suggest the drainage system is not functioning properly. If such areas are identified, the design engineer shall be notified to review the situation and make recommendations for repair of the system.

8.13 Leak Detection System

Cells 11 through 22 have been designed with leak detection systems that allow the performance of the primary liner to be monitored. This section describes the layout of the detection systems and leak detection monitoring program.

The base of Cells 11 through 22 have been designed with a leak detection system located between the primary and secondary liners as the main means of monitoring the performance of the primary liner system. The leak detection system consists of components similar to the leachate collection system. The leak detection system is constructed on top of the secondary liner and consists of a drainage geocomposite and one foot of sand with collection pipes located within the sand. On the sideslopes, only a drainage geocomposite is used. Fluid in the cells' leak detection systems will flow to each cell's leak detection sump where it will either be pumped into the leachate collection system for that cell or will flow by gravity to the adjacent cell's leak detection system. Cells 18, 19, and 20 will use leak detection pumps. Cell 20 (southerly half) leak detection fluids will flow by gravity to adjacent Cell 19; Cell 21 leak detection

fluids will flow by gravity to adjacent Cell 18; and Cell 22 leak detection fluids will flow by gravity to adjacent Cell 20. Leak detection sumps will be installed in Cells 20 (south), 21, and 22 to monitor leachate quality as needed. Monitoring of leak detection flows, leak action rates, response actions, and reporting requirements for the leak detection system are defined in the LRAP included in Appendix P.

9.0 RECORDKEEPING AND TRAINING

As part of landfill operations, records shall be kept of various site activities (Table 9-1). The purposes of the record keeping are to allow future strategic site planning and to comply with the MEDEP reporting requirements.

TABLE 9-1

OPERATION RECORDS SCHEDULE

	Daily	Weekly	Monthly	Annual
Waste volumes	X		(tabulated)	(tabulated)
Waste disposal area			X	
Equipment inspection	X			
Leachate flow			X	(tabulated)
Gas flows			X	
In-place volume survey				X
Unusual operating events				(recorded as necessary)
Operator training			X	
Leak detection system			X[1]	

Notes:
[1] See LAP included in Appendix P.

9.1 Construction

Construction of new cells or major improvements to the landfill will be documented by preparing record drawings and a final construction report containing all quality assurance/quality control testing and documentation of the construction site activities.

Construction activities include a new landfill cell, final covers, pump stations, force mains, stormwater detention ponds, or other components of the landfill. Copies of construction reports will be kept on file by the ECM.

9.2 Operations

Records of the landfill operation will be maintained as described in the following subsections and according to the schedule shown in Table 9-1. These records will be kept up to date and available for review by the MEDEP. Typical reporting forms used at the landfill is in Appendix O.

9.2.1 Waste Volumes

A record of the quantity of wastes and cover material placed at the landfill will be maintained based on the volume or weight of materials brought to the landfill. These records will be tabulated monthly by waste category and origin and included in the annual report for the facility. The in-place and remaining available volume of the landfill will be estimated by a topographic survey of the facility. This survey will

serve to check the amount of material landfilled, as well as provide an estimate of the amount of consolidation that has occurred and document the portion of the landfill used. This information will be used to project the remaining volume of landfill.

9.2.2 Equipment Operation and Maintenance

Reports describing equipment problems that may affect the operation or environmental integrity of the landfill, either by the nature of the problem or by delays caused by the problem, will be reviewed with the GM during routine operations meetings.

9.2.3 Leachate Management

Leachate flows will be reviewed as a check on the operation of the facility. An annual summation of the amount of leachate pumped from the leachate systems will be included in the annual report. Problems with the leachate collection system that may result in a discharge of leachate to the environment will be promptly reported to the GM and ECM, who will report discharges to the MEDEP.

9.2.4 Inspection Reports

The ECM, FM, and EA are responsible for completing inspections of the site and its various components. Copies of the inspection reports will be maintained by the ECM.

9.2.5 Unusual Operating Events

A record of any unusual operating events such as fires; significant deviations from the operating plan; spills of waste, fuel, or hydraulic fluid; or reports of any accidents at the landfill facility will be made by the OM, and a copy sent to the ECM, EA, and GM. If any of these events cause an adverse environmental impact, the ECM, EA, or GM will promptly notify the MEDEP. Significant deviations from the operating plan will be included in the annual report to the MEDEP.

9.2.6 Leak Detection Monitoring

The leak response and reporting requirements for Cells 11 through 22 are described in the LRAP included in Appendix P of this Manual.

9.3 Annual Report

An annual report will be prepared and submitted to the MEDEP, and will include the following information:

- A summary of the type, quantity, and origin of waste received;
- Estimates of the capacity of the landfill used during the past year and the remaining capacity;
- A description and estimate of the amount of cover material used in the past year;

- A description of changes in this Manual during the past year;
- Proposed changes to this Manual or other aspects of the landfill's operations;
- A summary of leachate quality and quantity, including a comparison with the previous year's data;
- An evaluation of the availability and capacity of regional facilities in Maine to reduce the volume of municipal wastewater treatment plant sludge prior to landfilling at JRL;
- A list of any possible recommendations to further reduce the volume of sludge prior to landfilling;
- A summary of the leak detection system monitoring;
- A summary of any changes made or proposed to either the EMP or the Geotechnical Monitoring Plan;
- A report on the water quality results for the year;
- A summary of landfill gas and air monitoring, including a comparison with the previous year's data;
- A summary of the periodic facility systems inspections;
- A summary of geotechnical monitoring for the year;
- An internal evaluation of the landfill's operations to verify that the facility is operating in compliance with this Manual and other applicable requirements;
- A summary of spills, fires, accidents, and unusual events that occurred at the landfill in the past year;
- Cell Development Plans for the next two-year period;
- Copies of reports prepared in accordance with the JRL's Hazardous and Special Waste Exclusion Plan;
- Results from the inspections and testing required by the facility's permit, including a report stating the date and findings associated with the annual inspection and cleaning, if necessary, of the leachate collection, detection, and transport systems; and
- A description of any system failures and documentation of repair measures.

The appropriate annual report fee shall be submitted, as determined by the MEDEP.

9.4 Operations Manual Control Copy

To record changes to operating procedures at JRL, a copy of the Manual, updated with any changes in landfill operations, will be kept at the ECM's office. The ECM will be responsible for assuring that all facility personnel are made aware of any MEDEP-approved changes to this Manual and that all certified copies receive any updates.

10.0 ACCIDENT PREVENTION AND SAFETY

NEWSME maintains a Landfill Safety Manual in the OM's Office. Personnel associated with operation of the landfill shall be familiar with the Landfill Safety Manual. Questions related to site safety and accident prevention shall be directed to the NEWSME SSO.

11.0 EMERGENCY PROCEDURES

Emergency procedures are included in Appendix M, Facility Notification Procedures. These procedures can be adapted to other similar possible emergencies.

12.0 COMPLAINT MANAGEMENT AND RESPONSE PLAN

The Odor Complaint Management and Response Plan is included in Appendix K of this manual. NEWSME has a dedicated incoming phone line for complaints from the public related to any aspect of the JRL operations. The complaint number is 207-394-4376. The scale house operator answers this number during working hours seven days per week. During non-working hours, the complaint line is transferred to a dedicated cellular phone in the possession of the on-call response individual. The following information will be gathered from any users of the complaint number:

- Name, address, and telephone number;
- The type of complaint (odor, noise, lighting, dust, etc.);
- What time of day did they first experience the source of their complaint; and
- Whether or not the source of the complaint was experienced at their residence.

After this information is received, the NEWSME staff taking the call will immediately relay the information to the appropriate complaint response personnel (during working hours). Outside of working hours, the designated response individual will be responsible for handling the complaint. An available member of the complaint response group will respond to complaints during working hours, as deemed necessary. If a return call has been requested, the on-call landfill staff will telephone the person initiating the complaint. If a meeting has been requested, the landfill staff will ask permission to go to the residence to evaluate site-specific information.

Whether or not the landfill personnel meet directly with the individual initiating the complaint, the landfill personnel will immediately gather and record the following information at the JRL site and vicinity as relevant to the complaint:

For odor complaints:

- Time of arrival at the location of the complaint (if applicable);
- Wind direction and speed at the landfill;
- H_2S level registered at the complaint address, if a site visit is performed; and
- Observation of unusual conditions present at the landfill prior to or during the time of the complaint.

For all complaints:

- Scale house records regarding truck activity if complaint is noise;
- Observed lighting conditions if complaint is lighting;

- Actions taken to remedy cause of the complaint;
- Resolution of the complaint;
- Time and comments made in reporting back to caller; and
- Comments made by caller during final exchange.

If a complaint about dust, litter, and debris is received at JRL, the OM will, within 24 hours of receiving the complaint, review the operations to determine the source of the complaint. Once the source is determined, the OM will direct the action required to rectify the problem. If the source of the dust is from a paved surface, the surface will be swept. If the source is from a mineral surface, water will be applied to the surface. The OM will assess the dust emission source and determine if routine preventive measures are required to prevent future emissions.

If a complaint about light levels at the site is received by NEWSME, the OM will determine the source of the light overspill. Corrective action such as turning off unneeded lights, reducing the light wattage, or adding additional cutoffs will be directed by the OM if deemed necessary.

If a complaint about pests around the site is received, within 48 hours of receiving the complaint the OM will address the issue (e.g., contact a licensed exterminator to rectify the immediate problem) if deemed necessary. The OM will also review the operating procedures to determine if operational changes are required to prevent future problems. Efficacy of vector management relative to seagulls (see Section 7.22) will continue to be evaluated on an ongoing basis, and any seagull complaints from nearby residents will be evaluated.

If a complaint about noise is received by NEWSME, the OM or designee will investigate the complaint and determine the source of the noise. Once the source is determined, the OM or designee will review the operating procedures to assure that the equipment is in good mechanical condition and is being operated properly.

NEWSME is required to operate its facilities in accordance with noise regulations in the Rules, which limit the hourly equivalent operating sound limit to 60 dBA during daytime hours from 7:00 A.M. to 7:00 P.M. and 50 dBA during nighttime hours from 7:00 P.M. to 7:00 A.M. at protected locations (i.e., properties occupied by residences).

If the OM determines that the facilities are being operated in accordance with the conditions of its approvals, and a second noise complaint is presented to NEWSME from the same complainant, the OM will, within seven days of receiving the complaint, engage a noise consultant to measure ambient sound level at the location of the complainant's residence. If the sound level is within the regulatory limits, no further action is required by NEWSME. If it is found that the facilities are not operating at or under approved regulatory limits, NEWSME will, within seven days of receiving the complaint, retain a noise

consultant to evaluate the operations and determine what corrective steps are required to bring the facilities into compliance with the noise regulations. The corrective action shall be undertaken as soon as practical but in no case greater than 90 days from receipt of the noise consultant's report, sound levels will be retested within seven days of completing the corrective action to verify the effectiveness of the corrective action.

13.0 SIGNIFICANT LANDFILL EVENTS

If there is a significant event at the landfill such as a fire that requires attention from the local fire department, the City Manager of the City of Old Town and the Town Manager of the Town of Alton will be informed as soon as possible after the fire department is called.

REFERENCES

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APPENDIX A

MEDEP OPERATING PERMITS

SME
SEVEE & MAHER
ENGINEERS

JUNIPER RIDGE LANDFILL

MEDEP AIR LICENSES

TAB #	PERMIT NUMBER	ISSUE DATE	FACILITY / ENTITY	TYPE	DESCRIPTION
A-1	A-921-70-A-I	12/20/2005	WEST OLD TOWN LANDFILL	PART 70 AIR EMISSION LICENSE	TITLE V AIR LICENSE, LANDFILL, FLARE #1, FLARE #2
A-2	A-921-70-A-I - FLARE #3	12/6/2007	JUNIPER RIDGE LANDFILL	INSIGNIFICANT ACTIVITY	TEMPORARY OPERATION OF FLARE #3
A-3	A-921-70-A-I - FLARES #2 & 3	3/19/2008	JUNIPER RIDGE LANDFILL	INSIGNIFICANT ACTIVITY	OPERATION OF FLARES #2 & #3 TOGETHER
A-4	A-921-70-A-I - FLARE #4	11/17/2008	JUNIPER RIDGE LANDFILL	INSIGNIFICANT ACTIVITY	OPERATION OF FLARE #4
A-5	A-921-77-2-A	11/26/2012	STATE OF MAINE & NEWSME	NEW SOURCE REVIEW - MAJOR MODIFICATION	NSR #1 - CHAPTER 115 FLARE #4 (FLARE #2 & #3 BACKUP)
A-6	A-921-77-3-M	2/13/2014	STATE OF MAINE & NEWSME	NEW SOURCE REVIEW - MINOR REVISION	NSR #2 - TRS CONTROL EQUIPMENT INSTALLATION (SULFATREAT, THIOPAQ)
A-7	A-921-75-D-X	2/13/2014	STATE OF MAINE & NEWSME	SALES & USE TAX EXEMPTION	TAX EXEMPTION CERTIFICATION (SULFATREAT & THIOPAQ)
A-8	A-921-77-4-M	5/9/2014	STATE OF MAINE & NEWSME	NEW SOURCE REVIEW - MINOR REVISION	NSR #3 - MONITORING & SAMPLING
A-9	A-921-70-B-R	10/7/2014	STATE OF MAINE & NEWSME	PART 70 AIR EMISSION LICENSE RENEWAL W/AMENDMENT	RENEWAL OF PART 70 LICENSE
A-10	A-921-70-H-A	1/6/2021	STATE OF MAINE & NEWSME	PART 70 AIR EMISSION LICENSE AMENDMENT	AMENDMENT TO CLARIFY THE APPLICABILITY/COMPLIANCE OF FED. REGS
A-11	A-921-70-F-R	5/24/2021	STATE OF MAINE & NEWSME	PART 70 AIR EMISSION LICENSE RENEWAL	RENEWAL OF PART 70 LICENSE Expires 05/24/26
A-12	A-921-77-6-A	12/8/2023	STATE OF MAINE & NEWSME	NEW SOURCE REVIEW	NSR #6 - FINDING AND FACT ORDER INTERMITTENT TO CONTINUOUS PILOT ON FLARE #4
A-13	A-921-70-I-A	1/26/2024	STATE OF MAINE & NEWSME	PART 70 AIR EMISSION LICENSE AMENDMENT #1	INTERMITTENT TO CONTINUOUS PILOT ON FLARE #4, UPDATES ON VISIBLE EMISSIONS REGULATIONS

JUNIPER RIDGE LANDFILL

VECTOR CONTROL PERMITS

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
V-1	MB670894	RENEWED ANNUALLY	CASELLA WASTE SYSTEMS	FEDERAL FISH AND WILDLIFE PERMIT	DEPREDATION PERMIT (Expires 12-31-25)
V-2	U00606	RENEWED EVERY THREE YEARS	JUNIPER RIDGE LANDFILL	MAINE DEPARTMENT OF PUBLIC SAFETY	EXPLOSIVES PERMIT - BIRD BANGERS AND POPPERS (Expired not renewed)

LEACHATE DISPOSAL PERMITS

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
L-1	37-2679-07	(02/08/2018)	NEWSME, LLC.	INDUSTRIAL WASTEWATER DISCHARGE PERMIT	CITY OF BREWER WASTEWATER DISCHARGE PERMIT (Expired 02/07/23 (not renewed)
L-2	NA	EXECUTED ON 10-27-23/SIGNED 10-30-23. (NEW TESTING REQ. STARTED Q1-2020)	NEWSME/ND PAPER	LEACHATE DISPOSAL	ND PAPER LEACHATE DISPOSAL AGREEMENT Expires 10/27/26

STORMWATER PERMITS

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
S-1	MER05B477	1/3/2006, NOI UPDATE 7/15/11 & 3/1/17	NEWSME LANDFILL OPERATIONS, LLC	MULTI-SECTOR GENERAL PERMIT	INDUSTRIAL STORMWATER PERMIT Permit shield - Awaiting MEDEP for issuance of new Multi-sector Permits

AGRONOMIC UTILIZATION LICENSES

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
AU-1	S-022376-SG-B-A	10/21/2015	NEW ENGLAND WASTE SERVICES	AMENDMENT (TO PTL LICENSE)	JRL THIOPAQ AGRONOMIC SULFUR UTILIZATION

CITY OF OLD TOWN

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
OT-1		11/14/2017	NEWSME LANDFILL OPERATIONS, LLC	CHAPTER 24 LICENSE	SOLID WASTE FACILITY PERMIT (EXPANSION)
OT-2		10/11/22 Planning Board Approval	ARCHAEA ENERGY/NEWSME LANDFILL OPERATIONS, LLC	CHAPTER 24 LICENSE	RENEWABLE NATURAL GAS FACILITY APPROVAL

ARMY CORPS OF ENGINEERS

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
ACE-1	NAE-1991-1909-MI	11/14/2017	NEWSME LANDFILL OPERATIONS, LLC	ARMY CORPS WETLANDS PERMIT	ARMY CORPS WETLANDS EXPANSION PERMIT

JUNIPER RIDGE LANDFILL

MEDEP SOLID WASTE LICENSES - ALL

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
1	S-020700-7A-A-N	7/28/1993	JAMES RIVER PAPER	NEW LICENSE - FINDINGS OF FACT AND ORDER	WEST OLD TOWN SECURE LANDFILL FACILITY - **ORIGINAL LICENSE**
2	S-020700-WD-B-C	3/10/1994	JAMES RIVER PAPER	CONDITION COMPLIANCE	SPECIAL CONDITIONS #19 AND #20
3	S-020700-WD-E-C	4/23/1996	JAMES RIVER PAPER	CONDITION COMPLIANCE	CELL 1 CONSTRUCTION
4	S-020700-WD-F-C	5/6/1996	JAMES RIVER PAPER	CONDITION COMPLIANCE	SPECIAL CONDITION #13, LINER INSTALLATION QUALIFIED INSTALLERS
5	S-020700-WD-H-M	7/21/1999	FORT JAMES OPERATING COMPANY	MINOR REVISION	SECOND SEDIMENTATION POND
6	S-020700-WZ-I-N	10/1/1999	FORT JAMES CORPORATION	NEW LICENSE	PILOT PROJECT - BULKING SLUDGE STABILITY
7	S-020700-WD-J-M	6/7/2000	FORT JAMES OPERATING COMPANY	CONDITION COMPLIANCE & MINOR REVISION	CONSTRUCTION OF CELL 2
8	S-020700-WD-K-M	5/30/2001	FORT JAMES OPERATING COMPANY	CONDITION COMPLIANCE & MINOR REVISION	CELL 2 OPERATION
9	S-020700-WU-L-N	1/22/2002	GEORGA-PACIFIC CORPORATION	NEW LICENSE	CITY OF OLD TOWN TRANSFER STATION BURN PILE / HOT LOAD ASH
10	S-020700-WR-M-T / L-019015-TH-C-T	10/21/2003	STATE PLANNING OFFICE	LICENSE TRANSFER	TRANSFER OF LICENSES, COND. COMPL., APPS., CERTS.
11	S-020700-WD-N-A	4/9/2004	STATE PLANNING OFFICE	AMENDMENT	VERTICAL INCREASE & ADDITIONAL WASTE STREAMS - **LICENSE AMENDMENT**
12	S-020700-WD-O-M	3/12/2004	STATE PLANNING OFFICE	MINOR REVISION	ADDITIONAL ASH SOURCES
13	S-020700-WD-P-M	6/13/2005	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 3A CONSTRUCTION
14	S-020700-WD-R-M	5/1/2006	STATE PLANNING OFFICE	MINOR REVISION	STORMWATER MANAGEMENT IMPROVEMENTS

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
15	S-020700-WD-S-M	7/27/2006	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 3B CONSTRUCTION
16	S-020700-WT-V-N	9/14/2006	STATE PLANNING OFFICE	NEW LICENSE	SOUTH PARIS TANNERY SLUDGE & SOIL
17	S-020700-WT-Y-N	2/20/2007	STATE PLANNING OFFICE	NEW LICENSE	BRUNSWICK NAVAL AIR STATION NON-HAZARDOUS DEBRIS & SOILS
18	S-020700-WT-Z-M	3/14/2006	STATE PLANNING OFFICE	MINOR REVISION	SOUTH PARIS TANNERY SLUDGE & SOIL REVISION
19	S-020700-WD-LC-M	3/10/2008	STATE PLANNING OFFICE	MINOR REVISION	EXPAND LANDFILL GAS MANAGEMENT SYSTEM
20	S-020700-WT-AA-N	9/10/2007	NEWSME LANDFILL OPERATIONS, LLC.	NEW LICENSE, PLUS CORRECTED COPY	CUTLER NAVAL AIR STATION PETROLEUM CONTAMINATED SOILS
21	S-020700-WT-AC-M	2/5/2008	NEWSME LANDFILL OPERATIONS, LLC.	MINOR REVISION, PLUS CORRECTED COPY	BRUNSWICK NAVAL AIR STATION NON-HAZARDOUS DEBRIS & SOILS
22	S-020700-WD-AB-M	6/30/2008	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 4 CONSTRUCTION
23	S-020700-WH-AF-E	4/22/2009	STATE PLANNING OFFICE	NEW LICENSE	SOLID WASTE TRANSFER STATION
24	S-020700-WD-T-C	6/15/2009	STATE PLANNING OFFICE	CONDITION COMPLIANCE	CONDITION #21 COMPLIANCE - NOISE STUDIES
25	S-020700-WD-AH-M	6/19/2009	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 5 CONSTRUCTION
26	S-020700-WT-AI-N	9/17/2009	STATE PLANNING OFFICE	NEW LICENSE	BANGOR NON-HAZARDOUS SOIL & DEBRIS (DREDGED SPOILS)
27	S-020700-WT-AL-N	11/4/2009	STATE PLANNING OFFICE	NEW LICENSE	BREWER LEAD IMPACTED SOIL
28	S-020700-WU-AN-N	3/1/2010	STATE PLANNING OFFICE	NEW LICENSE	PINE TREE WASTE OILY DEBRIS
29	S-020700-WT-AQ-N	4/15/2010	STATE PLANNING OFFICE	NEW LICENSE	BRUNSWICK NAVAL AIR STATION LEAD PAINT SOIL
30	S-020700-WU-AP-N	5/21/2010	STATE PLANNING OFFICE	NEW LICENSE	NEW ENGLAND WASTE SERVICES SULFUR WASTES

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
31	S-020700-WU-AJ-N	6/30/2010	STATE PLANNING OFFICE	NEW LICENSE	TREATED BIOMEDICAL WASTE
32	S-020700-WT-AR-N	7/21/2010	STATE PLANNING OFFICE	NEW LICENSE	HOWLAND TANNERY SLUDGE
33	S-20700-WD-AO-M	8/13/2010	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 6 CONSTRUCTION
34	S-020700-WD-W-M	9/10/2010	STATE PLANNING OFFICE	MINOR REVISION	MSW BYPASS LIMIT (MSW BYPASS FOR SOFT LAYER)
35	S-020700-WH-AV-M	10/28/2011	STATE PLANNING OFFICE	MINOR REVISION	SOLID WASTE TRANSFER STATION-RAILROAD TIES
36	S-020700-WD-AT-M	6/24/2011	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 7 CONSTRUCTION
37	S-020700-WT-AX-N	10/28/2011	STATE PLANNING OFFICE	NEW LICENSE	CUTLER NAVAL AIR STATION CONTAMINATED SOILS
38	S-020700-WT-AW-N	11/7/2011	STATE PLANNING OFFICE	NEW LICENSE	BASF CONTAMINATED SOILS
39	S-020700-WD-U-C	11/28/2011	STATE PLANNING OFFICE	CONDITION COMPLIANCE	CONDITION #4 - CELL 3B OPERATIONS
40	S-020700-WD-AS-M	11/28/2011	STATE PLANNING OFFICE	MINOR REVISION	MODIFICATIONS TO ACTIVE GAS EXTRACTION SYSTEM
41	S-020700-WD-Q-C	11/28/2011	STATE PLANNING OFFICE	CONDITION COMPLIANCE	CONDITION #10 - OPERATIONS MANUAL APPROVAL
42	S-020700-WD-AY-M	9/4/2012	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CELL 8 CONSTUCTION
43	S-020700-W5-AU-N	1/31/2012	STATE PLANNING OFFICE	PARTIAL APPROVAL - PUB. BEN. DETERMINATION	PUBLIC BENEFIT DETERMINATION - PARTIAL APPROVAL
44	S-020700-WD-AE-M	10/9/2012	STATE PLANNING OFFICE	MINOR REVISION	INTERMEDIATE COVER CHANGE
45	S-020700-WD-AG-M	10/9/2012	STATE PLANNING OFFICE	CONDITION COMPLIANCE & MINOR REVISION	CONDITION #7 – LEACHATE POND UNDERDRAIN DISCHARGE
46	S-020700-WD-BC-A	12/20/2013	BUREAU OF GENERAL SERVICES	AMENDMENT	ACCEPTANCE OF MUNICIPAL SOLID WASTE (MSW)

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
47	S-020700-WD-BF-C	2/27/2014	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	MSW AMENDMENT CONDITION #6 & #7
48	S-020700-WD-BH-C	10/7/2014	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CONDITIONS #21, #22, #23 NOISE AND VISUAL
49	S-020700-WD-BE-M	3/3/2015	BUREAU OF GENERAL SERVICES	MINOR REVISION	LANDFILL GAS TREATMENT FACILITY
50	S-020700-WD-BD-C	3/25/2015	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 9 CONSTRUCTION
51	S-020700-WT-AD-N	9/8/2016	BUREAU OF GENERAL SERVICES	NEW LICENSE	BELFAST MGP CONTAMINATED SOILS
52	S-020700-WT-AE-N	10/7/2016	BUREAU OF GENERAL SERVICES	NEW LICENSE	LOUIS MACK SITE LEAD CONTAMINATED SOILS
53	S-020700-WD-BJ-C	4/25/2017	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 10 CONSTRUCTION
54	S-020700-WD-BI-N / L-19015-TG-D-N	6/1/2017	BUREAU OF GENERAL SERVICES	NEW LICENSE	**LANDFILL EXPANSION** (9.35 MCY) BOARD ORDER
55	S-020700-WT-BK-N	7/27/2017	BUREAU OF GENERAL SERVICES	NEW LICENSE	SANFORD CIRCUIT BOARD PROCESSING WASTE
56	S-020700-WD-BL-A	3/31/2018	BUREAU OF GENERAL SERVICES	AMENDMENT	ACCEPTANCE OF NON BYPASS MSW (DATE REVISION UNTIL MARCH 31, 2019)
57	S-020700-WT-BN-N	7/6/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	PIONEER PLASTIC CONTAMINATED SOILS
58	S-020700-WT-BO-N	9/11/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	WATERVILLE ARMORY TREATED BUILDING DEBRIS
59	S-020700-WT-BR-N	9/21/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	HANCOCK ELLSWORTH TANNERY TRENCH SOLIDS, HIDES, MISC DEBRIS
60	S-020700-WD-BM-Z	10/10/2018	BUREAU OF GENERAL SERVICES	FINDINGS OF FACT AND ORDER ON APPEALS	ACCEPTANCE OF NON BYPASS MSW (DATE REVISION UNTIL MARCH 31, 2020)
61	S-020700-WT-BS-N	10/23/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	UNUM BUILDING - PORTLAND PCB CONTAMINATED SOIL
62	S-020700-WT-BT-N	1/28/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	US NAVY - CUTLER LEAD PAINT CHIPS/GRAVEL/MISC.

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
63	S-020700-WT-BU-N	4/1/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	EMERA MAINE - BANGOR PCB IMPACTED CONCRETE
64	S-020700-WD-BP-M	4/11/2019	BUREAU OF GENERAL SERVICES	MINOR REVISION	CRM BYPASS & RESIDUE DISPOSAL IN THE LANDFILL EXPANSION
65	S-020700-WT-BV-N	6/3/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	HUHTAMAKI POLYETHYLENE & CELLULOSE TRIMMINGS
66	S-020700-WT-CA-N	11/27/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	SOUTHWEST HARBOR TREATED LEAD CONTAMINATED SOIL
67	S-020700-WS-BY-N	12/12/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	DUPONT NUTRITION - ROCKLAND FIRE BRICK
68	S-020700-WT-BX-N	12/18/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	GENERAL ELECTRIC - BANGOR SPENT FILTER SAND
69	S-020700-WD-BW-M	12/20/2019	BUREAU OF GENERAL SERVICES	MINOR REVISION	OBW INCREASE IN EXPANSION (FROM 65,000 TO 85,000 FOR YEAR 2020)
70	S-020700-WT-CC-N	2/10/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	GAC CHEMICAL CORP. - SEARSPORT GRAVEL, SOIL, RR BALL. STONE W/SIKA
71	S-020700-WT-CE-N	3/16/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ROWE SCHOOL. - YARMOUTH SOIL IMPACTED W/ PULP SLUDGE & ASH
72	S-020700-WD-BZ-C	3/30/2020	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	ACCEPTANCE OF NON BYPASS MSW (6 MONTH EXTENSION UNTIL 09/30/20)
73	S-020700-WD-CB-C	4/30/2020	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 12 CONSTRUCTION CONDITION #5 (LICENSE #S-020700-WD-BI-N)
74	S-020700-WT-CF-N	5/6/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ST. JOHN'S CHURCH - SOUTH PORTLAND PCB/LEAD PAINT BUILDING DEBRIS
75	S-020700-WT-CH-N	7/10/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	SOUTHWEST HARBOR LEAD STABILIZED SOIL
76	S-020700-WT-CJ-N	10/2/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	MT. ARARAT HIGH SCHOOL - TOPSHAM PCB CONTAMINATED PLYWOOD
77	S-020700-WT-CI-N	10/2/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	FIBER MATERIALS - BIDDEFORD GRAPHITE & CARBON DUST
78	S-020700-WT-CK-N	12/3/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	CMP UTIL. POLE STORAGE AREA - BRIDGTON CONTAMINATED SOIL

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
79	S-020700-WU-CD-N	12/16/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	VARIOUS SPECIAL WASTES & REVISIONS TO ON-GOING SPECIAL WASTE LICENSES
80	S-020700-WD-CL-C	5/25/2021	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 13 CONSTRUCTION CONDITION #5 (LICENSE #S-020700-WD-BI-N)
81	S-020700-WD-CM-M	11/29/2021	BUREAU OF GENERAL SERVICES	MINOR REVISION	OBW TONNAGE LIMIT CALCULATION CHANGE IN THE LANDFILL EXPANSION Expires 12/31/25
82	S-020700-WD-CP-C	4/15/2022	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 14 CONSTRUCTION CONDITION #5 (LICENSE #S-020700-WD-BI-N)
83	S-020700-WD-BI-N	9/26/2022	BUREAU OF GENERAL SERVICES	SCHEDULE OF COMPLIANCE	SCHDULE FOR LANDFILL FINAL COVER CONSTRUCTION
84	S-020700-WD-CO-M	11/28/2022	BUREAU OF GENERAL SERVICES	MINOR REVISION	CONSTRUCTION OF RENEWABLE NATURAL GAS FACILITY AT JRL
85	S-020700-WD-CR-C	4/27/2023	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 15 CONSTRUCTION CONDITION #5 (LICENSE #S-020700-WD-BI-N)
86	S-020700-WD-CQ-C	6/12/2023	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	STAGE 1 FINAL COVER DESIGN REPORT CONDITION #19 (LICENSE #S-020700-WD-BI-N)
87	S-020700-WD-CT-C	6/18/2024	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	STAGE 2 FINAL COVER DESIGN REPORT CONDITION #19 (LICENSE #S-020700-WD-BI-N)
88	S-020700-WD-CU-C	6/26/2024	BUREAU OF GENERAL SERVICES	CONDITION COMPLIANCE	CELL 16 CONSTRUCTION CONDITION #5 (LICENSE #S-020700-WD-BI-N)
89	S-020700-W5-CV-N	10/2/2024	BUREAU OF GENERAL SERVICES	PUBLIC BENEFIT DETERMINATION	PUBLIC BENEFIT DETERMINATION - LANDFILL EXPANSION

JUNIPER RIDGE LANDFILL

MEDEP SOLID WASTE LICENSES (SPECIAL WASTE)

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	ONE-TIME OR ON-GOING	DESCRIPTION
9	S-020700-WU-L-N	1/22/2002	GEORGA-PACIFIC CORPORATION	NEW LICENSE	ON-GOING	CITY OF OLD TOWN BURN PILE / HOT LOAD ASH
12	S-020700-WD-O-M	3/12/2004	STATE PLANNING OFFICE	MINOR REVISION	ON-GOING	ADDITIONAL ASH SOURCES
16	S-020700-WT-V-N	9/14/2006	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	SOUTH PARIS TANNERY SLUDGE & SOIL
17	S-020700-WT-Y-N	2/20/2007	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	BRUNSWICK NAVAL AIR STATION NON-HAZARDOUS DEBRIS & SOILS
18	S-020700-WT-Z-M	3/14/2006	STATE PLANNING OFFICE	MINOR REVISION	ONE-TIME	SOUTH PARIS TANNERY SLUDGE & SOIL REVISION
20	S-020700-WT-AA-N	9/10/2007	NEWSME LANDFILL OPERATIONS, LLC.	NEW LICENSE, PLUS CORRECTED COPY	ONE-TIME	CUTLER NAVAL AIR STATION PETROLEUM CONTAMINATED SOILS
21	S-020700-WT-AC-M	2/5/2008	NEWSME LANDFILL OPERATIONS, LLC.	MINOR REVISION, PLUS CORRECTED COPY	ONE-TIME	BRUNSWICK NAVAL AIR STATION NON-HAZARDOUS DEBRIS & SOILS
26	S-020700-WT-AI-N	9/17/2009	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	BANGOR NON-HAZAARDOUS SOIL & DEBRIS (DREDGED SPOILS)
27	S-020700-WT-AL-N	11/4/2009	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	BREWER LEAD IMPACTED SOIL
28	S-020700-WU-AN-N	3/1/2010	STATE PLANNING OFFICE	NEW LICENSE	ON-GOING	PINE TREE WASTE OILY DEBRIS
29	S-020700-WT-AQ-N	4/15/2010	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	BRUNSWICK NAVAL AIR STATION LEAD PAINT SOIL
30	S-020700-WU-AP-N	5/21/2010	STATE PLANNING OFFICE	NEW LICENSE	ON-GOING	NEW ENGLAND WASTE SERVICES SULFUR WASTES
31	S-020700-WU-AJ-N	6/30/2010	STATE PLANNING OFFICE	NEW LICENSE	ON-GOING	TREATED BIOMEDICAL WASTE

32	S-020700-WT-AR-N	7/21/2010	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	HOWLAND TANNERY SLUDGE
37	S-020700-WT-AX-N	10/28/2011	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	CUTLER NAVAL AIR STATION CONTAMINATED SOILS
38	S-020700-WT-AW-N	11/7/2011	STATE PLANNING OFFICE	NEW LICENSE	ONE-TIME	BASF CONTAMINATED SOILS
51	S-020700-WT-AD-N	9/8/2016	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	BELFAST MGP CONTAMINATED SOILS
52	S-020700-WT-AE-N	10/7/2016	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	LOUIS MACK SITE LEAD CONTAMINATED SOILS
55	S-020700-WT-BK-N	7/27/2017	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	SANFORD CIRCUIT BOARD PROCESSING WASTE
57	S-020700-WT-BN-N	7/6/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	PIONEER PLASTIC CONTAMINATED SOILS
58	S-020700-WT-BO-N	9/11/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	WATERVILLE ARMORY TREATED BUILDING DEBRIS
59	S-020700-WT-BR-N	9/21/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	HANCOCK ELLSWORTH TANNERY TRENCH SOLIDS, HIDES, MISC DEBRIS
61	S-020700-WT-BS-N	10/23/2018	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	UNUM BUILDING - PORTLAND PCB CONTAMINATED SOIL
62	S-020700-WT-BT-N	1/28/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	US NAVY - CUTLER LEAD PAINT CHIPS/GRAVEL/MISC.
63	S-020700-WT-BU-N	4/1/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	EMERA MAINE - BANGOR PCB IMPACTED CONCRETE
65	S-020700-WT-BV-N	6/3/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	HUHTAMAKI POLYETHYLENE & CELLULOSE TRIMMINGS
66	S-020700-WT-CA-N	11/27/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	SOUTHWEST HARBOR TREATED LEAD CONTAMINATED SOIL
67	S-020700-WS-BY-N	12/12/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	DUPONT NUTRITION - ROCKLAND FIRE BRICK
68	S-020700-WT-BX-N	12/18/2019	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	GENERAL ELECTRIC -BANGOR SPENT FILTER SAND
70	S-020700-WT-CC-N	2/10/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	GAC CHEMICAL CORP. - SEARSPORT GRAVEL, SOIL, RR BALL. STONE W/SIKA

71	S-020700-WT-CE-N	3/16/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	ROWE SCHOOL. - YARMOUTH SOIL IMPACTED W/ PULP SLUDGE & ASH
74	S-020700-WT-CF-N	5/6/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	ST. JOHN'S CHURCH - SOUTH PORTLAND PCB/LEAD PAINT BUILDING DEBRIS
75	S-020700-WT-CH-N	7/10/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	SOUTHWEST HARBOR LEAD STABILIZED SOIL
76	S-020700-WT-CJ-N	10/2/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	MT. ARARAT HIGH SCHOOL - TOPSHAM PCB CONTAMINATED PLYWOOD
77	S-020700-WT-CI-N	10/2/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	FIBER MATERIALS - BIDDEFORD GRAPHITE & CARBON DUST
78	S-020700-WT-CK-N	12/3/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ONE-TIME	CMP UTIL. POLE STORAGE AREA - BRIDGTON CONTAMINATED SOIL
79	S-020700-WU-CD-N	12/16/2020	BUREAU OF GENERAL SERVICES	NEW LICENSE	ON-GOING	VARIOUS SPECIAL WASTES & REVISIONS TO ON-GOING SPECIAL WASTE LICENSES

JUNIPER RIDGE LANDFILL

PINE TREE LANDFILL CARRIED BLANKET WASTE LICENSES

TAB #	PERMIT NUMBER	ISSUE DATE	ENTITY	TYPE	DESCRIPTION
BW-1	S-010396-WU-DI-N	3/10/1993	SERF	NEW LICENSE	PIONITE DUST
BW-2	#S-01987-WD-BK-M	12/14/1994	SERF	MINOR REVISION	PETROLEUM CONTAMINATED SOIL & DEBRIS
BW-3	#S-01987-WD-BM-M	5/6/1994	SERF	MINOR REVISION	LEATHER TANNING SCRAPS
BW-4	#S-01987-WD-BN-M	7/15/1994	SERF	MINOR REVISION	LEATHER TANNING FILTER PRESS CAKE AND COLLAGEN SCRAPINGS
BW-5	#S-01987-WD-BO-M	1/4/1995	SERF	MINOR REVISION	ASH & SLUDGE WASTES
BW-6	#S-01987-WD-BP-M	6/16/1995	SERF	MINOR REVISION	COMMERCIAL & INDUSTRIAL LAUNDRY SLUDGE
BW-7	#S-01987-WD-BQ-M	3/29/1996	SERF	MINOR REVISION	SERF CDD PROCESSING RESIDUALS
BW-8	#S-01987-WD-BT-M	12/4/1996	SERF	MINOR REVISION	HIGH VANADIUM ASH
BW-9	#S-01987-WD-BU-M	5/12/1997	SERF	MINOR REVISION	PIGEON WASTES
BW-10	#S-01987-WD-BV-M	6/26/1997	SERF	MINOR REVISION	AMBIENT AIR & WATER FILTRATION MEDIA
BW-11	#S-01987-WD-EB-M	1/7/2004	SERF	MINOR REVISION	ASH & SLUDGE WASTES REVISION TO WD-BO-M
BW-12	#S-01987-WD-GY-M	12/12/1997	SERF	MINOR REVISION	NON-HAZARDOUS CHEMICAL PRODUCTS
BW-13	#S-01987-WD-HA-M	4/29/1998	SERF	MINOR REVISION	OVERSIZED BULKY WASTES

BW-14	#S-01987-WD-IA-M	9/23/1998	SERF	MINOR REVISION	FRONT END PROCESS RESIDUE & OVERSIZED BULKY WASTE
BW-15	#S-01987-WD-KB-M	5/3/2005	PINE TREE LANDFILL	MINOR REVISION	SPRAY BOOTH PAINT FILTERS AND DRIED PAINT RESIDUE
BW-16	#S-01987-WD-WA-M	12/19/2003	PINE TREE LANDFILL	MINOR REVISION	URBAN FILL SOIL & DEBRIS
BW-17	#S-01987-WD-YA-M	2/20/2003	NEW ENGLAND WASTE SERVICES OF ME, INC.	MINOR REVISION	VIRGIN PETROLEUM CONTAMINATED SOIL & DEBRIS
BW-18	#S-01987-WD-ZA-M	8/29/2003	NEW ENGLAND WASTE SERVICES OF ME, INC.	MINOR REVISION	RR TIE ASH, WTP SLUDGE, DREDGED SPOILS

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

STATE OF MAINE,	)	PUBLIC BENEFIT
DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL	)	DETERMINATION
SERVICES, BUREAU OF GENERAL SERVICES	)	
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
JUNIPER RIDGE LANDFILL EXPANSION	)	
S-020700-W5-CV-N	)	
(APPROVAL WITH CONDITIONS)	)	

Pursuant to the provisions of the *Maine Hazardous Waste, Septage, and Solid Waste Management Act*, 38 M.R.S. §§ 1301 through 1319-Y; *Solid Waste Management and Recycling*, 38 M.R.S. §§ 2101 through 2236; the *Maine Solid Waste Management Rules: General Provisions*, 06-096 C.M.R. ch. 400 (last amended February 9, 2021); and the *Maine Solid Waste Management Rules: Landfill Siting, Design, and Operation,* 06-096 C.M.R. ch. 401 (last amended April 12, 2015), the Department of Environmental Protection ("Department") has considered the application of the STATE OF MAINE, acting through the Department of Administrative and Financial Services, Bureau of General Services ("BGS" or "the applicant") with its supportive data, staff summary, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

A. Application: BGS has applied for a determination of public benefit for a proposed expansion of the Juniper Ridge Landfill in Old Town.

B. History: The following history is a summary and does not include all licensing actions:

(1) On July 28, 1993, James River Paper Company, Inc. was issued a license to construct and operate a 68-acre secure landfill, known as the West Old Town Landfill, to dispose of the James River Paper Company's pulp and papermaking residuals (Department Order S-020700-7A-A-N).

(2) On August 25, 1997, James River Paper Company, Inc. changed its legal name to Fort James Operating Company; this name change did not necessitate a license transfer. On October 21, 2003, the Department issued conditional approval for the transfer of licenses for the West Old Town Landfill, from the Fort James Operating Company to the State of Maine, State Planning Office ("SPO") (Department Orders S-020700-WR-M-T

and L-019015-TH-C-T), with the transfer effective on the sale date of February 5, 2004.

(3) On February 5, 2004, the State of Maine, acting by and through the SPO, and Casella Waste Systems, Inc. ("Casella") entered into an Operating Services Agreement ("OSA") for the operation of the West Old Town Landfill.

(4) On April 9, 2004, the Department approved an amendment application (Department Order S-020700-WD-N-A) for a vertical increase in the final elevation of the landfill and the disposal of additional waste streams. The license was subsequently affirmed by the Board of Environmental Protection ("Board") on October 21, 2004.

(5) In 2006, the West Old Town Landfill became known as the Juniper Ridge Landfill ("JRL").

(6) On January 31, 2012, the Department issued a partial approval of SPO's application for determination of public benefit for an expansion. The Department approved a 9.35-million-cubic-yard expansion finding that the entire proposed 21.9-million-cubic-yard expansion was not needed to meet the immediate or short-term solid waste disposal capacity needs of the State.

(7) Pursuant to P.L. 2011, ch. 655, § GG-69, on July 1, 2012, BGS, within the Department of Administrative and Financial Services ("DAFS") became the state agency acting as the owner and licensee of JRL. The Department of Economic and Community Development was the manager of JRL, although BGS assumed the manager role in 2020. NEWSME Landfill Operations, LLC ("NEWSME"), a wholly owned subsidiary of Casella, operated the landfill for the State of Maine, acting through BGS.

(8) On June 1, 2017, the Board approved the construction and operation of a 9.35-million-cubic-yard expansion at JRL (Board Order S-020700-WD-BI-N, hereafter "expansion license") in a phased manner, designated as Cells 11 through 16.

(9) Cells 11, 12, 13, 14, and 15 of the expansion have been constructed and are operational. Department approval for the specific design of Cell 11

was incorporated in the expansion license. The approval of the design specifics of Cell 12 was issued April 30, 2020 (Department Order S-020700-WD-CB-C). During the design of Cell 12, the expansion cell layout was changed; initially, the expansion was to be constructed in 6 cells, 11-16, but it was revised to be constructed in 7 cells, 11-17, with no change to the overall expansion footprint or fill height. Approval of the subsequent cell design specifics occurred as follows: Cell 13 was approved May 25, 2021 (Department Order S-020700-WD-CL-C), Cell 14 was approved April 15, 2022 (Department Order S-020700-WD-CP-C), Cell 15 was approved April 27, 2023 (Department Order S-020700-WD-CR-C); and Cell 16 (Department Order S-020700-WD-CU-C) was approved June 26, 2024. Cell 16 is currently under construction.

C. Summary of Proposal: BGS proposes to expand JRL by approximately 61 acres, to provide 11.9 million cubic yards of additional capacity. At the most recent 5-year fill rate average of 860,771 tons or 1,049,721 cubic yards, this would provide approximately 11.3 additional years of use. The expansion would continue to accept construction and demolition debris ("CDD"), oversized bulky waste ("OBW"), residue from CDD processing facilities located in Maine, bypass municipal solid waste ("MSW") from Maine incinerators and the Municipal Waste Solutions ("MWS") waste processing facility in Hampden, wastewater treatment plant sludge, ash, and a variety of other in-state non-hazardous solid wastes.

The application for a determination of public benefit ("Application") was submitted to the Department on June 10, 2024 and was accepted for processing on June 24, 2024. Pursuant to 38 M.R.S. § 1310-AA(2) and 06-096 C.M.R. ch. 400, § 5(G), the Department shall issue a decision within 60 days of receipt of the Application. In an August 13, 2024 letter, the Department requested a 30-day extension to this timeframe. The Department's request was granted in an August 13, 2024 letter from the applicant. The Department requested additional information on the Application in a July 30, 2024 letter. In an August 8, 2024 letter, the applicant provided a response to the Department's request.

2. APPLICABLE LAW

38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5 establish the process and standards to be used in determining whether a proposed new or expanded solid waste

disposal facility provides a substantial public benefit. The process and relevant standards follow.

A. Process: The law requires the Commissioner to consider the state waste management and recycling plan required under 38 M.R.S. § 2122 ("State Plan"), written information submitted in support of the Application and any other written information the Commissioner considers relevant. The most recent version of the State Plan is the *Maine Materials Management Plan: 2024 State Waste Management and Recycling Plan Update and 2022 Waste Generation and Disposal Capacity Report*, dated January 2024. The law also requires the Commissioner to hold a public meeting in the vicinity of the proposed facility to take public comments, to consider those comments in making the determination, and to accept written public comment during the course of processing the Application.

B. Standards: In order for the Commissioner to find that the proposed landfill expansion provides a substantial public benefit, the applicant must demonstrate to the Commissioner that the proposed facility:

- Meets the immediate, short-term, or long-term capacity needs of the state. "Immediate" is defined as within the next 3 years; "short-term" is within the next 5 years; and "long-term" is within the next 10 years. The Commissioner shall consider relevant local and regional needs as appropriate and the regional nature of the development and use of disposal capacity due to transportation distances and other factors;
- Is consistent with the state waste management and recycling plan and promotes the solid waste management hierarchy ("waste hierarchy");
- Is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal; and
- Is not inconsistent with ensuring environmental justice for the community in which the facility or expansion is proposed.

3. TITLE, RIGHT OR INTEREST

06-096 C.M.R. ch. 400, § 4(A) requires an applicant to demonstrate to the Department's satisfaction sufficient title, right or interest in all of the property which is proposed for development or use. The Application includes a copy of the deed for the property, which is recorded in Book 9188, Page 152 of the Penobscot County Registry of Deeds. Casella Waste Systems' subsidiary, NEWSME Landfill Operations, operates the landfill under

the terms of the OSA with the State of Maine. The Department finds that BGS has demonstrated sufficient evidence of title, right or interest in the property, as required by 06-096 C.M.R. ch. 400, § 4(A).

4. PUBLIC PARTICIPATION

A. Notice of Intent to File: 06-096 C.M.R. ch. 400, § 5(F)(1) requires public notification prior to filing an application for determination of public benefit. A notice of Intent to File the Application was published in the Bangor Daily News on June 7, 2024. A copy of the notice was sent by certified mail to abutters, the Town of Alton, the City of Old Town, the Penobscot Indian Nation, and the Juniper Ridge Landfill Advisory Committee members. The Department finds that the public notifications complied with the requirements in 06-096 C.M.R. ch. 400, § 5(F)(1).

B. Public Meetings: 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(F)(1) require that the Commissioner hold a public meeting in the vicinity of the proposed expansion to receive public comments regarding the Application. The Commissioner held an in-person public meeting in Orono, Maine on July 16, 2024, from 1:00 pm to 3:00 pm and 5:30 pm to 7:30 pm with the option to attend, but not give comment, virtually. Notice of the meeting was published in the Bangor Daily News on July 3, 2024, and posted on the Department's website, with interested parties notified by electronic mail. Comments were received orally and in writing at the meeting. The meeting was recorded, and a video and transcript posted on the Department's website. Based on a request from a commenter, a virtual-only public meeting was held on July 26, 2024, at 9:00 am, to accept remote public comments. Notice of the virtual meeting was published in the Bangor Daily News on July 12, 2024, posted on the Department's website, and sent to interested parties by electronic mail. The virtual meeting was also recorded, and the video and transcript posted on the Department's website. The Department finds that a public meeting was held as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(F)(1).

C. Public Comment: 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(F)(1) require that the Department accept public comments during the course of processing the Application. Public comments have been received throughout the course of processing the Application. In addition to comments received at the public meetings, comments were submitted to the Department by electronic mail. The comments received in writing and by electronic mail have been posted on the

Department's website. Those commenting include people living near the project site, people living elsewhere in Maine, members of the Penobscot Indian Nation, local legislators, the City of Old Town, and people representing or associated with the following organizations: Conservation Law Foundation, Slingshot, Maine Climate Action Now, Maine Water Environment Association, Community Water Justice, Don't Waste ME, Defend Our Health, Friends of the Harriet L. Hartley Conservation Area, Upstream Watch, the Sierra Club, First Light, ecomaine, and the Houlton Water Company.

Issues raised by commenters included, but were not limited to, the following concerns: the Department's review may not be objective, considering statements in the State Plan, dated January 2024; landfill expansion does not support the waste hierarchy and encourages disposal; landfill space has been consumed by out-of-state waste; it is premature to expand landfill capacity with the future of the Orrington waste-to-energy incinerator, Hampden waste processing facility, and treatment plant sludge management options being unclear; the State has failed to provide non-landfill options for waste management; there is insufficient incentive for people to reduce, reuse, or recycle waste and a financial incentive to landfill it; landfill leachate receives insufficient treatment prior to discharge; exposure of the public to odors, pollutants released during landfill fires, and leachate constituents discharged to the Penobscot River are inconsistent with environmental justice; the facility has changed from a landfill supporting residual disposal from a local pulp and paper mill to a facility accepting a wide variety of wastes from the entire State and other New England states with limited input from the host community and others; the application process does not provide for meaningful public involvement; duration and quantity of MSW bypass should be limited; it makes sense to expand an existing landfill rather than to place one in an unspoiled location elsewhere; and, the landfill expansion is needed to provide time for development and funding of infrastructure to support policies developed by the State.

The Department finds that public comments have been accepted and considered as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(F)(1).

D. Draft License Decision Comment Period: In accordance with 06-096 C.M.R. ch. 2, § 18,[1] a draft Public Benefit Determination was made available for a five-

[1] 06-096 C.M.R. ch. 2, § 2(B) does not apply to this public benefit determination. To the extent the Department consulted the rule, it did so for guidance only.

working-day comment period on September 13, 2024, through notification to the applicant, the Town of Alton, the City of Old Town, the Penobscot Indian Nation, Juniper Ridge Landfill Advisory Committee members, and interested persons. The draft Public Benefit Determination was also posted on the Department's website. In response to a request from the public, the Department sought concurrence from the applicant, on September 17, 2024, to provide an additional week for public comment and an additional 3 business days for Department review. The applicant agreed to this request on September 19, 2024. In addition to the topics described in Finding of Fact 4.C above, issues raised included, but were not limited to, the following: Casella should be required to install a sludge dryer at the landfill; there should be a limit on annual capacity used; there should be a limit on the quantity of CDD processing fines accepted; MSW bypass that has been continuing for a lengthy period of time should no longer be considered bypass; JRL should use tarps, biologically active soil, or soil from agronomic sludge utilization sites as daily cover material instead of alternative daily cover ("ADC") or virgin soil; additional continuous air monitors should be installed in the vicinity of JRL and Indian Island; a public alert warning system or siren should be established; and landfill capacity for sludge is needed because the few solutions that might marginally lower municipal sludge volumes would require financial investments out of reach of small utility districts.

5. CAPACITY NEEDS

38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(1) require the applicant to demonstrate that the proposed facility meets immediate, short-term, or long-term capacity needs of the State. 38 M.R.S. § 2124-A requires the Department to report to the Legislature regarding statewide generation of solid waste, statewide recycling rates, and available disposal capacity for solid waste. The State's capacity needs are projected in the most recent update of the State Plan.

A. Requested Capacity: JRL is expected to exhaust its permitted capacity in 2028, if disposal continues at current rates. BGS requests an expansion providing additional capacity of 11.9 million cubic yards, which would add 11.3 years of landfill life, using JRL's annual waste acceptance average over the most recent 5-year period, and assuming a compaction rate of 0.82 tons of waste per cubic yard. JRL currently accepts waste from all areas of the State of Maine, and disposes of approximately 52% of the waste landfilled in Maine. JRL also accepts nearly 90% of the wastewater treatment plant sludge disposed in Maine. The landfill provides a disposal location for residues from the Orrington waste-to-energy

incinerator, bypass MSW from all three Maine waste-to-energy incinerators, and bypass MSW from some of the municipalities under contract with the Municipal Waste Solutions (MWS) waste processing facility under a waste swap agreement with the Crossroads Landfill in Norridgewock. The landfill is located between an active commercial landfill in Norridgewock and an active landfill in Fort Fairfield licensed to accept MSW, CDD, and some special wastes.

The proposed expansion would provide for acceptance of the same types of wastes that are currently accepted, which include in-state CDD, OBW, residues from processing CDD, front end processing residue from waste-to-energy incinerators, bypass MSW, wastewater treatment plant sludge, and various non-hazardous special wastes. Based on waste volume information in the JRL annual reports, the average quantities of the major categories of waste received at JRL from 2020 through 2023 were: 38% CDD, 25% bypass MSW, 10% wastewater treatment plant sludge (both municipal and industrial), 9% OBW, 9% CDD processing fines, 4% miscellaneous waste, and 3% ash. In response to a question from the Department, the applicant calculated that if the Maine Regional Conversion Facility, LLC sludge dryer and the anticipated Brunswick AD, LLC anaerobic digester expansion projects are successful, sludge deliveries to the landfill may be reduced by 90%, in which case the proposed expansion would provide approximately 13 years of capacity.

Because the landfill accepts nearly 90% of the municipal wastewater treatment plant sludge disposed in Maine, and the licensed capacity is expected to be filled in 2028, the Application references a conclusion in the *Analysis of Sludge and State-Owned Landfills as Public Utilities Report*, dated January 2024 ("Biosolids Report") that additional disposal capacity will be needed for wastewater treatment plant sludge as soon as 2028, and thus the expansion would meet Maine's short-term need for capacity for wastewater treatment plant sludge.

The Application further concludes that an expansion of JRL is necessary to prevent a shortfall of disposal capacity for all wastes in less than 10 years based on a set of assumptions: the State's recycling rate is consistent; waste generation continues to increase at approximately 5.6% per year; the quantity of waste exported from Maine remains consistent; the Maine Waste to Energy and ecomaine waste-to-energy incinerators continue operation at the current rates; the MWS waste processing facility in Hampden sends 30% of its contracted waste to landfills; the Orrington facility incinerates 50% of its contracted waste in 2025 and 60% thereafter; municipally operated landfills do not change significantly;

and the Crossroads Landfill in Norridgewock could not handle all of the State's landfill needs. With these assumptions and based on calculations presented by the applicant a shortfall of landfill disposal capacity for all wastes will occur in less than 10 years, and therefore the expansion is needed to meet Maine's long-term capacity needs for all wastes.

B. Department Review: The Department considered the State Plan, the *Maine Solid Waste Generation and Disposal Capacity Report for Calendar Years 2020 & 2021*, dated January 2023 ("Biennial Report"), the Biosolids Report, the Application and other supporting information, recent facility annual reporting information, and public comments during review of the Application.

As noted in the Application, there are currently eight licensed landfills in Maine, in addition to JRL, that accept MSW, bypassed MSW, CDD and special waste. Four of these landfills (Bath, Hatch Hill in Augusta, Tri-Community in Fort Fairfield, and Presque Isle[2]) are municipally owned and primarily accept waste from the area municipalities. As stated in the Biennial Report, these landfills had 2,303,572 cubic yards of capacity remaining as of December 31, 2021, about two-thirds of which is capacity in Aroostook County. Two landfills, ecomaine (in Scarborough and South Portland) and Lewiston, accept primarily ash from associated or nearby waste-to-energy incinerators. These landfills had 1,328,969 cubic yards of capacity as of December 31, 2021. The Crossroads Landfill in Norridgewock is a commercial landfill accepting waste from a wide service area, and had 8,533,231 cubic yards of capacity available as of December 31, 2021. The remaining licensed landfill is the State-owned Carpenter Ridge Landfill, which has not yet been developed. Carpenter Ridge Landfill has a licensed capacity of 1,800,000 cubic yards and is licensed to accept only special waste. Nineteen additional municipally owned small landfills accept wood wastes and CDD, and seven generator-owned landfills accept wastes only from the generators. As stated in the JRL annual report, the landfill had 6,332,172 cubic yards of capacity remaining as of December 31, 2021. By the end of 2022, available capacity of the nine landfills combined was approximately 17,792,907 cubic yards. Based on 2023 annual reports, available capacity of the nine landfills combined at the end of 2023 was 15,951,479 cubic yards.

[2] The Presque Isle Landfill is currently inactive as its owner, Aroostook Waste Solutions, has transitioned operations to its landfill in Fort Fairfield; however, available capacity remains in Presque Isle and will be used once operations in Fort Fairfield have ceased.

The State Plan reported that 1,547,594 tons of MSW and CDD (including CDD used as ADC) was placed in landfills in 2022, including the 8 currently licensed and operating landfills described above and 19 smaller municipally owned landfills. Review of annual report information for 2023 for only the 8 currently licensed and operating landfills described above showed 1,507,497 tons of waste received (assuming ecomaine's ash landfill received waste at its 5-year average rate). Over the time period from 2018 to 2022, JRL accepted approximately 52% of the landfilled waste; Crossroads Landfill accepted approximately 27%, Hatch Hill Landfill in Augusta accepted approximately 5%, two Aroostook County landfills (in Presque Isle and Fort Fairfield) accepted approximately 5%, and municipally owned landfills accepted the remaining 11%. The 2024 State Plan analyzed licensed disposal capacity at the three waste-to-energy incinerators and licensed landfill capacity for the larger landfills in the State. The waste-to-energy incinerators accepted approximately 44% of the MSW disposed in Maine; the remaining 56% was landfilled. A minor percentage of CDD generated in Maine is disposed at small municipally owned facilities, but the majority must be managed at a processing facility or landfilled.

In addition to receiving bypass MSW, waste-to-energy incinerator residue, processing facility residue, and wastewater treatment plant sludge, JRL accepts CDD and special waste from sources that include: municipal transfer stations; municipal bulky waste collection events; commercial waste haulers providing disposal services; construction debris from new developments; remediation projects; disaster cleanups; and individuals who generate waste such as debris from home renovations. JRL's location meets local and regional needs for a disposal location for these wastes. With the exception of Crossroads Landfill, the other existing landfills are either not available for use by the generators currently using JRL or, in the case of the Aroostook County landfills, not a viable option due to transportation distances. JRL has been used as the location for disposal of some of the bypass MSW from the MWS processing facility in Hampden because of transportation distances, efficiency, and logistical challenges. MWS contracted with Crossroads Landfill for disposal of waste generated by its members from the effective date of contracts until facility startup ("bridge waste"), bypass, and residue, but the location of Crossroads Landfill made it difficult for some municipalities utilizing curbside collection to complete a collection route and still have time to travel to Crossroads Landfill for disposal before it closed for the day. Other municipalities would have travelled past JRL to go to Crossroads Landfill.

Regarding available licensed capacity, the information in the Application is consistent with the State Plan. As noted in the Application, the State Plan concluded that expansion of JRL would be needed to ensure adequate disposal capacity for the entire State for the next 10 years. The Department determined, after review of the State Plan and landfill annual reports, that the State Plan's conclusion is still valid.

Uncertainties regarding the quantity of bypass MSW needing landfill disposal (depending on future status of the Orrington waste-to-energy incinerator and MWS processing facility), quantity of municipal wastewater treatment plant sludge needing disposal (depending on startup of and sources of sludge for the new Maine Regional Conversion Facility, LLC sludge dryer, possible restart of the Brunswick AD, LLC anaerobic digester in Brunswick, and availability of bulking material for sludge at JRL) and possibility of legislative initiatives make prediction of future disposal capacity needs challenging. Many of the public comments received stated that too much landfill space has been consumed by waste originating in other states. Others commented that the amount of CDD should be reduced or more should be recycled. Current statute allows placement of a certain amount of waste from a processing facility located in Maine that accepts waste from out-of-state. Unless the statute is revised, JRL may legally accept a certain amount of residues from in-state CDD processing facilities. The Application states that JRL needs OBW from CDD processing facilities to bulk the increased quantity of wastewater treatment plant sludge being landfilled, and needs the processing fines in order to avoid using virgin soil material for daily cover. Casella has used more virgin soil in 2022 and 2023, when the quantity of processing fines decreased. The Department notes that JRL's daily cover, as a percentage of the total waste received, appears reasonable in comparison to similar landfills in Maine. Discounting the space consumed by CDD processing fines used as ADC, since the space would otherwise be consumed mostly by virgin soil (the other materials approved as ADC are a small percentage of the total waste received, and are not always available), approximately 6% of landfill space (average from 2020 through 2023) has been used by OBW that originated out-of-state. In contrast, approximately 38% of landfill space (average from 2020-2023) has been used for disposal of CDD originating in Maine. Data from the two CDD processing facilities operating in Maine are an indication that the recyclable content of the mixed CDD they receive is very low. Reducing the amount of CDD generated in Maine and requiring generators to separate CDD components at the site of generation is beyond the ability of the operator of JRL to control. Commenters expressed the concern that, if the landfill capacity is

increased, the incentive to find ways to reduce the volume of waste being disposed will disappear until the next capacity shortfall. Licensing and construction of landfill capacity can take three years or more to complete, so planning must begin well in advance of when capacity is needed. During this time, changes in waste management methods, pricing, and availability of alternatives to landfills can change, but it would be irresponsible to ignore the current projected capacity need. Moreover, the Department has already begun working toward alternative methods for diverting waste from landfills through its numerous product stewardship programs including the new extended producer responsibility for packaging program anticipated to be in full implementation in 2027. The State Plan acknowledges that, even with an expansion of JRL, waste disposal capacity will be limited in 15 years.

C. Findings: The Department finds that in consideration of the State Plan, expansion of JRL meets short-term and long-term capacity needs of the State, as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(1). The Department further finds that adding 11.9 million cubic yards of capacity is reasonable, considering the amount of time it takes to license new or expanded disposal capacity or waste processing facilities, uncertainty surrounding waste management options in the Eastern Maine region, uncertainty surrounding the future municipal wastewater treatment plant sludge management options, the fact that waste generation rates fluctuate but as noted in the State Plan, per capita waste generation appears to be increasing, the need to support waste-to-energy incinerators and disposal needs of the Eastern Maine region, and the lack of existing infrastructure to increase waste diversion.

6. CONSISTENCY WITH STATE WASTE MANAGEMENT PLAN AND HIERARCHY

38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(2) require the applicant to demonstrate that the proposed expansion is consistent with the State Waste Management and Recycling Plan and to promote the Solid Waste Management Hierarchy. The State Plan is based on the waste hierarchy established in 38 M.R.S. § 2101 and the State's goals for recycling, composting, and waste reduction established in 38 M.R.S. § 2132. The waste management hierarchy establishes priorities for the State to use when making solid waste management decisions. The hierarchy, from highest to lowest priority is as follows: reduction of waste (in amount and toxicity) at the source; reuse of waste; recycling of waste; composting of biodegradable waste; processing of waste to reduce the volume needing land disposal, including incineration; and land disposal of waste. The State's goals are to recycle or compost at least 50% of the MSW tonnage by January 1,

2021; to reduce the per capita disposal rate to 0.55 tons per person per year by January 1, 2019, with further reduction of 5% every 5 years thereafter; and for municipalities to demonstrate reasonable progress toward these goals. The State Plan described several studies that have been or are being undertaken to understand and characterize waste streams; the results will be used for future solid waste management planning. In the meantime, the State Plan includes some strategies for consideration, including but not limited to the following: use of subsidies, tax incentives, low-interest loans, and "pay as you throw" programs to increase waste diversion; increasing participation in product stewardship programs; encouraging municipal efforts through education, cooperative work, and publicizing waste diversion grant opportunities and future extended producer responsibility reimbursement; and encouraging regionalization.

A. Application Discussion: The Application and supporting documents describe a number of actions and programs to demonstrate that expansion of the landfill is consistent with the State Plan and promotes the waste management hierarchy.

(1) Landfill gas at JRL has been flared, but Casella, with an energy partner, developed a renewable natural gas facility that converts landfill gas to biogas. The biogas will eventually be directed to a natural gas pipeline; currently the gas is compressed and trucked, while awaiting extension of the gas line.

(2) Casella operates a single sort recycling facility in Lewiston and a commercial recycling facility in Scarborough, and provides brokerage operations; over 93,000 tons per year of recyclables are managed through these programs. JRL's 2023 annual report states that 101 tons of residue from the Casella operated single sort recycling facility was delivered to the Maine Waste to Energy waste-to-energy incinerator. Additional residue and trash from the Casella operated single sort recycling facility disposed at JRL totaled 8,239 tons. Casella provides recycling capability for traditional recyclable materials (paper, plastics, glass, cans) at 11 out of 15 Casella-owned or operated transfer stations and provides curbside collection of or drop-off locations for recyclables in 39 municipalities. Casella states that 3,251 businesses in Maine participate in its single sort recycling program.

(3) Casella also collects and manages universal waste, electronic waste, and tires at most of its owned or managed transfer stations. Metals are accepted for recycling at all of its owned or operated transfer stations.

Four of its transfer stations collect wood separately; wood waste processed from two of them is used for alternative daily cover or other landfill use, and the other two send wood waste to other processors.

(4) Casella manages 15,000 to 30,000 tons per year of residuals for agronomic utilization, including seaweed residual, wood-fired boiler ash, and paper mill lime wastes.

(5) Casella provides education and outreach for recycling customers through its website, at schools, businesses, and community events; with student internships focused on recycling education; and with a mobile recycling application ("app") that it has deployed to six communities so far, with plans to deploy to additional municipalities. Casella worked with one large municipality to perform recycling audits and bin tagging to reduce contamination in recycling, and is willing to work with other interested towns.

(6) Casella's August 9, 2024 response to the Department states that it intends to initiate a mattress recycling program in Maine in 2025.

B. Department Review: A solid waste disposal facility must show that waste has been reduced, reused, recycled, composted, and/or processed to the maximum extent practicable prior to landfilling. The greatest amount of waste must be handled through means as high on the hierarchy as possible without causing unreasonable increases in facility operating costs or unreasonable impacts on other aspects of facility operation.

The Application demonstrates that Casella has existing programs in place to reduce and reuse waste and to encourage recycling at the facilities it owns and, to a lesser extent, facilities it operates for municipalities, including single sort recycling, commercial recycling, universal waste and electronic waste recycling, metal recycling, tire recycling, agronomic utilization of residuals, wood waste recycling, and converting landfill gas to renewable natural gas. The categories of waste accepted by the landfill in the greatest volumes in recent years have been bypass MSW, CDD, residue from CDD processing facilities, and wastewater treatment plant sludge. Casella cannot control the amount of MSW that is bypassed from waste-to-energy incinerators or the Hampden waste processing facility. The volumes of CDD delivered to the landfill from non-Casella haulers or transfer stations not owned or operated by Casella similarly are beyond

Casella's control to sort or reduce. The Department anticipates that the volume of CDD processing residue from Maine's largest CDD processing facility delivered to JRL for disposal will be reduced in accordance with 38 M.R.S. § 1310-N(5-A) which requires this processing facility to reuse or recycle at least 50% of its processing debris through methods other than placement in a solid waste landfill by July 1, 2028. The quantities of wastewater treatment plant sludge delivered to the landfill are generated by municipalities and industries after passing through the treatment plants' dewatering processes. If Casella were to refuse to accept the treatment plant sludge due to its moisture content, or to require the generators to dry it further, this would increase the burden on municipalities and require time to develop and implement a solution. As noted in the Application, landfill space will still be required for sludge when drying or anaerobic digestion facilities are not operating due to planned maintenance or malfunction events. However, the Department recognizes that new facilities may become operational in the future to reduce the volume of wastewater treatment plant sludge either by drying or anaerobic digestion. For example, Maine Regional Conversion Facility, LLC expects to have their proposed sludge dryer operational in late 2025. This facility is expected to reduce sludge volumes by approximately 75%. Reduction in volume of waste is one of the priorities in Maine's solid waste management hierarchy.

The Department finds that expansion of the JRL as proposed by BGS is consistent with the State Plan and promotes the solid waste management hierarchy as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(2), provided:

- Casella submits a report to the Department detailing its plans and schedule for implementing the mattress recycling program within six months of the date of this Order;
- Casella continues to expand deployment of its mobile recycling app, and includes information in each landfill annual report regarding where the app has been deployed;
- Casella includes a discussion in each landfill annual report regarding Casella's work to encourage and assist towns to engage in all possible recycling and diversion activities; and
- Casella evaluates, and submits the evaluation in each annual report, the availability and capacity of regional facilities in Maine to reduce the volume of municipal wastewater treatment plant sludge prior to landfilling at JRL. The evaluation should include recommendations to further reduce the volume of sludge prior to landfilling.

7. NOT INCONSISTENT WITH LOCAL, REGIONAL, OR STATE WASTE COLLECTION, STORAGE, TRANSPORTATION, PROCESSING, OR DISPOSAL

38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(3) require the applicant to demonstrate that the proposed expansion is not inconsistent with local, regional, or state waste management.

Casella provides collection and/or recycling services to approximately 60 municipalities, including curbside collection, drop-off locations, transfer stations, and brokerage services for recyclables, consistent with local, regional, and statewide collection practices. JRL is located centrally and is accessible to many municipalities. Vehicles performing curbside collection have time to complete their route and go to the landfill on the same day. A large part of Maine is within 50 miles of the landfill; it is close to Bangor, the second largest city in the state, and nearly the entire state is within 150 miles, so the landfill meets local, regional, and statewide needs. Tipping fees at the landfill are capped in accordance with the OSA, and are subject to annual adjustment in accordance with the consumer price index. The not-to-exceed tipping fees for bypass MSW are slightly above the average and median cost of MSW disposal stated in the State Plan. The CDD tipping fees are a little lower than the average and median cost stated in the State Plan. The landfill provides a disposal location for special wastes that require disposal in a secure landfill. The landfill supports existing processing facilities and waste-to-energy incinerators in the state by providing a disposal location for bypassed waste and residues that require landfilling.

The landfill has existed as a State-owned landfill for 20 years, and was purchased by the State to provide for disposal capacity for nonhazardous waste generated within the state. The landfill continues to accept wastes similar to those it has accepted over the past 20 years, although the 2017 expansion limited acceptance of MSW to bypass from Maine waste-to-energy incinerators and the MWS processing facility, and the quantity of sludge accepted as a percentage of the waste stream has increased in recent years. Continued operation of the landfill in a manner similar to which it has been operated is consistent with past waste management practices in the state.

The Department finds that the proposed expansion is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal, as required by 38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(3).

8. NOT INCONSISTENT WITH ENSURING ENVIRONMENTAL JUSTICE

38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(5) require the applicant to demonstrate that the proposed project is not inconsistent with ensuring environmental justice for the community in which the facility is proposed. Environmental justice is defined as the right to be protected from environmental pollution and to live in and enjoy a clean and healthful environment regardless of ancestry, class, disability, ethnicity, income, national origin, or religion. Environmental justice includes the equal protection and meaningful involvement of all people with respect to the development, implementation, and enforcement of waste management laws, regulations, and licensing decisions.

Based on EPA's Environmental Justice Screening and Mapping Tool (Version 2.3), Indian Island and the Penobscot River to just above the Mattaseunk Dam is part of a block group identified as a Designated Disadvantaged Community according to EPA Justice40 criteria (designated for energy, health, and American Indian Reservation Lands) and EPA Inflation Reduction Act ("IRA") Data 2.0 criteria. The tract of land where JRL is located is identified as disadvantaged according to EPA IRA Data 1.0. There are 20 disadvantaged tracts in Penobscot County and 127 disadvantaged tracts in Maine according to EPA Justice40 criteria.

Based on environmental justice indicators, the block group that includes Indian Island is above the 95th percentile when compared to state data for several indexes including wastewater discharge,[3] hazardous waste proximity,[4] underground storage tanks,[5] and toxic releases to air.[6] Within the 19.36-square-mile block, 7 regulated sites (1 water discharger and 6 brownfields) report data to EPA. For the block group that includes JRL, there are 2 environmental justice indexes (toxic releases to air and wastewater discharge)

[3] The environmental burden indicator for wastewater discharge measures how much relative risk there is of being exposed to pollutants from wastewater that flows into rivers or other bodies of water downstream.
[4] The environmental burden indicator for hazardous waste proximity measures how close people might live to a facility that handles hazardous waste.
[5] The environmental burden indicator for underground storage tanks measures how many underground storage tanks and release sites are near where people live. This indicator is based on the sum of tanks and releases within a 1,500-foot buffered block group.
[6] The environmental burden indicator for toxic releases to air measures the average annual chemical concentrations in air weighted by the toxicity of each chemical. This indicator includes chemicals covered by EPA's Toxics Release Inventory (TRI) Program.

that are in the 50th to 80th percentile range when compared to state data. There are no environmental justice indicators at higher percentiles. As part of this block group, there is one regulated water discharger and two regulated air polluters that are required to report data to EPA.

The Penobscot River Basin is the longest river system located entirely within Maine and is New England's second largest river basin located entirely within the region. The Penobscot Indian Nation, a federally recognized tribe, which is based on Indian Island near Old Town, has deep connections to the land and waterways of the Penobscot River. The Penobscot River is considered the heart of the Penobscot culture and is relied on for food, drinking water, transportation, and other cultural facets. The West Branch and mainstem receive wastewater discharges from five pulp and paper mill outfalls, one of which is ND OTM, LLC in Old Town. ND OTM, LLC is licensed under Maine Pollutant Discharge Elimination System permit #ME0002020 and Maine Discharge License #W002226-5N-S-M. In 2023, 26,531,525 gallons of landfill leachate from JRL were generated and hauled off-site for treatment at the ND OTM, LLC wastewater treatment facility.

Based on the Department's draft *2024 Integrated Water Quality Report*, a total of seven segments on the mainstem of the Penobscot River from the confluence of the East and West Branches to Reeds Brook in Hampden and the West Branch Penobscot River between Millinocket Stream and East Branch Penobscot River are listed as impaired for aquatic life. Maine has established safe eating guidelines for fish from the Penobscot River below Lincoln of no more than one to two meals per month of any fish species based on testing for PCBs, dioxins, and DDT.

A. Per- and Polyfluoroalkyl Substances: Per- and Polyfluoroalkyl Substances ("PFAS") are a group of manufactured chemicals that have been used in industry and consumer products since the 1940s. There are thousands of different PFAS, some of which have been more widely used and studied than others. Many PFAS are known to break down very slowly and can bioaccumulate in people, animals, and the environment over time. Several commenters expressed concern over PFAS in JRL's landfill leachate and in the discharge from ND OTM, LLC's wastewater treatment facility, where JRL leachate is treated, to the Penobscot River.

Based on data reported to the Department pursuant to P.L. 2021, ch. 641, the Sum of 6 PFAS[7] (PFOA, PFOS, PFHxS, PFNA, PFHpA, and PFDA) from samples taken at Outfall 001-A at ND OTM, LLC ranged from a low of 11 parts per trillion ("ppt") in March 2023 to a high of 311 ppt in September 2023. The Sum of 6 PFAS from an October 2023 landfill leachate sample from JRL was approximately 2,920 ppt. The lowest Sum of 6 PFAS concentration was 410 ppt from a December 2021 sample. ND OTM, LLC's wastewater treatment facility does not specifically include treatment for PFAS.

B. Environmental Monitoring at JRL: As part of the facility's environmental monitoring plan, the applicant monitors 50 groundwater monitoring wells, 5 surface water monitoring locations, 5 pore-water monitoring locations, 2 stormwater monitoring locations, 13 underdrain monitoring locations, 7 leak detection monitoring locations, and 1 leachate monitoring location. The applicant also conducts monitoring for landfill gas within manholes and groundwater monitoring wells, and at underdrain, leak detection, and leachate collection locations. Four locations just beyond the property boundary are also monitored for hydrogen sulfide. The facility operates a sulfur removal system to remove total reduced sulfur compounds, primarily hydrogen sulfide, from the landfill gas prior to flaring.

Based on the Department's most recent review of JRL's annual monitoring report, the Department concluded that "[g]roundwater, surface water, porewater, underdrain and leak detection monitoring results continue to show minimal evidence of impact from landfill leachate." Further, the Department noted that groundwater monitoring locations that exhibit low concentrations of certain landfill indicator parameters (i.e., chloride) appear to be affected by site-related maintenance and construction activities rather than leachate from the landfill.

C. Air Quality and Landfill Odor: As part of landfill operations, the applicant conducts daily odor surveys around the active waste areas, continuous hydrogen sulfide monitoring with stationary monitors, and quarterly methane emission surface scans on the landfill intermediate cover. Through surface scan monitoring, improvements are made to ensure the effectiveness of the intermediate cover and active gas collection and control system. If a hydrogen

[7] The Department reported the Sum of 6 PFAS in its November 2023 wastewater effluent monitoring summary report which includes the compounds used in Maine's current interim drinking water standards. However, Maine does not have any standards or screening levels for wastewater effluent or landfill leachate. The use of the Sum of 6 PFAS in this paragraph is for ease of reference only.

sulfide monitor detects hydrogen sulfide over 15 parts per billion ("ppb"), the scale house is automatically alerted, and scale house staff report the detection to landfill supervisory staff. If there is a detection over 30 ppb, the Old Town code enforcement officer is to be notified. These action levels were established during licensing of the landfill expansion in 2017, based on the recommendation of Old Town's consultant. For comparison purposes, the Department's acute ambient air guidelines include a level of 30 ppb (30-minute rolling average) for hydrogen sulfide. Based on JRL's 2023 Annual Report, JRL received a total of 49 odor complaints; 44 were confirmed as likely coming from the landfill. During 2023, there were 20 hydrogen sulfide readings from the monitors that were above 15 ppb. Of these, none were above 30 ppb. While the odor threshold for hydrogen sulfide is variable, hydrogen sulfide can become noticeable at approximately 10 ppb. Several comments were received about odor from JRL and impacts to the enjoyment of property.

JRL's Operations Manual includes an Odor Control Plan and Odor Complaint Management and Response Plan. The Odor Control Plan outlines specific provisions to control and mitigate the off-site migration of odors associated with landfill operations including the placement of daily cover, minimizing the active waste area, use of an odor neutralizer spray at the working face and on waste within incoming waste loads, and the use of a perimeter odor misting system during warmer months. As each landfill cell is filled and cover is placed, a series of lateral gas collection pipes is installed to control fugitive landfill gas emissions which could result in landfill odors. Vertical landfill gas extraction wells are installed once certain waste grades are reached. Once extracted, landfill gas is either compressed and trucked off-site while awaiting extension of a natural gas pipeline or combusted with on-site flares.

Based on air quality complaints received pertaining to the landfill, the Department's Bureau of Air Quality installed a dedicated hazardous air pollutant sampler in November 2023 to collect 24-hour samples and a particulate matter sensor at a residence near the entrance to JRL in Old Town. Data evaluated to date do not show any exceedances of the Department's acute ambient air guidelines. The Department will be installing a dedicated continuous hydrogen sulfide monitor in the near future. It is the Department's understanding that the Penobscot Indian Nation received funding from the U.S. Environmental Protection Agency to purchase a hazardous air pollutant sampler to operate on Indian Island.

D. Community Notification: The Department received several comments relating to the lack of real-time information available to the public during events such as the May 2023 landfill fire. The applicant maintains a dedicated website devoted to State-owned landfills and JRL which includes notices of public meetings, information about PFAS, various monthly reports, annual reports, and operating services agreements. Monthly reports include information about significant construction and operational activities; licenses applied for, received, or renewed; volume of leachate transported for disposal; volume of landfill gas flared; and quantity and origin of wastes received. A summary of complaints received including the nature and location of the complaint, wind direction and speed at the time of the complaint, hydrogen sulfide monitoring data, and information about whether the complaint was confirmed to be landfill related and its resolution is also provided on a monthly basis and posted on the applicant's website. Reports for the current month are posted in the following month.

E. Department Finding: The Department finds that expansion of JRL is not inconsistent with ensuring environmental justice for the community in which the facility is proposed, as required by 38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(5), provided that if a license is issued for the construction and operation of the expansion:

(1) Casella designs and installs a Department-approved system for the treatment of landfill leachate for PFAS prior to expansion operations and submits an implementation schedule with tasks to the Department for review and approval to meet this timeframe. The schedule should be submitted to the Department within 90 days of issuance of this public benefit determination;

(2) Casella pays for all applicable costs associated with a third-party odor consultant, working on behalf of the Department, to complete an odor analysis of the landfill and surrounding area, including evaluation of historical air quality sampling results, odor complaint history, field investigation, and recommended actions, to be submitted to the Department for review;

(3) Casella conducts two additional surface scans per year, during periods of low barometric pressure, if possible, of the landfill intermediate cover using a Department-approved method, to determine if there are fugitive

landfill gas emissions and conducts repairs of the cover material accordingly; and

(4) The applicant establishes a system to inform the public about significant landfill events in near real time such as through a website or other means as approved by the Department.

BASED on the above Findings of Fact and subject to the Conditions listed below, the Department makes the following CONCLUSIONS:

1. BGS has demonstrated sufficient evidence of title, right or interest in the property, as required by 06-096 C.M.R. ch. 400, § 4(A).

2. A public meeting was held and public comments were accepted and considered as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(F)(1).

3. Expansion of JRL as proposed by BGS meets short-term and long-term capacity needs of the State, as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(1).

4. Expansion of JRL as proposed by BGS is consistent with the State Plan and promotes the solid waste management hierarchy as required by 38 M.R.S § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(2), provided that Casella submits a report to the Department detailing its plans and schedule for implementing the mattress recycling program within 6 months of the date of this Order and, if a license is issued for the construction and operation of the expansion:

   - Casella continues to expand deployment of its mobile recycling app, and includes information in each landfill annual report regarding where the app has been deployed;
   - Each landfill annual report includes a discussion regarding Casella's work to encourage and assist towns to engage in all possible recycling and diversion activities; and
   - Casella evaluates, and submits the evaluation in each annual report, the availability and capacity of regional facilities in Maine to reduce the volume of municipal wastewater treatment plant sludge prior to landfilling at JRL. The evaluation should include recommendations to further reduce the volume of sludge prior to landfilling.

5. The proposed expansion is not inconsistent with local, regional, or state waste collection, storage, transportation, processing, or disposal, as required by 38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(3).

6. The proposed expansion is not inconsistent with ensuring environmental justice for the community in which the expansion is proposed, as required by 38 M.R.S. § 1310-AA and 06-096 C.M.R. ch. 400, § 5(E)(5), provided that if a license is issued for the construction and operation of the expansion:

    - Casella designs and installs a Department-approved system for the treatment of landfill leachate for PFAS prior to expansion operations and submits an implementation schedule with tasks to the Department for review and approval to meet this timeframe. The schedule should be submitted to the Department within 90 days of issuance of this public benefit determination;
    - Casella pays for all applicable costs associated with a third-party odor consultant, working on behalf of the Department, to complete an odor analysis of the landfill and surrounding area, including evaluation of historical air quality sampling results, odor complaint history, field investigation, and recommended actions, to be submitted to the Department for review;
    - Casella conducts two additional surface scans per year during periods of low barometric pressure, if possible, of the landfill intermediate cover, using a Department-approved method to determine if there are fugitive landfill gas emissions and conducts repairs of the cover material accordingly; and
    - The applicant establishes a system to inform the public about significant landfill events in near real time such as through a website or other means as approved by the Department.

THEREFORE, the Department APPROVES the above noted application of the STATE OF MAINE, acting through the Department of Administrative and Financial Services, Bureau of General Services, SUBJECT TO THE FOLLOWING CONDITIONS, and all applicable standards and regulations.

1. The Standard Conditions of Approval, a copy attached as Appendix A.

2. The invalidity or unenforceability of any provision, or part thereof, of this Order shall not affect the remainder of the provisions or any other provisions. This Order shall be

construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

3. Within 6 months of the date of this Order, Casella shall submit a report to the Department detailing its plans and a schedule for implementing the mattress recycling program.

4. If a license is issued for the construction and operation of the expansion:

   A. Casella shall continue to expand deployment of its mobile recycling app, and include information in each landfill annual report regarding where the app has been deployed;

   B. Casella shall include in each landfill annual report a discussion regarding their work to encourage and assist towns to engage in all possible recycling and diversion activities; and

   C. Casella evaluates, and submits the evaluation in each annual report, the availability and capacity of regional facilities in Maine to reduce the volume of municipal wastewater treatment plant sludge prior to landfilling at JRL and, include recommendations to further reduce the volume of sludge prior to landfilling;

   D. Casella designs and installs a Department-approved system for the treatment of landfill leachate for PFAS prior to expansion operations;

   E. Casella pays for all applicable costs associated with a third-party odor consultant, working on behalf of the Department, to complete an odor analysis of the landfill and surrounding area, including evaluation of historical air quality sampling results, odor complaint history, field investigation, and recommended actions, to be submitted to the Department for review and approval;

   F. Casella conducts two additional surface scans per year during periods of low barometric pressure, if possible, of the landfill intermediate cover, using a Department-approved method to determine if there are fugitive landfill gas emissions and conduct repairs of the cover material accordingly; and

   G. The applicant establishes a system to inform the public about significant landfill events in near real time such as through a website or other means as approved by the Department.

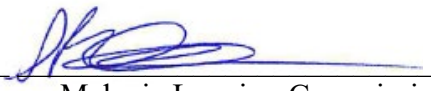
STATE OF MAINE	25	PUBLIC BENEFIT
DEPARTMENT OF ADMINISTRATIVE AND FINANCIAL	)	DETERMINATION
SERVICES, BUREAU OF GENERAL SERVICES	)	
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
JUNIPER RIDGE LANDFILL EXPANSION	)	
S-020700-W5-CV-N	)	
(APPROVAL WITH CONDITIONS)	)	

5. Within 90 days of the issuance of this public benefit determination, Casella shall submit an implementation schedule with tasks to detail how they intend to design and install a Department-approved system for the treatment of landfill leachate for PFAS prior to expansion operations, if a license approval is issued for the expansion.

DONE AND DATED AT AUGUSTA, MAINE, THIS 2nd DAY

OF October, 2024.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  *for*
Melanie Loyzim, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURE

Date of initial receipt of application: June 10, 2024
Date of application acceptance: June 24, 2024

Date filed with the Board of Environmental Protection:

XKK92656

FILED

OCT 2, 2024

State of Maine
Board of Environmental Protection

STANDARD CONDITIONS TO ALL SOLID WASTE FACILITY LICENSES

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL. VIOLATIONS OF THE CONDITIONS UNDER WHICH A LICENSE IS ISSUED SHALL CONSTITUTE A VIOLATION OF THAT LICENSE AGAINST WHICH ENFORCEMENT ACTION MAY BE TAKEN, INCLUDING REVOCATION.

1. **Approval of Variations from Plans.** The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed by the license. Any consequential variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

2. **Compliance with All Applicable Laws.** The licensee shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, statutes, regulations, and orders prior to or during construction and operation, as appropriate.

3. **Compliance with All Terms and Conditions of Approval.** The licensee shall submit all reports and information requested by the Department demonstrating that the licensee has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.

4. **Transfer of License.** The licensee may not transfer the solid waste facility license or any portion thereof without approval of the Department.

5. **Initiation of Construction or Development Within Two Years.** If the construction or operation of the solid waste facility is not begun within two years of issuance or within 2 years after any administrative and judicial appeals have been resolved, the license lapses and the licensee must reapply to the Department for a new license unless otherwise approved by the Department.

6. **Approval Included in Contract Bids.** A copy of the approval must be included in or attached to all contract bid specifications for the solid waste facility.

7. **Approval Shown to Contractors.** Contractors must be shown the license by the licensee before commencing work on the solid waste facility.

8. **Background of key individuals.** A licensee may not knowingly hire as an officer, director or key solid waste facility employee, or knowingly acquire an equity interest or debt interest in, any person convicted of a felony or found to have violated a State or federal environmental law or rule without first obtaining the approval of the Department.

STANDARD CONDITIONS TO ALL SOLID WASTE FACILITY LICENSES

9. **Fees.** The licensee must comply with annual license and annual reporting fee requirements of the Department's rules.

ADDITIONAL STANDARD CONDITIONS FOR SOLID WASTE DISPOSAL FACILITIES

10. **Recycling and Source Reduction Determination for Solid Waste Disposal Facilities.** This condition does not apply to the expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling.

The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by State law.

11. **Deed Requirements for Solid Waste Disposal Facilities.** Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following information must be recorded in the Registry of Deeds:

A. The type of facility located on the lot and the dates of its establishment and closure.
B. A description of the location and the composition, extent, and depth of the waste deposited.
C. The disposal location coordinates of asbestos wastes must be identified.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: August 2021 **Contact: (207) 314-1458**

SUMMARY

This document provides information regarding a person's rights and obligations in filing an administrative or judicial appeal of a licensing decision made by the Department of Environmental Protection's (DEP) Commissioner.

Except as provided below, there are two methods available to an aggrieved person seeking to appeal a licensing decision made by the DEP Commissioner: (1) an administrative process before the Board of Environmental Protection (Board); or (2) a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

A person filing an appeal with the Board should review Organization and Powers, 38 M.R.S. §§ 341-D(4) and 346; the Maine Administrative Procedure Act, 5 M.R.S. § 11001; and the DEP's *Rule Concerning the Processing of Applications and Other Administrative Matters* (Chapter 2), 06-096 C.M.R. ch. 2.

DEADLINE TO SUBMIT AN APPEAL TO THE BOARD

Not more than 30 days following the filing of a license decision by the Commissioner with the Board, an aggrieved person may appeal to the Board for review of the Commissioner's decision. The filing of an appeal with the Board, in care of the Board Clerk, is complete when the Board receives the submission by the close of business on the due date (5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board, as determined by the received time stamp on the document or electronic mail). Appeals filed after 5:00 p.m. on the 30th calendar day from which the Commissioner's decision was filed with the Board will be dismissed as untimely, absent a showing of good cause.

HOW TO SUBMIT AN APPEAL TO THE BOARD

An appeal to the Board may be submitted via postal mail or electronic mail and must contain all signatures and required appeal contents. An electronic filing must contain the scanned original signature of the appellant(s). The appeal documents must be sent to the following address.

Chair, Board of Environmental Protection
c/o Board Clerk
17 State House Station
Augusta, ME 04333-0017
ruth.a.burke@maine.gov

The DEP may also request the submittal of the original signed paper appeal documents when the appeal is filed electronically. The risk of material not being received in a timely manner is on the sender, regardless of the method used.

At the time an appeal is filed with the Board, the appellant must send a copy of the appeal to: (1) the Commissioner of the DEP (Maine Department of Environmental Protection, 17 State House Station, Augusta, Maine 04333-0017); (2) the licensee; and if a hearing was held on the application, (3) any intervenors in that hearing proceeding. **Please contact the DEP at 207-287-7688 with questions or for contact information regarding a specific licensing decision.**

REQUIRED APPEAL CONTENTS

A complete appeal must contain the following information at the time the appeal is submitted.

1. *Aggrieved status*. The appeal must explain how the appellant has standing to bring the appeal. This requires an explanation of how the appellant may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions, or conditions objected to or believed to be in error.* The appeal must identify the specific findings of fact, conclusions of law, license conditions, or other aspects of the written license decision or of the license review process that the appellant objects to or believes to be in error.
3. *The basis of the objections or challenge.* For the objections identified in Item #2, the appeal must state why the appellant believes that the license decision is incorrect and should be modified or reversed. If possible, the appeal should cite specific evidence in the record or specific licensing criteria that the appellant believes were not properly considered or fully addressed.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license to changes in specific license conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those matters specifically raised in the written notice of appeal.
6. *Request for hearing.* If the appellant wishes the Board to hold a public hearing on the appeal, a request for hearing must be filed as part of the notice of appeal, and it must include an offer of proof regarding the testimony and other evidence that would be presented at the hearing. The offer of proof must consist of a statement of the substance of the evidence, its relevance to the issues on appeal, and whether any witnesses would testify. The Board will hear the arguments in favor of and in opposition to a hearing on the appeal and the presentations on the merits of an appeal at a regularly scheduled meeting. If the Board decides to hold a public hearing on an appeal, that hearing will then be scheduled for a later date.
7. *New or additional evidence to be offered.* If an appellant wants to provide evidence not previously provided to DEP staff during the DEP's review of the application, the request and the proposed supplemental evidence must be submitted with the appeal. The Board may allow new or additional evidence to be considered in an appeal only under limited circumstances. The proposed supplemental evidence must be relevant and material, and (a) the person seeking to add information to the record must show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process; or (b) the evidence itself must be newly discovered and therefore unable to have been presented earlier in the process. Requirements for supplemental evidence are set forth in Chapter 2 § 24.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, and is made accessible by the DEP. Upon request, the DEP will make application materials available to review and photocopy during normal working hours. There may be a charge for copies or copying services.

2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing the appeal.* DEP staff will provide this information upon request and answer general questions regarding the appeal process.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed, the license normally remains in effect pending the processing of the appeal. Unless a stay of the decision is requested and granted, a licensee may proceed with a project pending the outcome of an appeal, but the licensee runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will acknowledge receipt of an appeal, and it will provide the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials admitted by the Board as supplementary evidence, any materials admitted in response to the appeal, relevant excerpts from the DEP's administrative record for the application, and the DEP staff's recommendation, in the form of a proposed Board Order, will be provided to Board members. The appellant, the licensee, and parties of record are notified in advance of the date set for the Board's consideration of an appeal or request for a hearing. The appellant and the licensee will have an opportunity to address the Board at the Board meeting. The Board will decide whether to hold a hearing on appeal when one is requested before deciding the merits of the appeal. The Board's decision on appeal may be to affirm all or part, affirm with conditions, order a hearing to be held as expeditiously as possible, reverse all or part of the decision of the Commissioner, or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, the licensee, and parties of record of its decision on appeal.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court (see 38 M.R.S. § 346(1); 06-096 C.M.R. ch. 2; 5 M.R.S. § 11001; and M.R. Civ. P. 80C). A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board Clerk at 207-287-2811 or the Board Executive Analyst at 207-314-1458 bill.hinkel@maine.gov, or for judicial appeals contact the court clerk's office in which the appeal will be filed.

Note: This information sheet, in conjunction with a review of the statutory and regulatory provisions referred to herein, is provided to help a person to understand their rights and obligations in filing an administrative or judicial appeal. The DEP provides this information sheet for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

IN THE MATTER OF

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Pursuant to the provisions of Resolve 2003, Chapter 93; 38 M.R.S.A. Section 1301 et seq.; and 06-096 CMR Chapter 400 et seq., Solid Waste Management Regulations, effective September 6, 1999, the Department of Environmental Protection ("Department") has considered the application of the State of Maine, acting through the State Planning Office, with its supportive data, staff review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

A. Application: The State of Maine, State Planning Office ("SPO" or "the applicant") is applying for an amendment to the original license for the West Old Town Landfill ("WOTL" or "the landfill"); SPO seeks to increase the approved final elevation of the landfill without increasing the horizontal footprint of the landfill, and to dispose of additional waste streams in the landfill.

B. History: The WOTL was licensed by the Board of Environmental Protection on July 28, 1993 as a 15-cell generator-owned landfill for the disposal of pulp and papermaking residuals generated at the Fort James Operating Company's mill in Old Town. Summaries of information on the siting and design of the landfill are contained in the landfill license, DEP #S-020700-7A-A-N ("the original license"). The licensed footprint of the WOTL, including the accessory structures, is approximately 68 acres; it sits on a parcel of land approximately 780 acres in size.

In summary, the landfill is situated on an area of deep glacial till soils with an average fines content of 58% passing the No. 200 sieve. The average till thickness is approximately 30 feet, and after excavation and grading to the proposed base grades of the landfill a minimum of 10 feet of soil above bedrock will remain in all areas. The bedrock consists of

metasediments that are generally competent and occasionally fractured; there was no mapped or observed faulting in the bedrock beneath the site. The site does not overlay, or lie adjacent to, a mapped significant sand and gravel aquifer, nor a mapped high-yield bedrock zone. The proposed facility was found not to cause an unreasonable threat to a significant sand and gravel aquifer, or to a fractured bedrock aquifer. The closest water supply well is located approximately 1500 feet west of the site across a bog and stream, and on the other side of a topographic ridge. The landfill was located on the property in an area where seepage gradients and the site's topography hydraulically isolate it from the regional ground water systems and existing water supplies.

The landfill began operation in December 1996, and cells 1 and 2 have been developed. In addition to the wastes from the Old Town Mill, bottom ash from the Lincoln Pulp and Paper Mill in Lincoln, Maine and burn pile ash from the City of Old Town's transfer station are licensed for disposal in the landfill. Fort James Operating Company is a wholly owned subsidiary of Georgia-Pacific Corporation ("GPC"). The landfill has a composite liner system, and leachate is stored in a pond with a double liner system. Approximately 300,000 tons of waste has been disposed in the landfill. No complaints from the public about any aspect of the landfill's operation were received by the Department prior to the submission of this application.

In April 2003 GPC shut down 2 tissue machines and 13 converting lines at its Old Town Mill. Through negotiations with the Office of the Governor, GPC agreed to continue operation of its mill in Old Town, Maine under certain conditions. One of the conditions was that the State of Maine purchase the company's West Old Town Landfill, and provide disposal capacity for the mill's wastes for a 30 year period. In June 2003, following a public hearing before the Legislature's Natural Resources Committee, the Maine Legislature passed Resolve 2003, Chapter 93 ("the Resolve"). The Resolve authorized SPO to purchase the WOTL from Fort James Operating Company, and to enter into any contracts necessary for the operation of the landfill; however, the landfill will continue to be owned and controlled by the State. SPO initiated a competitive bid

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process to select a long-term operator for the landfill. On August 18, 2003, SPO notified Casella Waste Systems, Inc. ("Casella") that it had been selected to be the long-term operator of the landfill, pending successful negotiation of mutually agreeable terms. Actual operations will be by NEWSME Landfill Operations, LLC ("NEWSME Operations"), a company in which New England Waste Services of ME, Inc., a Casella subsidiary, holds the sole membership interest. In accordance with the intent of the Resolve and the terms of the State's Request for Proposals ("RFP"), the operation of the landfill will remain revenue-neutral to the State.

SPO, Fort James Operating Company and GPC signed a purchase and sales agreement, dated November 20, 2003, for transfer of the ownership of the West Old Town Landfill from Fort James Operating Company to SPO; the purchase and sales agreement was executed on February 5, 2004. In addition, SPO and Casella signed an Operating Services Agreement ("OSA") on February 5, 2004. The purchase and sales agreement and the OSA state that the pulp and paper mill wastes currently licensed for disposal in the landfill will continue to be disposed in the landfill for at least 30 years, and that SPO will seek permits to expand the capacity of the landfill. Under the terms of the OSA between SPO and Casella, Casella will pay all costs associated with development, operational and closure/post-closure activities at the landfill.

On October 21, 2003, following public notice as required by 06-096 CMR Chapter 2, the Department issued conditional approval for the transfer of the licenses for the WOTL from Fort James Operating Company to the SPO (DEP #S-020700-WR-M-T and #L-019015-TH-C-T); the transfer became effective when the sale of the landfill to SPO occurred on February 5, 2004. No appeals were filed from this approval.

C. Summary of Proposal: SPO proposes to increase the licensed final elevation of the landfill from 270 feet (which would be about 60 feet above the original ground surface) to 390 feet. This vertical increase would result in the disposal capacity of the landfill being increased from the original estimate of 3.3 million cubic yards to an estimated 10 million

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cubic yards. In addition to the wastes currently disposed in the landfill (sludge from Fort James' Old Town Mill and ash from Lincoln Pulp & Paper), SPO proposes to dispose of the waste streams generated in Maine that are currently accepted for disposal at the Pine Tree Landfill in Hampden, Maine. These waste streams are the following: construction and demolition debris; the residues (ash, front-end process residue and oversized bulky wastes) generated by municipal solid waste ("MSW") incinerators located in Maine; a limited amount of MSW bypass from the incinerators; water/wastewater treatment plant sludge; and smaller amounts of miscellaneous non-hazardous wastes. The proposed vertical increase is expected to provide disposal capacity for approved waste streams for up to 15 years. After construction of a new cell is completed during the summer of 2004 and the additional wastes begin coming to the facility, the applicant estimates approximately 450,000 tons of waste per year will be disposed in the landfill; in the future, that quantity is estimated to potentially increase to 540,000 tons per year. In accordance with the RFP and the OSA between SPO and Casella, waste that is generated outside Maine will not be accepted at the landfill.

The applicant proposes to modify the approved design of the facility by using clay as the earthen part of the composite liner instead of glacial till; by placing a foot of compacted clay beneath the undeveloped portions of the landfill's footprint; by eliminating liner penetrations associated with the leachate removal system and instead installing leachate collection sumps and removal pumps above the liner system; by adding an above-ground storage tank to be used as the primary leachate containment system; and by installing an active gas extraction system as the landfill is developed. To increase the capacity of the landfill, an elevated soil berm will be constructed around the perimeter of the landfill, with the interior toe of the berm within the currently licensed solid waste boundary. The western portion of the berm will be mechanically stabilized using reinforcing geogrids.

The proposal is described in an application dated October 2003 and submitted to the Department on October 30, 2003, and includes several additional submittals prepared in response to comments on the application.

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The application was accepted for processing on November 21, 2003. In addition to meetings held with municipal officials to discuss traffic impacts associated with the facility, a public informational meeting on the application was held on January 21, 2004. A written summary of the questions asked and the answers provided during the public informational meeting is part of the record. A draft license was made available to the public on February 17, 2004. The Department received written comments on the draft license and also participated in a public informational session on February 24, 2004; written comments submitted during that session are included in the record. The Department held 2 days of public sessions on the proposed project on March 29 and 30, 2004. Testimony under oath was accepted, and the sessions were recorded and transcribed. The transcriptions and copies of written comments submitted at these sessions are included in the record. The record was closed to receipt of comments on the application at the close of the last session held on March 30, 2004. The Department prepared a written summary of comments received throughout the processing of the application; this summary is included in the record. The application was reviewed by staff of the Department's Bureau of Remediation and Waste Management, staff of the Maine Department of Transportation, and the outside consulting firm Terrence J. DeWan & Associates. Mr. DeWan's firm provided the review of the updated visual impact assessment through a contract with the Department.

The Department finds that the applicant has provided a plan for all aspects of the development of the additional landfill capacity within the licensed footprint. As is typical, the applicant has not provided the detailed design packages required for construction. The applicable detailed design packages required by the Solid Waste Management Regulations ("Rules") and any information specifically described in the finding of facts below must be reviewed and approved by the Department prior to construction of the individual cells and any new ancillary structures for the landfill.

The Department received numerous comments from the public on the application, and on the State's transaction with GPC as a whole. Many of these comments, both in opposition to and in support of the transaction, were received on aspects of the transaction that are outside the purview of

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the Department's authority, and thus the Department cannot make findings of fact or conclusions of law on these issues. These aspects included the following issues: the legislative process, ending in the Resolve that authorized the purchase of the landfill; the RFP and bidding process that resulted in the selection of Casella as the operator of the landfill; the terms of the Purchase and Sales Agreement between GPC and the State of Maine, acting through the State Planning Office; the terms of the OSA between SPO and Casella; the establishment and duties of the Citizens Advisory Committee established by the Resolve; the host community benefits offered by SPO and/or Casella; the effect of the project on property values in the area; and the 80,000 pound weight limit on trucks using I-95, which results in heavy trucks using local roads.

The Department finds that this application for a vertical increase in the final elevation of the existing landfill is not an expansion of the landfill because solid waste will not be disposed beyond the boundaries previously licensed by the Department for solid waste disposal in the original license. The Department recognizes that under the terms of the RFP and the OSA, an application to the Department for an expansion of the landfill is required to be submitted. However, the applicant has not submitted an application for expansion or yet discussed its plans for submission of an expansion application; and thus no comments relating to development of the landfill facility beyond the vertical increase described in this application can be considered at this time.

2. PUBLIC PARTICIPATION

The Department received timely requests for a public hearing from the following 5 persons: the Town of Alton, Bruce Sidell, Oscar Emerson, William Lippincott, and the Maine Peoples Alliance. 06-096 CMR Chapter 2.7 states, in part, that "A request for a public hearing on an application must be received by the Department, in writing, no later than 20 days after the application is accepted for processing." The application was accepted for processing on November 21, 2003; thus, the 20 day period ended on December 11, 2003. On January 28, 2004, the Department notified all 5 persons that their requests did not include conflicting technical information, and thus their requests were denied because they failed to

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meet the standard for a public hearing in 06-096 CMR Chapter 2.7. The Department also received a timely request from the City of Brewer that the Board of Environmental Protection assume jurisdiction of the project and hold a public hearing; the City of Brewer withdrew its request on January 28, 2004 after its concerns with the traffic impacts associated with the project were addressed.

As noted in Finding of Fact #1.C, above, many comments were received by the Department that cannot be considered because they fall outside the Department's purview.

The majority of the remaining comments from people opposed to the project focused on issues related to traffic movement, ground water quality, visual impact of the facility, odors, the types of wastes to be accepted at the facility and Casella's civil and criminal record.

The majority of the remaining comments from people supporting the project focused on it being an existing and operating, well-sited landfill, and Casella's excellent records of operating facilities in their areas. Commentors also note that area residents' concerns were addressed during the original siting and licensing of the landfill, that operation of the landfill to date has not been problematic, and that the landfill will provide needed disposal capacity for the state.

As noted in Finding of Fact #1.C, above, the Department participated in several public meetings on the project: meetings were held on December 8, 2003 and December 16, 2003 with municipal officials to discuss the traffic impacts from the project; public informational meetings were held on January 21, 2004, February 24, 2004, March 29, 2004 and March 30, 2004.

Where applicable, comments on the project that are within the Department's purview are addressed in the appropriate findings of fact, below. In addition, a written summary of comments received throughout the processing of the application is included in the record.

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3. DESCRIPTION OF SPO/CASELLA RELATIONSHIP

As described in Finding of Fact #1.B., above, the State of Maine SPO is the owner of the landfill and the applicant for this application. SPO advertised an RFP to operate the landfill. At the conclusion of that process, Casella was selected to be the long-term operator of the landfill. Actual operations will be by NEWSME Operations, a company in which a Casella subsidiary holds the sole membership interest. The terms and conditions of NEWSME Operations' operation of the landfill are established by the OSA, dated February 5, 2004, between SPO and Casella.

While SPO retains control of the landfill, in accordance with the Resolve and the OSA, Casella/NEWSME Operations will pay all costs associated with the development, operation, closure and post-closure care of the landfill. In addition, Casella/NEWSME Operations will establish and maintain financial assurance for the landfill sufficient to meet the closure and post-closure care provisions of the Rules, assume liability for the landfill under both the current (including past actions by GPC) and future conditions, and assure that adequate disposal capacity is provided for the wastes currently disposed in the landfill for a 30 year period.

Condition #6 of the order transferring the landfill licenses (DEP #S-020700-WR-M-T, dated October 21, 2003) from Fort James Operating Company to SPO requires that if Casella or a subsidiary of Casella is replaced as the operator, prior to finalization of a new OSA SPO must submit to the Department for its review and approval information on the financial capacity of the new operator, information on the financial assurance to be provided by the new operator consistent with Chapter 400.11 of the Rules or successor regulations in effect at that time, and information on the technical ability of the new operator.

The Department finds that in many instances the responsibility for submittals required by this license are placed on Casella/NEWSME Operations (or a successor operator) by the OSA. Therefore, reference to the applicant in this license refers to both SPO and Casella/NEWSME Operations (or a successor operator).

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4. FINANCIAL CAPACITY

A. Funding for development, operation, closure and post-closure care of the facility: Under the provisions of the RFP and the OSA, Casella/NEWSME Operations is required to fund future development and operation of the landfill, and closure and post-closure care of the landfill. The application includes a letter demonstrating that monies are available to fund the construction proposed for 2004; thereafter evidence of financial capacity for construction costs is proposed to be demonstrated prior to each subsequent construction activity. Funds to cover facility operations and maintenance will be generated from facility tipping fees. Financial assurance will be provided as described in Finding of Fact #4.B, below. The Department finds that the applicant has demonstrated that it has the financial capacity to undertake the proposed project consistent with the State's environmental standards and laws with regards to the construction planned for 2004 and the operation of the landfill. The Department further finds that the applicant must demonstrate financial capacity for costs associated with construction of each additional cell; the information must be included in the detailed design package as required in Finding of Fact #11, below.

B. Financial Assurance: Casella/NEWSME Operations affirmed in a letter dated October 22, 2003 that it will initially fund a closure/post-closure care account through a trust account funded by a surety bond. In accordance with Chapter 400.11 of the Rules, the financial assurance mechanism will be submitted to the Department for its review and approval; the amount of the financial assurance will be based on the costs of a third party closing any developed areas of the landfill that have not received final cover, and conducting post-closure care and maintenance of the facility for at least 30 years after closure of the facility, in accordance with the Rules. The amount of financial assurance necessary to meet these requirements, and any changes in the financial assurance mechanism, will be calculated and adjusted annually during the operational period, and reported in the annual report for the facility. The Department finds that Casella/NEWSME Operations, as the operator of the facility and as required by the OSA, will provide financial assurance sufficient to ensure

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that funds are available to pay for the anticipated costs of compliance with all facility closure, post-closure maintenance, and post-closure monitoring requirements for a period of at least 30 years after closure of the facility, provided the financial assurance package submitted to the Department for its review and approval meets requirements of the Rules and Casella/NEWSME Operations updates it in accordance with the Rules on an annual basis.

5. TECHNICAL ABILITY

A. Description of Experience: The applicant provided information demonstrating the technical ability of both SPO and the selected operator, Casella, its subsidiary NEWSME, and NEWSME Operations. The application describes SPO's experience in siting, designing and licensing the Carpenter Ridge Landfill. It also describes the solid waste expertise of Casella and its subsidiaries, and its consultants and legal counsel. The application indicates the personnel currently responsible for operations at the Pine Tree Landfill in Hampden, Maine will be responsible for fulfilling the operating services contract at this landfill; the Pine Tree Landfill is consistently operated in substantial compliance with its licenses and the Rules.

The applicant retained a number of consultants in developing the application. Sevee & Maher Engineers, Inc. ("SME"), a firm specializing in waste management issues, was the primary consultant for the project. The applicant also retained SMRT, Inc. to prepare the visual impact portion of the application; Richard E. Wardwell, P.E., Ph.D. for work on the geotechnical aspects of the application; Sanborn Head & Associates for work on the active gas management system for the landfill; Eaton Traffic Engineering to prepare the traffic assessment portion of the application; Acentech Incorporated to prepare the section of the application that addresses potential noise impacts; and Odor Science & Engineering, Inc. for work on odor control measures for the facility.

The Department finds that the combination of SPO and NEWSME Operations personnel and the consultants retained by the applicant have

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the technical ability to develop the project in a manner consistent with State standards and laws.

B. Civil/Criminal Disclosure Statement: The applicant provided civil and criminal disclosure statements prepared in accordance with Chapter 400.12 of the Rules for SPO and Casella, including its subsidiaries and the individuals required to disclose under that regulation, in the transfer application approved by the Department on October 21, 2003; the Department did not require the applicant to provide another copy of that information in this application.

The Department received comments from the public on alleged environmental violations by Casella. Department staff ("staff") requested that Casella respond to the listing of violations; Casella provided information on each of the alleged violations. Letters from municipal and county officials praising Casella's management of many of the facilities listed in the comments have been submitted. Staff also contacted environmental enforcement staff in states where the violations were alleged to occur and discussed the list provided by the public. Staff comments that based on those conversations, and the submittals from Casella and the municipal and county employees, there is no reason to withhold this license due to Casella's civil or criminal record. Staff's evaluation of the nature, substance and severity of the violations, and state and local officials' assessment of Casella's willingness to correct violations demonstrate that, where Casella is found to have violated regulatory or license criteria, it will complete any required corrective actions.

The Department finds that the applicant filed an accurate Criminal/Civil Record, prepared in accordance with Chapter 400.12 of the Rules. The Department finds that the applicant has shown that past violations of certain environmental laws, as described in the application, will not prevent SPO from owning and controlling, and NEWSME Operations from operating, the landfill as proposed in this application in compliance with Maine laws and regulations in that Casella/NEWSME Operations has conducted the required corrective actions to resolve its previous violations.

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6. TITLE, RIGHT OR INTEREST

The Department finds that the applicant has provided evidence of its interest in this project by submitting a copy of the purchase and sales agreement, dated November 20, 2003, between SPO and Fort James Operating Company. The closing on the transfer of the landfill property occurred on February 5, 2004. In accordance with Condition #2 of the transfer order (DEP #S-020700-WR-M-T, dated October 21, 2003), SPO submitted a copy of the deed to the landfill property within 30 days of its entry in the Penobscot County Registry of Deeds.

7. GEOLOGY AND HYDROGEOLOGY

A detailed description of the geology and hydrogeology of the site is contained in the original license; a summary of the siting characteristics is found in Finding of Fact #1.B, above. As confirmed during preparation of the application, the geologic and hydrogeologic characteristics of the site have not changed since the issuance of the original order and thus are not subject to the siting criteria of these Rules; however, in accordance with the Rules, the application addresses any impact the existing facility is having on water quality, affirms that groundwater flow directions and the upward seepage gradients have not changed in a significant way that would invalidate the landfill design assumptions, provides a calculation of time of travel to sensitive receptors from the bottom of the landfill and the leachate storage system, and includes a contaminant transport analysis.

A. Groundwater Flow Directions: Attachment 8 of the application includes a review of all groundwater data that has been collected at the site from 1991 when the original application was filed through September 2003. The applicant's consultant for this review, SME, reviewed the available groundwater information, and concluded that the phreatic groundwater surface has not significantly changed since the original application. Groundwater passing beneath the landfill continues to remain within the landfill property prior to discharge. Based on the orientation of bedrock foliation, it is suggested that the primary horizontal direction of groundwater flow in the bedrock is more or less the same direction as the interpreted direction of horizontal flow in the overburden. Groundwater in

the bedrock continues to be interpreted as discharging into the stream along the westerly side of the landfill, due to the presence of a topographic hill south of the stream which significantly reduces the possibility of groundwater movement beyond it. The review of the information on vertical seepage gradients indicates groundwater continues to migrate downward in the upper portions of the site and tends overall to migrate upwards in the lower portions of the site.

All staff comments on the groundwater flow information for the site have been addressed. Based on the additional information submitted in support of the application on November 21, 2003, staff agree with SME's conclusions on groundwater flow directions and vertical seepage gradients.

The Department finds that the findings in the original license regarding the direction of groundwater flow have not changed as a result of the construction and operation of the existing landfill.

B. Existing Groundwater Quality: As noted in Finding of Fact #7.A, Attachment 8 of the application includes a review of all water quality data that has been collected at the site from 1991 when the original application was filed through September 2003. The site is currently monitored by 12 groundwater monitoring wells; the results from the 12 monitoring wells were analyzed for statistically significant increases. Nine of the 12 wells were found to have one or more parameters that varied over time based on the statistical analyses; of these 9 wells, SME concluded that only one, MW-204, was potentially affected by leachate. SME concluded the changes found in the other 8 wells were caused by well installation trauma or a source other than leachate in the groundwater, based on its review of the parameters for which a statistically significant change was found. With regards to the water quality changes noted in MW-204, SME noted that the well is a shallow till well located immediately adjacent to the leachate pond and the manhole used for emptying of the leachate pond for annual inspection. SME concluded the changes in MW-204 were likely attributable to small leachate spills in the vicinity of the manhole and leachate pond during emptying of the leachate pond for annual

inspections, rather than directly into groundwater from the landfill or the leachate pond. SME's basis for its conclusions are described in detail in the application.

Staff conducted a comprehensive review of all water quality information available for the site, including the same historic water quality results compiled by GPC's water quality sampling consultant that were reviewed by SME in the application, the data gathered by the consultant GPC hired to perform a baseline analysis of conditions on the property just prior to its purchase by SPO, and data gathered from monitoring wells installed in January and February 2004 to resolve the source of changes in groundwater quality discussed during the review of the application. In an initial review memorandum dated December 16, 2003, staff noted that the water quality changes have occurred in 3 monitoring wells: MW-204, MW-223B, and MW-302. Staff agreed that the sources of changes noted in these wells could be those operational issues identified by SME in its report, but that the applicant had not provided sufficient evidence to conclude the landfill or the leachate pond were not the sources.

In response to the initial staff review memorandum, the applicant and GPC provided additional information concerning operational anomalies at the site, and 7 additional groundwater monitoring wells were installed by the applicant at the facility. Five of the wells are located between the landfill boundary and the leachate pond, and 2 of the wells are located downgradient of the leachate pond and/or in the vicinity of manhole #1. Staff oversaw the installation of the wells by the consultant, and staff took independent split samples from the wells. Up to 4 rounds of data have been collected from the new wells. Additional samples from the landfill underdrain, the leachate pond underdrain, and the leak detection system for the leachate pond were also taken during this period. Based on the information in Attachment 8 of the application and the new information gathered during review of the application, staff comment that, within the limitations of the data, a leak in the landfill liner system is not the source of the water quality changes noted in the initial staff memorandum regarding this project. Staff comment that the sources of the water quality changes are likely due to operational practices related to leachate

management, such as the small surface spills documented to have occurred in the past. Staff recommend several operational changes which will eliminate the release of leachate. The applicant has agreed to the changes. Staff further recommend that additional investigations be conducted in Spring 2004 to monitor the performance of the facility's existing detention ponds, and that the ponds be included in the surface water quality monitoring program for the facility. The applicant submitted on April 1, 2004 a workplan for the additional investigation in the areas of the detention ponds; the workplan is under review by staff. Staff comment that the approved workplan should be revised to address staff recommendations and implemented as approved.

The Department finds that the subtle changes in groundwater quality observed in monitoring wells MW-204, MW-223B and MW-302 do not appear to be caused by leakage through the landfill liner system. The Department also finds that the applicant must submit to the Department for review and approval changes to the operations manual that address all staff recommendations; complete the investigation in the areas around and beneath detention ponds 1 and 2 in accordance with the workplan approved by the Department; and include the ponds in the surface water quality monitoring program for the facility. The Department further finds that the facility is not contaminating groundwater in that no primary drinking water standards have been exceeded, and no statistically significant changes in measured parameters indicating a deterioration in water quality have been demonstrated through an assessment monitoring program.

The Department received many comments from the public in reaction to staff's initial memorandum regarding the water quality assessment; no independent information on water quality was submitted by the public. The Department finds that, as noted in this finding, the comments on existing water quality have been addressed by the additional information gathered during the review process. The Department also received comments from the public on the hydrologic connection between the landfill and the City of Old Town's drinking water supply. As described in Finding of Fact #1.B, above, the facility is hydraulically isolated from

private drinking water supplies in the area of the landfill. The City of Old Town's public drinking water supply is wells located in Stillwater and along Spring Street; there is no direct hydraulic connection between these wells and the groundwater beneath the landfill. The Department finds that the landfill does not pose an unreasonable threat to the public drinking water supply.

C. Existing Surface Water Quality: Attachment 8 also includes a review of the surface water quality data that has been collected at the site from 1991 when the original application was filed through September 2003. There are 3 surface water monitoring points (SW-1, SW-2 and SW-3) along the unnamed stream on the westerly boundary of the facility. The report notes that there were no apparent or significant changes in water quality at these locations. This stream is the sensitive receptor for the landfill; see Finding of Fact #7.D, below. Although labeled as a surface water monitoring location, SW-4 is actually the sampling manhole for the cells 1 and 2 underdrains; the report notes that the data from this monitoring point is comparable to upgradient monitoring locations. There are 3 surface water monitoring points along the entrance road into the landfill (SW-AR1, SW-AR2 and SW-AR3); the results from these locations also show no changes in water quality data over time. Staff concur with the applicant's conclusions regarding the historical surface water quality monitoring results.

The Department received comments from the public that baseline testing for biological indicators of water quality should be done at the site.

The Department finds that the facility is not contaminating surface water. The Department further finds that baseline surface water quality was established in accordance with the Rules before the landfill was developed and that the Rules do not include provisions for biological indicators testing.

D. Updated Time of Travel Calculations and Contaminant Transport Analysis: Updated time of travel calculations for the landfill prepared in accordance with the Rules are found in Section 7 of the application. Using

available water level information collected at the site since 1991, the applicant calculated groundwater time-of-travel from the bottom of the landfill liner systems to the sensitive receptor for the site – the unnamed stream along the westerly boundary. The updated contaminant transport analysis, also prepared in accordance with the Rules, assesses the potential for an unreasonable threat to the unnamed stream at the westerly boundary of the landfill, and identifies operational and monitoring measures that would be utilized to ensure protection of the stream if contaminants were released to groundwater beyond the engineered systems.

The report modeled contaminant transport from within 3 areas of the landfill, the leachate storage tank, and the leachate force main in hypothetical failure scenarios. The results demonstrate that even under the unrealistic failure scenarios required to be modeled, the sensitive receptor in the vicinity of the landfill will not be threatened.

In response to initial staff comments on the time-of-travel calculations and contaminant transport analysis, SME recalculated some of the travel time analyses and hypothetical leachate containment system failure analyses for the entire flow path to the unnamed stream to the west, using the groundwater velocities in the bedrock submitted in the original application. Staff comment that the revised calculations show that the regulatory time frames are met.

The Department received comments from the public that the bedrock underneath the landfill is "cracked". The Department finds that the entire State of Maine is underlain by fractured bedrock. The Rules require a detailed evaluation of underlying fractured bedrock aquifers to determine that a facility will not pose an unreasonable threat to an underlying fractured bedrock aquifer.

The Department finds that the applicant has demonstrated that the time of travel to the sensitive receptor for the landfill is greater than 6 years, and greater than 3 years for the proposed leachate force main and storage tank. The Department also finds that the contaminant transport analysis demonstrates that contaminant releases from the area within the solid

waste boundary or the leachate management system will not pose an unreasonable threat to sensitive receptors.

8. WATER QUALITY MONITORING

The proposed environmental monitoring plan ("EMP") for the facility was prepared in accordance with the Rules and is found in Appendix H of the application. The applicant proposes to continue monitoring groundwater at the existing 12 monitoring wells, surface water at the existing 6 monitoring points, the underdrains for the landfill and the leachate pond at the existing 2 surface water points, and leachate quality. Monitoring will be done 3 times per year, using low flow methodology. The applicant proposed to continue monitoring for the existing detection monitoring list for the landfill, plus sulfide during the spring and fall sampling events, and for parameters on the expanded list for the landfill during the summer sampling event. The EMP describes the sampling procedures to be used, the quality assurance/quality control program, the submission of the data to the Department, and procedures for the abandonment of wells.

Staff proposed several revisions to the EMP to clarify that the EMP will require ongoing revisions as the facility is developed. Although the results from the new groundwater monitoring wells described in Finding of Fact #7.B, above, appear to corroborate the applicant's conclusions as to the source of the slight changes in existing water quality, staff recommend that assessment monitoring be initiated at monitoring wells MW-204, MW-302, MW-223B, MW-212 and MW-303 during the Spring 2004 sampling event and that new monitoring locations in the area of the detention ponds be added to the assessment monitoring program after their installation. Staff further recommend that the 3 new clusters of monitoring wells proposed in the application be installed in Spring 2004, and that new monitoring wells #DP-4, #P-04-02 and #P-04-04 and the 2 existing detention ponds be included in the detection monitoring program. Staff further recommend that the underdrain for the landfill be added to the EMP for the facility; all landfill underdrain discharge locations should be monitored monthly for the field parameters in Appendix A, Column 1 of Chapter 405 of the Rules, and be sampled 3 times per year for the facility's suite of detection parameters at the same time as the other monitoring locations.

Staff also comment that the existing underdrains for the landfill and the leachate pond are directed through manholes where water quality monitoring can be conducted. The system allows for the removal of the water into the leachate containment system instead of discharge into the stormwater structures if the water quality results indicate it should not be discharged. Staff recommended, based on investigations done in January and February 2004 that the underdrain for the leachate pond be routed into the leachate pond. A pump has been installed in manhole #MH 7 and this underdrain discharge is being directed to the leachate pond. Staff also recommend that the underdrain for the existing leachate pond be sampled weekly throughout 2004, and an analysis of the results be included in the 2004 annual report for the facility.

The Department finds that the applicant has proposed an EMP prepared in accordance with the Rules. The Department further finds that the applicant must update the EMP on an ongoing basis as recommended by staff, beginning with the submittal of the 2003 Annual Report. The Department also finds that assessment monitoring must be initiated at existing monitoring wells MW-204, MW-302, MW-223B, MW-212 and MW-303 during the Spring 2004 sampling event; that the new monitoring locations in the area of the detention ponds be included in the assessment monitoring program beginning with the Summer 2004 sampling event; and that the new monitoring wells #DP-4, #P-04-02 and #P-04-04 and the 2 existing detention ponds must be included in the detection monitoring program in addition to the 3 new clusters of monitoring wells proposed in the application to be installed in Spring 2004. The Department also finds that the underdrain for the landfill must be added to the EMP for the facility; all landfill underdrain discharge locations must be monitored monthly for the field parameters in Appendix A, Column 1 of Chapter 405 of the Rules, and be sampled 3 times per year for the facility's suite of detection parameters at the same time as the other monitoring locations. The Department also finds that the underdrain for the leachate pond has been routed into the leachate pond, and that the leachate pond underdrain water quality must be sampled weekly throughout the rest of 2004 and an analysis of the results be included in the 2004 annual report for the facility. The Department also finds that the proposed construction at the facility will not affect the ability to monitor water quality at the facility site.

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STATE PLANNING OFFICE	)	
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
VERTICAL INCREASE and	)	
ADDITIONAL WASTE STREAMS	)	
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(APPROVAL WITH CONDITIONS)	)	AMENDMENT

9. LANDFILL DESIGN

A. Summary of Current Design: The design of the facility is described in the original license and the construction documentation for cells 1 and 2. Cells 1 and 2 of the landfill have been developed; a temporary geomembrane intermediate cover has been placed on cell 1 and cell 2 is currently operational. The approved composite liner system for these cells consists of, from top to bottom, a 15-inch drainage sand leachate collection system with perforated collection pipes (underlain by a drainage geocomposite in cell 2); an 80-mil textured high-density polyethylene ("HDPE") geomembrane; a geosynthetic clay liner ("GCL"), and 24 inches of recompacted glacial till with a maximum hydraulic conductivity of $3x10^{-6}$ cm/sec. A groundwater underdrain system consisting of a 6-ounce non-woven geotextile, 12 inches of drainage sand with collection pipes, and another 6-ounce non-woven geotextile underlies most areas under these cells. Leachate is conveyed by gravity to a leachate storage pond located outside the western boundary of the landfill. Leachate is transported from the pond via a force main to a loading rack where it is loaded into tank trucks for transport and subsequent treatment and disposal at the Old Town Mill's wastewater treatment facility. The pond has a double liner system, consisting of two 80 mil HDPE geomembranes, with a drainage geocomposite and sand leak detection layer in between. The secondary geomembrane is underlain by a GCL and 2 feet of recompacted glacial till with a maximum hydraulic conductivity of $3x10^{-6}$ cm/sec. Landfill gas is passively vented to the atmosphere.

B. General Description of Proposed Design: As noted above, cells 1 and 2 have already been developed. The waste currently in these cells will be excavated and mixed with incoming waste to improve the geotechnical stability characteristics of the existing sludge (see Finding of Fact #10.A, below) and then cells 1 and 2 will be refilled. The leachate collection, liner, and underdrain system for cells 1 and 2 will continue in service. Cells 3 through 8 will be located on the base grade for the landfill, and cells 9, 10 and 11 will be developed over cells 1 through 8. To accommodate the proposed vertical increase in the final elevation, a berm

will be constructed around the perimeter of the landfill as it is developed. The berm will be constructed entirely of soil, except for the western portion of the berm which is proposed to have mechanically stabilized exterior grades. The landfill will be developed in a sequential manner as shown on the cell development plan for the facility.

All base grade cells will include a liner system overlain by a leachate collection system. The original liner system has been modified through the use of compacted clay rather than compacted glacial till for the soil component of the composite liner system. Instead of the pipe liner penetrations currently used to convey leachate from cells 1 and 2 (which will be removed and repaired as part of cell 4 construction), cells 3 through 8 will have leachate collection sumps and pumps located above the liner system. A groundwater underdrain system will underlie the liner system for cells 3 through 8. Gas produced by the landfill will be burned off initially through the use of passive flares. When the gas produced is of sufficient quantity and quality to support combustion, an active gas extraction system will be installed as described in Finding of Fact #9.E. The cells will be developed sequentially, and intermediate or final cover will be placed as the cells are filled. The leachate from the landfill will be conveyed through a force main to a new above-ground storage tank with the existing leachate pond used only as a backup system. The stored leachate will be emptied into tank trucks for transport to the Old Town Mill's wastewater treatment plant. In the future, the leachate may be transported to the City of Old Town's wastewater treatment plant via a new sewer line along Route 43, after studies of the treatment plant, and any necessary upgrades identified in the studies, are completed and if the City of Old town approves the acceptance of the leachate. As described more fully in this finding and in Finding of Fact #11, below, detailed design packages will be submitted to the Department for review and approval prior to each construction project at the facility.

The Department received comments from the public regarding bioreactor (wet cell) landfills. Commentors suggested that the Department require that landfill cells constructed under this license utilize wet cell technology. The Department finds that the applicant did not propose and the Rules do

not require an applicant to consider the use of wet cell technology. Furthermore, the United States Environmental Protection Agency published a Final Rule in the Federal Register on March 22, 2004 entitled Research, Development, and Demonstration Rule (RD&D) for municipal solid waste landfills. The effective date of this rule is April 21, 2004. This rule addresses design and operational criteria variances that are necessary in order to develop information on bioreactor landfills. The applicant has provided correspondence dated April 5, 2004 documenting its willingness to explore the feasibility of wet cell or bioreactor technology.

C. Liner System and Perimeter Berm: The liner system proposed for the base grade cells of the landfill will consist of, from top to bottom: a leachate collection layer consisting of 12 inches of drainage sand with perforated HDPE collection pipes over a drainage geocomposite; an 80-mil HDPE textured geomembrane; a GCL; and one foot of compacted clay with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec. The liner system will be underlain by an additional foot of compacted clay with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec. Three internal leachate sumps will be constructed to collect all leachate generated by both the existing and new cells. The existing leachate transport pipes that penetrate the liner system to convey leachate to the storage pond will be removed and the liner repaired and tested. The landfill liner will be underlain by a groundwater underdrain system consisting of twelve inches of sand with perforated HDPE collection pipes. The underdrain system is designed with groundwater quality monitoring sumps.

As noted previously, a berm is proposed to be constructed around the perimeter of the landfill. The berm is required to achieve the increase in the final elevation of the landfill. It will be constructed entirely of soil, except for the western portion where it is proposed to have mechanically stabilized exterior grades due to wetland setback limitations. The interior of the berm will have 3 horizontal to 1 vertical sideslopes. The exterior sideslopes where the berm will be constructed entirely of soil will have 2 horizontal to 1 vertical grades. The mechanically stabilized earthen ("MSE") portions of the berm will have 1 horizontal to 3 vertical

sideslopes. The height of the berm will vary from 19 feet along the western side to 30 feet along the eastern side of the landfill. The top surface of the berm will be approximately 44 feet wide. A 20-foot wide access road, surface water drainage ditches and the valve houses for the leachate pumping stations will be located on the top of the berm. The berm will be constructed in phases concurrent with cell development. Geotechnical analyses of the berm, for both short- and long-term conditions, demonstrate that it will remain stable with the appropriate factors of safety; see Finding of Fact #10.C, below.

Staff comment that all issues raised in initial review memoranda regarding the liner system and the perimeter berm have been satisfactorily resolved, provided that the detailed design packages to be submitted prior to each construction project address all staff recommendations regarding the design, the technical specifications, and the construction quality assurance plan as agreed to in SME's January 22, 2004 responses to the comments provided in 3 initial engineering review memoranda by staff.

The Department finds that the liner system and the perimeter berm proposed by the applicant are designed in accordance with the Rules, provided that the detailed design packages to be submitted to the Department for review and approval prior to each construction project address all staff recommendations on the design, the technical specifications, and the construction quality assurance plan as agreed to in SME's January 22, 2004 responses to the comments provided in 3 initial engineering review memoranda by staff.

D. Leachate Collection, Conveyance and Storage System: The leachate collection system for the base grade cells will consist of a 12-inch layer of drainage sand (drainage stone on the top 10 feet of the sideslopes) with perforated leachate collection pipes, a drainage geocomposite, several leachate collection inlets, and tee connections on the leachate collection system cleanouts. The inlets and tee connections will help facilitate leachate drainage during operations, including the development of upper lifts. Pressure transducers will be placed within each base grade cell in order to monitor the performance of the leachate collection system.

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STATE PLANNING OFFICE	)	
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(APPROVAL WITH CONDITIONS)	)	AMENDMENT

Leachate will be collected within the perforated pipes, directed to sumps, and pumped through a double-walled force main to an above ground storage tank. The existing leachate storage pond will be used for back-up storage capacity with the leachate flows pumped directly to it if the leachate storage tank is full.

The applicant proposes to construct a new 81-foot diameter by 25-foot high above-ground tank with a capacity of 900,000 gallons for the storage of leachate generated by the landfill. The tank will be underlain by a leak detection system and a secure secondary containment structure sized to contain 110 percent of the maximum tank storage capacity. An assessment of the quantity of leachate anticipated to be generated by the landfill was completed. Based on a comparison with data from another facility, SME concluded that the modeling parameters used to estimate leachate provided a good representation of actual leachate generation rates. The anticipated leachate production rates during the period identified as having the highest leachate volume were used to size the leachate collection, conveyance and storage structures. From the storage tank, leachate will be loaded into tank trucks and transported to the Old Town Mill's wastewater treatment facility.

Staff comment that all issues raised in initial engineering review memoranda regarding the leachate collection, conveyance and storage systems have been satisfactorily resolved, provided the detailed design packages submitted to the Department for review and approval prior to each construction project address all staff recommendations regarding the design, the technical specifications, and the construction quality assurance plan as agreed to in SME's January 22, 2004 responses to the comments provided in 3 initial engineering review memoranda by staff.

The Department finds that the applicant has proposed leachate collection, conveyance and storage systems designed in accordance with the Rules, provided that the detailed design packages to be submitted to the Department for review and approval prior to each construction project address all staff recommendations regarding the design, the technical

specifications, and the construction quality assurance plan as agreed to in SME's January 22, 2004 responses to the comments provided in 3 initial engineering review memoranda by staff.

E. Gas Management System: The applicant proposes to install an active gas extraction system within the landfill. The primary purpose of the system is to control emissions of landfill gas from the landfill to provide compliance with current Title V New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. A secondary benefit of the system is the control of potential landfill odors. The system will be installed sequentially during site development.

The active gas extraction system will consist of vertical gas extraction wells, and may be supplemented by horizontal collector pipes as needed, along with the associated header and lateral piping to transport the gas to a blower and flare station. The blower and flare station will be constructed near the area where the leachate storage tank is proposed to be located. Condensate from the gas management system will be pumped directly into the leachate management system, both at the cell 4/5 leachate collection sump and the leachate storage tank.

Staff comment that the active gas extraction system was sized, and the installation timing of the components proposed, in part, on the projected disposal rates in the application. To ensure the effectiveness of the active gas extraction system, staff comment that each year's annual report should include an evaluation of the of the sizing and the installation timing of the system components over the reporting period, and an evaluation of the effectiveness of the system based on the quantities and types of wastes projected for the next year.

In response to staff comments, the applicant has committed to an accelerated schedule for installation of the active gas extraction system. During initial operations in cell 3, the applicant proposes to install passive flares. The location and number of passive flares will be included in the detailed design package for cell 3 submitted to the Department for review

and approval. The applicant proposes to monitor the passive flare locations for gas flow rate, and concentrations of methane, carbon dioxide, and oxygen. Once the monitoring data shows that the gas is of a sufficient quality and quantity to support combustion with an active gas management system, the applicant will finalize the design of the active gas management system, including a schedule for installation of the system. Furthermore, the applicant proposes to install gas collection infrastructure to provide the ability to collect gas generated from solid waste in place for 12 months or longer through either vertical extraction wells or horizontal collectors, or a combination thereof.

The applicant will install temporary connections to the active gas management system components at the time of construction if the necessary infrastructure is not in place to accommodate the planned permanent connections. The applicant also proposes to use a portable blower and flare unit if the permanent blower and flare station has not been constructed at the time it is initially needed.

In response to staff comments regarding access to the well-heads on areas that have received intermediate cover, the applicant stated that soil intermediate cover will be utilized as the primary option. This will allow operating personnel to have safe access to the well-heads to monitor and balance the well-field. The applicant further stated that temporary geomembrane tarps will be a secondary option, and acknowledged that protection of the well-heads and safe access provisions, particularly during the winter months, will be necessary if temporary geomembrane tarps are utilized. Staff comment that well-head protection and access provisions need to be submitted to the Department if temporary geomembrane tarps are utilized for intermediate cover.

The applicant proposes to submit the operating plan for the gas management system with the appropriate annual report. Staff comment that the operational procedures for the gas management system, inclusive of monitoring, record-keeping, and reporting procedures for both the well-field, and the blower and flare unit, should be submitted with the detailed design package for construction of the system.

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OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
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(APPROVAL WITH CONDITIONS)	)	AMENDMENT

The Department finds that the applicant has demonstrated that the active gas extraction system proposed for phased construction in the landfill is designed to reduce fugitive emissions of landfill gas and control odors associated with the landfill, provided the detailed design package to be submitted to the Department for review and approval prior to each phase of construction addresses staff recommendations regarding the design, the technical specifications, and the construction quality assurance plan as agreed to in Sanborn Head & Associates' ("SHA") submittal dated January 21, 2004 and the applicant's letter dated February 4, 2004, provided the active gas system operating plan, inclusive of monitoring, record-keeping and reporting procedures, is submitted for review and approval with the detailed design packages; provided that each year's annual report includes an evaluation of the of the sizing and the installation timing of the active gas system components over the reporting period, and an evaluation of the effectiveness of the system based on the quantities and types of wastes projected for the next year; and provided plans are submitted to the Department for review and approval detailing the provisions to be utilized to protect the well-heads and provide safe access to the well-heads if temporary geomembrane tarps are utilized for intermediate cover.

F. Closure Design: The applicant proposes to construct a phased final cover system throughout the operational life of the landfill as areas of the landfill with no plans for future waste placement are filled to final grade. The proposed cover system will meet the applicable requirements of the Rules for a secure landfill that govern at the time of closure. Prior to the placement of final cover on any area, the applicant will submit the detailed design package and supporting information on the design required by the applicable requirements in Chapter 401.5 of the Rules to the Department for review and approval. The Department finds that the applicant has proposed to apply a phased final cover system in accordance with the Rules, provided the detailed design packages for the placement of phased final cover are reviewed and approved by the Department prior to each application of final cover. The Department further finds that the applicant must submit to the Department for its review and approval a final closure

plan for the landfill, prepared in accordance with the Rules in effect at that time, and complete final closure of the landfill in accordance with the approved final closure plan. As required by the Rules, the final closure plan must include a post-closure monitoring and maintenance plan covering a period of at least 30 years following closure. The Department also finds that the post-closure monitoring and maintenance plan must be revised throughout the post-closure period to comply with any changes in the post-closure monitoring and maintenance requirements of the Rules. The Department further finds that post-closure monitoring and maintenance requirements do not automatically cease after 30 years; they must continue to be met until the Department approves their cessation.

10. SETTLEMENT AND GEOTECHNICAL STABILITY

A. Test Plot Program: GPC has been conducting a pilot project at the existing landfill since October 1999. The purpose of the project is to evaluate the short-term stability of the sludge in the field, and to evaluate operational issues associated with the initial loss of shear strength in the sludge. The consultant for the pilot project is Richard E. Wardwell, P.E., Ph.D. ("REW"). The applicant retained REW to evaluate the settlement and stability aspects of this application in part because of his working knowledge of the characteristics of the sludge already disposed in cells 1 and 2 of the landfill. Based on the Department's recommendations, due to geotechnical stability concerns, the applicant proposed to remove the existing sludge and mix it with other incoming wastes (including new sludge from the Old Town Mill) in order to improve its geotechnical characteristics.

Originally the applicant proposed to mix no more than 15% of the existing and new sludge by volume into the incoming waste. Stability of the waste at this percentage would meet the regulatory criteria, but it was predicted to take several years to complete the mixing process and require a large operating area. The large operating area would result in greater leachate production and an increase in potential odor generation. The applicant now proposes to determine the optimum ratio at which the existing sludge can be mixed with the incoming waste and still achieve deposit stability by

constructing an initial test plot in the existing, unused area of cell 2. The test plot construction is expected to take at least 6 weeks to complete, and will require a total of approximately 98,000 cubic yards of waste. Of this amount, approximately 60% of the waste will be diverted from the Pine Tree Landfill in Hampden and the remaining 40% will be existing and new sludge. It is important for the test plot program to operate through the spring thaw period because this has been observed to be the most biologically and chemically active time in the existing sludge. As a result, the amount of waste delivered to the landfill for mixing with the sludge will exceed the projected rate of filling at the landfill for this time period.

The test plot is proposed to consist of 3 sections; in each of the 3 sections the existing sludge will be mixed with incoming waste at different ratios (20%, 40% and 60% sludge to other wastes). The test plot has been designed to mimic actual operating conditions and will provide necessary information on the operating criteria that will be used to effectively run the landfill. In addition to gathering data for the stability evaluation through instruments installed in the test plot, air monitoring (oxygen, methane, and hydrogen sulfide) will be conducted. Based on the findings of the test plot program, the need to re-assess geotechnical stability will be evaluated, a finalized geotechnical monitoring plan for the facility will be prepared, the operating requirements for cell 3 will be finalized, and an odor control plan for sludge excavation and mixing will be prepared. All of the above will be submitted to the Department for review and approval.

The Department finds that the use of the proposed test plot program to determine the optimum rate at which the existing sludge can be excavated and mixed with incoming waste will result in a stable landfill configuration provided operations are conducted in accordance with approved recommendations from the program. The Department further finds that it is acceptable for the applicant to divert the necessary quantity of any waste delivered to PTL to the WOTL for use in the test plot within the time frame needed for completion, as outlined in the description of the test plot program proposal.

STATE OF MAINE, ACTING THROUGH THE	30	SOLID WASTE ORDER
STATE PLANNING OFFICE	)	
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
VERTICAL INCREASE and	)	
ADDITIONAL WASTE STREAMS	)	
#S-020700-WD-N-A	)	
(APPROVAL WITH CONDITIONS)	)	AMENDMENT

B. Settlement Analysis: Short and long-term settlement was analyzed to assure that load and non-load related strains associated with primary compression and waste decomposition will not be detrimental to the performance of the proposed liner, leachate collection, underdrain, and final cover system. Liner, leachate collection, and underdrain system settlement was evaluated considering the elastic deformation of the subgrade soils. Cover system settlement was estimated from the projected secondary compression of the mixed solid waste using coefficients that have been observed for similar waste streams at a similar facility. The Department finds that the applicant demonstrated that the landfill liner, leachate collection, underdrain, and final cover systems will maintain their integrity and performance at the maximum predicted settlements.

C. Geotechnical Stability Analysis: Geotechnical stability analyses for the proposed vertical increase at the landfill were completed in accordance with the Rules. The stability assessment analyzed potential failure planes through the foundation soils and along liner and cover system interfaces. The minimum required factors of safety were achieved for all identified critical failure planes. The need to re-assess geotechnical stability will be evaluated once the findings of the test plot program described in Finding of Fact #10.A, above, are available. Stability of the MSE berm was also evaluated and the minimum required factors of safety were achieved. The Department finds that the applicant has demonstrated that the landfill, including the MSE berm, will meet or exceed the minimum required factors of safety during construction, operation and the post-closure periods under both static and seismic conditions, provided an appropriate ratio of sludge to other incoming waste is chosen and approved by the Department through an evaluation of the findings of the test plot program.

D. Settlement and Stability Monitoring Plan: After completion of the test plot program described in Finding of Fact #10.A, above, the applicant will prepare and submit to the Department for review and approval a proposed geotechnical monitoring plan that will include the proposed waste mixing procedures for cells 1, 2 and 3 as well as routine operational stability monitoring. The applicant also proposes periodic settlement monitoring of completed cells to determine site specific compression coefficients, and

monitoring and observations of the final cover system, to confirm that total and differential strains are within tolerable limits. The Department finds that the applicant has proposed to provide a plan to monitor stability and settlement during construction, operational and post-closure periods, and report the results to the Department, including an interpretation of the results by a qualified geotechnical engineer. The Department also finds that the applicant proposes to prepare and submit the geotechnical monitoring plan for the landfill to the Department for review and approval once the findings of the test plot program have been evaluated.

11. CONSTRUCTION

The landfill, and some of the proposed ancillary structures, will be constructed over time, as capacity is needed. New cells will be constructed by a general contractor who can demonstrate familiarity and experience with the various aspects of landfill construction, and by subcontractors with specialized experience in the installation of geosynthetics.

The applicant has prepared a preliminary construction quality assurance ("CQA") plan that establishes the requirements for CQA testing and installation oversight of all construction materials to assure that the design specifications and performance requirements are achieved during construction. Geosynthetics and soil components will be tested, certified, and inspected by qualified CQA personnel independent of SPO, NEWSME Operations and any contractor hired for the project.

CQA personnel will provide on-going, thorough project documentation during construction. Daily and weekly reports will be prepared and provided to the Department. A final construction report will be prepared and submitted for Department review and approval within 45 days of the conclusion of each construction project.

Following installation of the leachate collection system, the applicant proposes to conduct an electric leak location survey of the geomembrane liner to assure that it was not damaged during overburden placement. Electric leak location is an innovative quality assurance technology developed to detect any breaches in the

geomembrane after placement of the protective layer (once the greatest potential for damage to the geomembrane has passed). It is accomplished by impressing a voltage across the geomembrane then scanning the surface for current flow. The geomembrane is an insulator and will not allow current to pass through it unless a hole is present. If a hole is found, it will be exposed, repaired, and retested before the liner system is placed into service.

The applicant has prepared preliminary construction contract documents as part of the application. Prior to construction of each cell, the applicant will provide the Department for review and approval a detailed design package which will include design details and calculations, a complete set of project specific construction contract bid documents, including drawings, technical specifications, contract administrative documents, and the construction quality assurance plan for that project.

The applicant proposes to initiate construction of the test plot program described in Finding of Fact #10.A, above, shortly after approval of this application is received. The test plot construction is anticipated to take at least 6 weeks to complete. The findings of the test plot program will then be used to evaluate the need for additional geotechnical stability analyses, to finalize the operating requirements for cells 1, 2 and 3, to finalize a geotechnical monitoring plan for the facility, and to develop an odor control plan for sludge excavation and mixing operations. Staff comment that all recommendations regarding the construction, operation, and monitoring of the test plot have been adequately addressed, provided the work is completed as described in REW's work plan as revised in REW's submittal dated January 16, 2004.

The detailed design package for cell 3, and the new leachate storage tank and ancillary structures, are expected to be submitted to the Department for review and approval in Spring 2004. It will include the technical specifications, construction drawings, construction quality assurance plans, and construction monitoring and documentation provisions required by the Rules. It will include all information recommended by staff during review of the application, as agreed to in SME's submittal dated January 22, 2004 and as responded to in staff memoranda dated January 26, 28, and 30, 2004.

STATE OF MAINE, ACTING THROUGH THE	33	SOLID WASTE ORDER
STATE PLANNING OFFICE	)	
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
VERTICAL INCREASE and	)	
ADDITIONAL WASTE STREAMS	)	
#S-020700-WD-N-A	)	
(APPROVAL WITH CONDITIONS)	)	AMENDMENT

Construction of cells 4 through 11, inclusive of the leachate management system for the cells, is expected to proceed sequentially. The applicant proposes to submit to the Department for review and approval the detailed design package for each of these cells at least 6 months prior to the date planned for initiation of operation. Each detailed design package will include the technical specifications, construction drawings, a construction quality assurance plan, and the construction monitoring and documentation provisions required by the Rules. Each detailed design package will include all information recommended by staff during review of the application as agreed to in SME's submittal dated January 22, 2004 and as responded to in staff memoranda dated January 26, 28 and 30, 2004. Staff further comment that, if the Rules applicable to any aspect of construction of the landfill cells change during the development of the landfill, the applicant should be required to address the new design requirements in the subsequent detailed design submittals.

Construction of the perimeter berm, including the MSE berm, is expected to proceed sequentially as the landfill cells are developed. A detailed design for the construction of the perimeter berm in the area of cell construction will be included in the detailed design package submitted for construction of the individual cells. Staff comment that all issues identified in the review of the application have been satisfactorily addressed, provided all recommendations in staff memoranda are addressed as agreed to in SME's submittal dated January 22, 2004 and as responded to in staff memoranda dated January 26, 28 and 30, 2004. Staff further comment that, if the Rules applicable to any aspect of construction of the perimeter berm change during the development of the landfill, the applicant should be required to address the new design requirements in the subsequent detailed design packages.

Construction of the active gas extraction system is expected to occur on an annual basis. The details for the following year's installation are proposed to be described in the annual report for the facility, and in detailed design packages provided to the Department for review and approval prior to construction. Staff comment that all issues identified in the review of the application have been satisfactorily addressed, provided all recommendations in the staff memoranda are addressed as agreed to in SHA's submittal dated January 21, 2004 and the applicant's letter dated February 4, 2004, provided the active gas system

operating and monitoring plans are submitted with the detailed design package, and provided plans are submitted detailing the provisions to be utilized to protect the well-heads and provide safe access to the well-heads if temporary geomembrane is utilized as intermediate cover. Staff further comment that, if the Rules applicable to any aspect of construction of the active gas extraction system change during the development of the landfill, the applicant should be required to address the new design requirements in the subsequent detailed design packages.

Construction of the phased final cover will occur as areas of the landfill are filled to the proposed final grade. Prior to the placement of final cover on any area, the applicant will submit to the Department for review and approval a detailed design package to include the detailed construction plans, technical specifications, a construction quality assurance plan, and supporting information on the design as required by the applicable provisions of Chapter 401.5 of the Rules. Staff comment that all issues identified in the review of the application have been satisfactorily addressed, provided all recommendations in staff memoranda are addressed as agreed to in SME's submittal dated January 22, 2004 and as responded to in staff memoranda dated January 26, 28 and 30, 2004. Staff further comment that, if the Rules applicable to any aspect of the placement of phased final cover change during the development of the landfill, the applicant should be required to address the new closure requirements in the subsequent phased final cover submittals. Staff comment that the applicant must also submit to the Department for its review and approval a final closure plan for the landfill, prepared in accordance with the Rules in effect at that time, and complete final closure of the landfill in accordance with the approved final closure plan. As required by the Rules, the final closure plan should include a post-closure monitoring and maintenance plan covering a period of at least 30 years following closure. The post-closure monitoring and maintenance plan should be revised throughout the post-closure period to comply with any changes in the post-closure monitoring and maintenance requirements of the Rules.

The Department finds that the applicant has addressed all aspects of the construction and closure of the proposed vertical increase of the landfill, provided detailed design packages are submitted to the Department for review and approval prior to the initiation of any construction project, and provided the various ongoing construction activities described in this finding are designed, constructed,

monitored, operated, closed, and monitored and maintained during the post-closure period in accordance with the application, staff recommendations on the application and responses to staff recommendations submitted by the applicant and its consultants in submittals dated January 16, 2004; January 21, 2004; January 22, 2004; and February 4, 2004. The Department also finds that, as recommended in Finding of Fact #4.A, above, the applicant must include a demonstration of financial capacity for costs associated with construction of cells 4 through 11 as part of the detailed design packages for these cells. The Department further finds that, if the Rules applicable to any aspect of construction or post-closure care of the vertical increase of the landfill and its ancillary structures change during the development of the landfill, the applicant must address the new requirements in subsequent submittals.

12. OPERATIONS

The applicant proposes to continue using the current operations manual for the landfill until the completion of construction of cell 3. The current operations manual for the facility includes the detailed operating requirements specific to the GPC waste characteristics and generation rates. Until the time cell 3 is available for disposal, only the wastes currently approved for disposal will be landfilled, except during the construction of the test plot program described in Finding of Fact #10.A, above. Operational criteria specific to the test plot program have been reviewed and found to be acceptable by staff.

The applicant proposes to update the operations manual to reflect the proposed waste characteristics, generation rates, mixing requirements, and cell development sequence and provide it to the Department for review and approval prior to the commencement of waste placement in cell 3. A conceptual cell development plan for the proposed life of the landfill was included in the application; staff comment that all recommendations regarding the conceptual cell development plan have been adequately addressed provided the plan is revised as described in SME's January 22, 2004 submittal. The applicant proposes to provide a detailed cell development plan, covering the first 2 years of operations, for the landfill prior to the commencement of filling in cell 3, and provide it to the Department for review and approval. As required by the Rules, proposed revisions to the operations manual, including the annually updated cell development plan, will be included in

the facility's annual report, and the operations manual will be revised to comply with any changes in the operating requirements in the Rules. The operations manual will again be updated and submitted to the Department for review and approval following completion of the test plot program and prior to the excavation of sludge from cells 1 and 2.

The hours of operation for the landfill are proposed to be 6 AM to 8 PM on weekdays and 8 AM to 4 PM on weekends, although Casella's contract with PERC requires that the landfill be available for disposal of its residues outside the normal business hours. The operations manual for the facility addresses basic functions such as the maintenance of the access road, and includes the many plans and provisions for the orderly operation of the landfill addressed throughout this order.

The Department finds that the operations manual was prepared in substantial accordance with the Rules, and that it provides the information necessary to enable supervisory and operating personnel, and persons evaluating the operation of the landfill, to determine the sequence of operation, policies and procedures for the landfill, as well as the monitoring, maintenance, inspection and legal requirements that must be met for the operation of the landfill on an ongoing basis, provided the operations manual is revised prior to the commencement of waste placement in cell 3 and as recommended by staff. The revisions to the operations manual must include the following information: the conceptual and detailed cell development plans;, and changes made to address staff recommendations as agreed to in SME's January 22, 2004 submittal addressing staff memoranda. The operations manual must be updated again to incorporate changes needed to address the findings of the test plot program. All changes to the operations manual are to be submitted to the Department for review and approval, and implemented as approved by the Department.

13. ACCEPTABLE WASTES

A. Waste Types and Sources: The landfill is currently licensed to accept pulp and paper mill wastewater treatment plant sludge from the Old Town Mill, smaller quantities of other special wastes from the Old Town Mill (lime wastes and grit, woodwaste and inert debris, soil and sawdust

contaminated with non-hazardous process chemicals, virgin oily contaminated debris, sand from sandfilters, and non-hazardous sandblast grit), flyash from Lincoln Pulp and Paper, and burn pile ash from the City of Old Town's transfer station.

This application proposes to add the solid wastes approved for disposal at Pine Tree Landfill in Hampden that are generated in Maine, including solid waste from all 4 licensed incinerators, to the list of wastes acceptable for disposal in the landfill. The wastes proposed to be added would consist primarily of front-end process residue ("FEPR") from PERC in Orrington, Maine and Maine Energy in Biddeford, Maine; oversized bulky wastes; MSW bypassed from incinerators located in Maine; construction and demolition debris; ash from incinerators located in Maine; and water/wastewater treatment sludge. Small quantities of other miscellaneous non-hazardous waste streams are also listed in the application for disposal in the landfill. There are 34 wastes listed in the miscellaneous category; in total, they are anticipated to equal approximately 50,000 tons per year. In addition, Appendix K of the application includes a listing of the generator, type of solid waste and permit number of several individually permitted wastes currently approved at Pine Tree Landfill that the applicant proposes to accept at WOTL. The yearly quantity of solid waste to be accepted at the landfill is not expected to exceed 540,000 tons per year.

The applicant has committed to the same limitations on MSW accepted for disposal at WOTL as at Pine Tree Landfill. Department License #S-001987-WD-QA-M, issued to Pine Tree Landfill on February 26, 2002, limits the MSW Pine Tree Landfill is allowed to accept to unprocessed MSW bypass from the following sources: the PERC incinerator in Orrington and the Maine Energy incinerator in Biddeford; waste delivered under an interruptible contract with PERC; or waste delivered in excess of processing capacity at other MSW incinerators in Maine. An annual limit of 310,000 tons on the amount of unprocessed MSW destined for Maine Energy, and then incinerated at Maine Energy or bypassed to Pine Tree Landfill, was selected. This is not the annual amount of MSW anticipated to come to Pine Tree Landfill and/or the WOTL from Maine Energy; this

is the maximum total amount of unprocessed MSW destined for Maine Energy that will be delivered to all 3 Casella owned or operated disposal facilities: Maine Energy, Pine Tree Landfill and WOTL. Unprocessed MSW from Maine Energy is only bypassed to a landfill for disposal during temporary shutdowns for repairs or maintenance, and when the amount of contracted waste exceeds the plant's capacity. Conditions #2 through 7 of that license specify the limitations and parameters under which Pine Tree Landfill can accept MSW from the Maine incinerators.

In accordance with the RFP and OSA, the applicant will not accept solid wastes generated from out-of-state sources at the WOTL. The applicant proposes to manifest all wastes brought to the facility for disposal, including those not required to be manifested by law. The Department finds that the monthly activity reports submitted to the Department must be designed to provide the data needed for determining the quantities of the various waste types, and their sources, delivered to the landfill. The Department further finds that the applicant must submit an application to the Department for review and approval prior to accepting for disposal any waste not listed in the application.

The Department received comments from the public regarding specific wastes and whether they would be regarded as in state or out of state waste. The Department responded that FEPR and ash from incinerators in Maine, as well as a limited amount of bypass, would be considered waste generated in Maine, but that waste delivered from out of state to another facility (such as a transfer station, or a compost facility if no processing occurs) for transfer to WOTL in its original form would be considered waste generated outside Maine. As noted above, the amount of bypassed MSW from the incinerators will be limited and the amount of MSW bypassed from Maine Energy, also owned by Casella, will in addition be tied to production at Maine Energy. The applicant has committed, in a letter dated March 9, 2004, that no out of state MSW will be bypassed to the landfill, and that waste from the tipping floor of any of the incinerators will not be transported to the landfill if it contains any out of state waste. The Department also received comments that the landfill would be required to accommodate MSW from the closure of existing municipal

landfills due to Department violations; as noted above, MSW will be accepted only from the 4 incinerators in Maine. Additional sources of MSW would require Department review and approval prior to acceptance for disposal.

B. Waste Characterization and Compatibility: The procedures for characterizing the solid wastes accepted at the landfill are identified in the Solid Waste Characterization Plan for the facility; the plan is located in Appendix K of the application and will be part of the facility's operations manual. The facility proposes to accept non-hazardous wastes for disposal using the same procedure as approved for Pine Tree Landfill. The wastes fall into 2 categories: those accepted on an ongoing basis under general permitting requirements for specific categories of wastes and those accepted under individual permits. Each waste required to be characterized by the Rules has a testing frequency, list of parameters to be tested for, and the acceptance criteria for each parameter, based on the requirements of Chapter 405 of the Rules. Copies of all analyses will be kept on file at the facility and may be viewed during normal business hours. The wastes proposed for disposal in the landfill have been demonstrated to be compatible with each other and the liner and leachate collection system components at Pine Tree Landfill; the same materials are proposed to be used in the construction of cells 3 through 11 at WOTL.

The Department received several comments related to the waste characterization process and its reliability in terms of keeping hazardous wastes out of the facility. The Department finds that the waste characterization plan proposed for use at WOTL provides adequate provisions for the testing of wastes coming into the landfill and a proven, reliable method of keeping hazardous waste from being disposed. The Department further finds that the proposed waste streams are compatible with each other and the components of the landfill system.

C. Reporting Requirements: As described in Finding of Fact #13.A, above, the Department finds that a monthly summary of the wastes accepted for disposal will be submitted to the Department, and the monthly activity

reports submitted to the Department must be designed to provide the data needed for determining the quantities of the various waste types, and their sources, delivered to the landfill. As found in Finding of Fact #13.A, above, the Department finds that the information on the source and quantity of MSW accepted for disposal is to be reported to the Department on both a monthly and an annual basis, as follows:

1. The monthly reports on the wastes accepted for disposal at the landfill shall include the amount and source of unprocessed MSW accepted for disposal;

2. The total amount of (a) unprocessed MSW incinerated at Maine Energy and (b) MSW bypassed from Maine Energy for disposal at the WOTL and at Pine Tree Landfill's Secure III Landfill Expansion shall not exceed 310,000 tons in any calendar year, unless changes in conditions or circumstances occur that cause the Department to revise this cap; and

3. In addition to the specific requirements of Chapter 401.4(D) of the Rules, the annual reports for the facility submitted to the Department shall include the amount of unprocessed MSW received at WOTL from each of the approved sources, including statements from the incinerators providing an estimate of the percentage of the MSW that originated outside Maine.

14. AIR QUALITY

A. Fugitive Dust: To control fugitive dust from unpaved access roads, the applicant will apply water and/or calcium chloride to the road surfaces on an as-needed basis. The applicant also proposes to pave an additional portion of the access road from where it begins at Route 16 such that the first one-half mile of the road will be paved. If necessary to control dust, the applicant has also committed to pave an additional portion of the access road. The applicant has committed to daily cleaning of the paved surface using a street sweeper. The Department received comments on existing dust control methods and the potential for additional problems

with fugitive dust emissions associated with the increased traffic at the landfill entrance. The Department finds that the dust control measures proposed by the applicant are sufficient to control fugitive dust. However, the Department also finds that if staff find that operation of the landfill as proposed unreasonably adversely affects air quality additional fugitive dust control measures will be required.

B. Landfill Gas: The applicant proposes to install an active gas extraction system for control of fugitive emissions of gas generated by the landfill. Passive flares will be installed initially and monitored to determine when the gas quantity and quality is adequate to support combustion. At that time the detailed design of the active gas extraction system will be prepared and the system installed. (See Finding of Fact #9.E, above.) The Department finds that the applicant has proposed adequate measures to control fugitive emissions of gas from the landfill.

C. Odor Control: The applicant proposes to use several mechanisms to control odors associated with the facility; an odor assessment, including proposed odor control mechanisms, prepared by Odor Science & Engineering, Inc., is included in Attachment 7 of the application. As fully described in Finding of Fact #9.E, above, one of the benefits of the proposed gas management system is the control of potential landfill odor. The applicant will also employ operational practices, including the use of a portable odor neutralizer system and minimization of the active working face of the landfill. Odors associated with the leachate will be minimized by the use of an above-ground leachate storage tank instead of the existing open leachate pond. The applicant has committed to odor training of its landfill personnel, the implementation of a community odor complaint response plan, and to the installation of perimeter hydrogen sulfide monitoring instruments. The applicant will also monitor odors during the sludge mixing test plot program, described in Finding of Fact #10.A, above, and will prepare a detailed odor control plan for sludge excavation and mixing operations following completion of the program and prior to full-scale operations.

The Department received comments from the public that odors from the existing landfill have been a problem. Staff comment that, prior to the submission of this application, no odor complaints about this facility were received by the Department.

The Department finds that the applicant has proposed odor control mechanisms sufficient to control nuisance odors. However, the Department also finds that if staff find that operation of the landfill as proposed unreasonably adversely affects air quality additional odor control measures will be required. The Department further finds that the applicant must submit to the Department for review and approval the following information on the perimeter hydrogen sulfide monitoring program prior to implementation of the program: the number and locations of instruments, based on meteorological conditions; system security measures; monitoring program details and responsibilities; and reporting procedures.

15. TRAFFIC MOVEMENT

The parcel of land which includes the landfill is located between Routes 43 and 16. Although the landfill is located much closer to Route 43 than to Route 16, it is accessed from Route 16 by a road into the property that existed at the time of the original licensing. A large wetland exists between the landfill and Route 43; the applicant does not propose to change the access to the landfill from Route 16 to Route 43 now or in the future. The access road intercepts Route 16 approximately 600 feet west of I-95.

At the time this application was filed, approximately 16 trucks were hauling sludge from the Old Town Mill, ash from Lincoln Pulp & Paper, leachate from the landfill back to the Old Town Mill's wastewater treatment plant, and gravel during the peak hour; approximately one-half of these vehicles were hauling gravel to the landfill for use as daily cover.

Attachment 4 of this application contains a new traffic assessment prepared by Eaton Traffic Engineering in accordance with the Rules.

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STATE PLANNING OFFICE	)	
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	
VERTICAL INCREASE and	)	
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(APPROVAL WITH CONDITIONS)	)	AMENDMENT

With the increased use proposed by the applicant, approximately 30 total vehicles (9 of them passenger vehicles) will enter the landfill during the peak hour at the initial projected waste acceptance rate of 450,000 tons/year, and up to 35 total vehicles (still 9 of them passenger vehicles) will enter the landfill during the peak hour at the highest projected waste acceptance rate of 540,000 tons/year. These peak numbers include the current vehicles, except that the gravel deliveries will cease.

The total daily number of trucks anticipated to enter the facility on a daily basis is 108 at the 450,000 tons/year rate of waste acceptance. The total daily number of trucks at the 540,000 tons/year rate is 140 trucks per day. The existing daily trips into the landfill are estimated at 45-50 trips per day.

The trucks hauling wastes that are currently disposed at the landfill are expected to continue using the same haul routes; likewise, the trucks hauling leachate to the Old Town Mill's wastewater treatment plant will continue using the same routes.

A major haul route for transporting waste in trucks weighing over 80,000 pounds from Pine Tree Landfill to WOTL is identified in the application; the route includes roads within Hampden, Bangor, Brewer, Eddington, Bradley, Milford and Old Town. During the peak hour, the number of over 80,000 pound trucks is anticipated to be 7 at 450,000 tons/year and up to 10 at 540,000 tons/year. The major haul route identified for trucks and other vehicles weighing less than 80,000 pounds is I-95; the remaining new traffic associated with the project would use I-95 to deliver waste to the landfill, and all empty trucks would use I-95 on their return trip.

The Maine Department of Transportation ("MDOT") was asked to review the traffic section of the application; it reviewed high crash locations, roadway geometrics, traffic volumes and traffic signal progression along the identified route. The volume of traffic associated with the landfill falls far below the threshold for review of the project under MDOT's Chapter 305 "Rules and Regulations Pertaining to Traffic Movement Permits", effective May 20, 2000; that threshold is 100 or more passenger car equivalent vehicles during the peak hour. In a memorandum dated December 12, 2003 MDOT concluded that the route identified in the application was acceptable in terms of geometrics, traffic

volumes, and economic feasibility, but that an alternative route identified in the MDOT memorandum as Alternative 1 was more desirable. The only difference in the two routes was the bridge used to cross the Penobscot River from Bangor into Brewer.

In response to numerous comments on traffic associated with the project, MDOT staff identified in a memorandum received by the Department on February 4, 2004 a total of 5 routes (plus I-95 for the less than 80,000 pound vehicles) that could safely accommodate the number, weight and types of vehicles transporting waste to and from the facility from the south or west. Each of the routes have minor deficiencies; however, since the drivers are likely to make their choices of routes depending on the time of day, day of the week or time of year, all of the routes are viable alternatives over which trucks now travel. MDOT noted that all of the identified routes can handle traffic generated by the landfill, and that the functionality of any of the 6 routes will not be negatively affected by the landfill's traffic.

MDOT also reviewed the Route 16/landfill access road intersection. It concluded that there is adequate sight distance for the posted speed of Route 16, and that no turn lanes are needed. No high crash locations within the immediate vicinity of the site were identified. MDOT did recommend that overhead lights be installed at the entrance to the facility to make it easier for trucks to locate the entrance.

As noted above, the Department received many comments from the public on the proposed haul route for the facility. Many commentors requested that the Department require that all haulers use I-95 to access the facility; other commentors expressed concern over increased traffic, and associated road damage and other safety and esthetic impacts, through their neighborhood.

The only change proposed to the 10,950 foot long, 24 foot-wide mostly gravel access road into the site is an extension of the paved section from the first 500 feet to the first one-half mile of the road. If necessary to control dust, the applicant has also committed to pave an additional portion of the access road. A scale, and a small scale house, are proposed to be constructed approximately 250 feet from the landfill perimeter security fence; parking will be provided at this location for only the scale house operator. The gravel parking area at the operations office

will be expanded to approximately 4,000 square feet to provide parking for up to 20 cars. The perimeter access road for the landfill is proposed to be located on top of the perimeter berm described in Finding of Fact #9.C, above. Gravel maintenance roads will also be provided for access to the leachate pond pump station, the leachate storage tank and the blower and flare for the active gas extraction system.

The Department finds that the applicant has made adequate provisions for the safe and uncongested movement of traffic of all types into, out of, and within the facility, provided it installs overhead lights, or another effective lighting system, at the entrance to the facility to make it easier for trucks to locate the entrance. The Department further finds that it is outside its purview to require that waste haulers using this facility limit their truck weights to 80,000 pounds and use I-95 as the only haul route for the facility, and affirms MDOT's statement that there is an affirmative right for all individuals and entities, public and private, domestic or commercial, to travel on all State and State Aid Highways in Maine.

16. EXISTING USES AND SCENIC CHARACTER

A. Visual Analysis: The original application included a visual impact assessment report prepared by Environmental Analysis and Design. In summary, the report concluded that the landfill would not have an unreasonable adverse effect on the scenic character of the area because of its limited viewshed, small visual magnitude and its low visual contrast.

Attachment 5 of this application contains an updated visual impact assessment report prepared by SMRT, Inc. in accordance with the Rules. The consultant evaluated the proposal in terms of unreasonable interference with views from established public viewing areas as well as other potential viewshed locations. The applicant states that the landfill will not be visible from an established public viewing areas as defined by the Rules or any new viewsheds. As predicted in the original application, people traveling on Route 43 in a northerly direction will be able to see the landfill along an approximately 3/8 mile long stretch; the view will last about 21 seconds if the viewer is driving the speed limit. The applicant

has offered to plant a tree screen along this stretch if permission is granted by the landowner.

The Department received written comments from a Route 43 resident who owns property and a business off Route 43. The commentor noted that the landfill is currently visible from Route 43, in contradiction to the original visual assessment, and that the landfill would be visible from Route 43, Route 16, I-95 and at other points within Old Town if the Department did not limit the height of the landfill. He commented that the proposed final elevation would be 150 feet higher than the highest point in Old Town (Fairdale Hill, at 240 feet).

The Department retained Terrence J. DeWan & Associates, Inc. ("tjd&a") to perform an independent review of SMRT, Inc.'s updated assessment. Tjd&a's report, dated February 6, 2004, confirms the results of SMRT, Inc.'s assessment. It also makes several suggestions for making the updated visual impact assessment a stand-alone document, and for providing corroborative information on the conclusions reached in the SMRT, Inc. report. At staff's request, tjd&a also responded to written comments from the Route 43 resident. Although tjd&a agrees with some of the commentor's statements, tjd&a concludes that the proposed increase in the landfill's height will not unreasonably adversely affect the use of the resident's property or other existing uses in the area.

The Department finds that the design of the project continues to take into account the scenic character of the surrounding area, and that the development has been located and screened to minimize its visual impact, but that the visibility of the landfill would be lessened if the section of Route 43 where the landfill is visible is screened. The Department finds that the development will not have an unreasonable effect on the scenic character of the surrounding area, provided the results of a future visual analysis, performed when the final elevation of the landfill reaches 330 feet, agree with the projections provided in the application, and provided the applicant negotiates in good faith with the Route 43 landowner for permission to plant a tree screen in the location identified in the visual impact assessment.

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B. Noise: The original application included a noise study prepared by Acentech Incorporated ("Acentech"). In summary, the study demonstrated that the noise standards of the applicable Rules would be met by the implementation of several noise abatement measures during construction and operation, and that noise would be reduced by atmospheric adsorption and the proposed buffer strips around the facility. As a check on the actual noise levels from the facility, the Department placed Condition #7 in the original license. The condition required that noise studies be performed within the first month of operation, and again within the first month of operation of cell 4 of the landfill. The noise study performed when the landfill became operational demonstrated the facility was operating within the noise limits; cell 4 has not been developed.

The applicant retained Acentech to address noise impacts associated with the proposed facility. A copy of Acentech's report is contained in Attachment 6 of the application. The noise study modeled the projected noise levels from the landfill operating equipment to the nearest property boundary and the nearest residence; the study demonstrated that the facility will comply with the 60 dBA day time noise standards of the Rules. Between 7 p.m. and 7 a.m., the 50 dBA night time standards of the Rules apply, and the applicant will limit the spreading and compacting equipment to 1 compactor and 1 dozer or loader if necessary to meet the noise standards. (The landfill is proposed to operate between 6 a.m. and 8 p.m. on weekdays.)

The Department finds that the noise study for the proposed facility indicates that it will not generate excessive noise at the property boundary or at any protected location as defined by the Rules. However, the Department also finds that the applicant must perform 2 additional noise studies to confirm the model used in the study: one within the first month of operation of cell 3, and the other within the first month of operation of cell 9. If the actual noise limits are above the limits in the Rules, additional noise measures must be promptly implemented to meet the requirements of the Rules.

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C. Existing Uses and Conditions: The portions of the 780 acre parcel that are currently undeveloped will not be altered, and the current allowed uses of the property by the public described in Finding of Fact #24 of the original order will be allowed to continue. The Department finds that its original finding that the facility will not unreasonably interfere with existing uses and conditions, and has enhanced values in some areas, is not changed.

17. STORMWATER MANAGEMENT

The Department found in the original license that the project is not located on a floodplain. The applicant has provided an updated stormwater management plan for the proposed facility, prepared in accordance with the Rules and the three general objectives of the Department's *Stormwater Management for Maine: Best Management Practices* (MDEP, 2003): effective drainage, flood prevention and erosion control. The plan is contained in Section 5.7 of the application.

The proposed stormwater management measures, which include the erosion and sedimentation control plan for the facility (see Finding of Fact #18, below), will assure that peak runoff rates for the post-development conditions at the site will be equal to or less than the peak runoff rates for the site's pre-development (prior to 1991) conditions. A major consideration in the grading and layout of the landfill in the original application was the minimization of wetlands impact; the same consideration was applied to the vertical increase of the landfill proposed in this application. Existing drainage courses will be utilized where feasible; no surface water 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 or sedimentation basins that will attenuate peak flow rates to the unnamed tributary feeding Pushaw Stream, located at the lowest elevation of the facility. This runoff will be only from areas outside the landfill footprint and from landfill areas that have received final or intermediate cover material. Runoff from areas where waste is exposed or has received only daily cover is considered leachate and is handled within the leachate collection and conveyance systems.

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A drumlin oriented in a northwest to southeast direction effectively divides the 780-acre parcel into 4 major watersheds: northeast, northwest, southeast and southwest. The Department received comments from the public that the ditches on the Stagecoach Road contain runoff contaminated by the existing landfill. Staff comment that the Stagecoach Road is located in the northwest watershed of the parcel. The landfill is located in the southwest watershed of the parcel, and runoff from this watershed drains to a wetland area that serves as the headwater of an unnamed tributary that empties into Pushaw Stream, not towards the Stagecoach Road.

The Department has also received comments from the public that contaminated runoff from the landfill can flow into ditches along Route 43 and onto property across Route 43. Staff comment that water in the unnamed stream directly downgradient of the landfill has been consistently sampled at least 3 times per year since 1991; no changes in surface water quality have been observed. Staff also comment that no analyses or other documentation of contamination of ditches in either area was submitted to the Department.

Staff comment that all issues raised in the initial engineering review memorandum regarding the provisions for stormwater management have been satisfactorily resolved.

The Department finds that the facility's stormwater management plan will control run-on and run-off; and infiltrate, detain or retain water falling on the facility site during a storm of intensity up to and including a 25-year, 24-hour event such that the rate of flow of stormwater from the facility after construction does not exceed the rate of outflow of stormwater from the facility prior to construction of the facility. The Department also finds that the preponderance of the evidence indicates that runoff from the landfill is not impacting ditches along Route 43 or the Stagecoach Road.

18. EROSION AND SEDIMENTATION CONTROL

The application contains an erosion and sedimentation control plan prepared in accordance with the *Maine Erosion and Sedimentation Control Best Management Practices* (MDEP, 2003) and the requirements of the Rules. The plan is

contained in Appendix F of the application. The plan includes the construction of two new stormwater detention ponds, several new drainage structures (ditches, catch basins and culverts), and it addresses the inclusion of terrace drainage swales and downchutes on the landfill cover system. To minimize erosion during construction and operation, both temporary and permanent erosion control measures will be used. All measures will be continuously monitored and all necessary maintenance will be performed to assure that the measures are functioning properly. In response to staff comments, the applicant confirmed that the design of construction-related erosion and sedimentation control systems will be included in the detailed design package for each phase of the landfill development. For all cells other than cell 3, which will utilize the existing sedimentation control structures, it is anticipated that water generated within the cell construction area will be contained within that landfill cell, thus allowing sediment to settle out within the cell before being pumped out. If necessary, additional sediment removal techniques will be employed.

The Department finds that ongoing construction of the proposed facility will not cause unreasonable sedimentation or erosion of soil, provided the erosion and sedimentation control plan is implemented as described in the application, and as amended during the review of the detailed design package submitted for the Department's review and approval prior to each phase of landfill construction.

19. RECYCLING AND SOURCE REDUCTION

The landfill will accept only solid waste that is subject to recycling and source reduction programs at least as effective as those imposed by State law. The recycling and source reduction programs included in the OSA will affect the region served by the landfill and the rest of the state, and includes several innovative recycling initiatives that will advance the State's solid waste management policy.

In signing the OSA, Casella agreed, in part, to use its best efforts to operate the landfill following the State's solid waste management hierarchy. Specific actions listed in the OSA include the following:

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A. Implementation of a technology for recovery and recycling of all color glass containers so that glass does not require separation by color in order to be recycled;

B. Work with the Municipal Review Committee ("MRC"), which represents over 160 municipalities that are limited partners in PERC and/or users of PERC, to:

1. through Casella's Fairfield County Recycling Division, analyze and develop the best collection, processing and marketing options for paper recycling;
2. help develop organics recycling programs that enhance or expand current practices of MRC members;
3. develop a program to collect, store and process (where applicable) universal wastes and mercury containing products; and
4. develop programs to identify, collect and properly dispose of household hazardous wastes;

C. Work with the MRC and appropriate research facilities to assess the viability of using Maine-developed ablation technology as a source of air emission control for biomass boilers combusting up to 50% clean wood from construction and demolition debris ("CDD") as a fuel source, as proposed for new GPC biomass boiler; and

D. Expand the CDD processing capability of Casella and its affiliates to achieve a decrease in CDD waste volume requiring disposal with a focus on recovering the clean CDD wood waste that would assist in meeting the biomass fuel commitment of the OSA. Other recyclable materials, including cardboard, aggregate and metals, would be separated and utilized in other applications.

The Department finds that the provisions of 38 M.R.S.A. §1310-N(5) and the Rules are not applicable to this application because it is not an application for a new landfill or an expansion of an existing landfill. (See Finding of Fact #1.C, above.) However, to address public comments on the need for additional

recycling rather than additional disposal capacity, the applicant submitted a summary of the recycling initiatives included in its response to the RFP and in the OSA.

20. PROTECTED NATURAL RESOURCES

The original application, and the application submitted to the Army Corps of Engineers, included an extensive wetlands study of the property. The original licenses permitted the filling of 8.84 acres of wetlands, and contained a compensation plan for the activity. Condition #4 of the original license required that the original licensee submit annual reports on the restoration and enhancement projects in the compensation plan for a 3 year period; compliance with this condition has been demonstrated.

No additional wetland areas will be impacted by the proposed project. However, the reconstruction of the access road from the landfill berm to the existing leachate pump station, and the construction of the leachate force main will include construction activities within 75 feet of the upland boundary of the forested wetland to the west of the site, and thus the applicant will file Permit By Rule applications under the Department's Chapter 305, Sections 4 and 9, Regulations prior to this construction, and will comply with the standards in the regulations.

The Department finds that the proposed facility will not unreasonably adversely effect protected natural resources in that no new impact on protected natural resources will occur, provided that the applicant obtains, and complies with the standards of, permits-by-rule under 06-096 CMR Chapter 305.4 and 305.9.

21. SETBACKS AND BUFFERS

The setbacks to public roads, private residences, public and private water supplies protected natural resources, airports and the property boundary are not changed as a result of this proposal, and thus continue to exceed the setbacks set forth in the Rules. As required by Condition #9 of the original license, the 100 foot forested buffer between the western side of the facility between the landfill and the emergent wetland to the southwest of the facility will be maintained. The

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Department finds that Finding of Fact #22 of the original license, which sets forth required buffers, is not changed by this proposal.

22. UTILITIES

On site single-phase power is supplied from Route 16 via buried electrical lines. Potable water will continue to be provided by an on-site well. On-site sanitary wastewater treatment is provided by a licensed subsurface wastewater disposal facility. The applicant proposes to upgrade the facility from 113 gallons/day to 420 gallons/day; a copy of the HH200 form for the upgraded facility is contained in Attachment 10 of the application. As described in Finding of Fact #9.D, above, leachate will initially be trucked to the Old Town Mill's wastewater treatment plant, but may be transported via sewer line or truck to the City of Old Town Wastewater treatment plant in the future, if the necessary upgrades are made and the City of Old Town is willing. The Department finds that the applicant has provided for adequate utilities and the proposed facility will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by the utilities.

23. ALL OTHER FINDINGS OF THE ORIGINAL ORDER

The Department finds that all of the remaining Findings of Fact of the original license will be unchanged by the proposed amendment for a vertical increase, in that the horizontal footprint of the landfill will be unchanged by the proposal.

BASED on the above Findings of Fact, the Department CONCLUDES the following:

1. The applicant has provided adequate evidence of financial capacity and technical ability to meet air and water pollution control standards, provided an acceptable package for financial assurance is submitted and maintained, and provided evidence of financial capacity for construction of each cell is provided as part of the detailed design package submitted prior to each construction season.

2. The information submitted by the applicant and supplied by state and local officials regarding Casella's previous violations of certain environmental laws, as described in the civil and criminal record for SPO and Casella/NEWSME

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Operations, demonstrates that Casella has willingly conducted all required corrective actions; thus the civil and criminal record does not provide a basis to deny approval for SPO to own and control, and NEWSME Operations to operate, the landfill as proposed in this application in compliance with Maine laws and regulations.

3. The applicant has provided adequate evidence of title, right or interest in the parcel of property containing the existing landfill.

4. The proposed vertical increase of the landfill will not pose an unreasonable risk that a discharge to a significant groundwater aquifer will occur in that the landfill is not located over a significant sand and gravel aquifer and the proposed vertical increase of the landfill does not pose an unreasonable threat to the quality of a significant sand and gravel aquifer which it does not overlie, or to an underlying fractured bedrock aquifer, in that soils under the landfill and the proposed design of the vertical increase, combined with the groundwater flow conditions, provide adequate protection to water quality.

5. The proposed vertical increase of the landfill will not pollute any waters of the State, contaminate the ambient air, constitute a hazard to health and welfare, or create a nuisance, provided the environmental monitoring plan for the landfill is updated in accordance with staff recommendations, and provided the landfill is constructed, operated, closed and monitored and maintained throughout the post-closure period in accordance with staff recommendations and the approved design and then-current operational standards, including reporting requirements. Compliance with the intent of the Solid Waste Management Regulations has been affirmatively demonstrated.

6. The applicant has adequately addressed the settlement and stability of the landfill, provided it monitors the facility in accordance with an approved settlement and stability monitoring plan that incorporates all recommendations made by staff.

7. The applicant has made adequate provisions for traffic movement of all types into, out of and within the development area, provided overhead lights, or another effective lighting system as approved by the Department, are installed at the

entrance to the access road prior to the operation of cell 3. The traffic increases attributable to operation of the landfill will not result in unreasonable congestion or unsafe conditions on a road in the vicinity of the project.

8. The applicant has made adequate provisions for fitting the development harmoniously into the existing natural environment and the development will not adversely affect the existing uses, scenic character, or natural resources in the municipality or in neighborhood municipalities provided the landfill is properly operated, properly closed, and properly cared for after closure, all in accordance with then-current regulatory requirements; that the applicant obtains the necessary Natural Resource Protection permit-by-rules before construction of the MSE berm; and provided the results of future visual and noise analyses confirm the projections contained in the application.

9. The proposed change in the landfill will not cause unreasonable erosion of soil or sediment, nor inhibit the natural transfer of soil. The applicant has made adequate provisions for controlling erosion and managing stormwater, provided the approved stormwater management plan and erosion control plan are fully implemented.

10. The applicant has made adequate provisions for utilities, including water supplies, sewerage facilities, solid waste disposal and roadways required for the development, and the landfill will not have an unreasonable adverse effect on existing or proposed utilities in the City of Old Town, the Town of Alton, or the area served by those services.

THEREFORE the Department APPROVES the above noted application of the STATE OF MAINE, ACTING THROUGH THE STATE PLANNING OFFICE, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations.

1. The Standard Conditions of Approval, a copy attached as Appendix A.

2. The applicant shall take all necessary actions to ensure that its activities or those of its agents do not result in unnecessary or noticeable erosion of soils on site during construction or operation of the facility.

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3. Prior to May 15, 2004, the applicant shall submit a financial assurance package for closure and post-closure care to the Department for review and approval that meets requirements of the Rules. The applicant shall implement the approved package. The approved financial assurance package shall be updated on an annual basis by the applicant in accordance with the Rules.

4. The applicant shall complete the investigation in the areas around and beneath detention ponds 1 and 2 in accordance with the workplan approved by the Department.

5. The applicant shall update the EMP on an ongoing basis as recommended by staff, beginning with the submittal of the 2003 Annual Report. Monitoring of detention ponds 1 and 2, and monitoring wells #DP-4, #P-04-02, and #P-04-04 shall be added to the EMP. The 3 new well clusters proposed in the application shall be installed in locations approved by the Department, and added to the monitoring program for the facility. All landfill underdrain discharge locations shall be added to the monitoring program for the facility; they shall be monitored monthly for the field parameters in Appendix A, Column 1 of Chapter 405 of the Rules, and sampled 3 times per year for the facility's suite of detection parameters at the same time as the other monitoring locations.

6. The applicant shall initiate assessment monitoring in accordance with the Rules at monitoring wells MW-204, MW-302, MW-223B, MW-212 and MW-303 during the Spring 2004 sampling event. New wells installed in accordance with Condition #4, above, shall be included in the assessment monitoring program during the Summer 2004 sampling event.

7. The applicant shall continue to route the discharge from the leachate pond underdrain into the leachate storage pond until the Department authorizes a resumption of the surface discharge. The leachate pond underdrain water quality shall be sampled weekly throughout the rest of 2004 for field parameters including pH, specific conductivity and temperature, and an analysis of the results shall be included in the 2004 annual report for the facility. The analysis of the results shall include a proposal for future monitoring at this location, and the

necessary changes to the EMP. After review and approval by the Department, the changes shall be incorporated into the EMP and implemented as approved.

8. The applicant shall construct the sludge mixing test plot in accordance with the proposed plan, as revised in accordance with staff recommendations. At least 60 days prior to landfilling of sludge from cells 1 and 2 with other waste outside of the test plot, the applicant shall propose to the Department for review and approval, based on the findings of the test plot program, a ratio of existing and new sludge to incoming waste to be placed in cells 1, 2 and 3, detailed procedures for mixing the waste streams, and an odor control and monitoring plan for sludge excavation and mixing operations.

9. At least 60 days prior to landfilling of sludge from cells 1 and 2 with other waste outside of the test plot, the applicant shall submit to the Department for review and approval, based on the findings of the test plot program, an updated geotechnical stability analysis and a finalized geotechnical monitoring plan for the landfill.

10. At least 45 days prior to the commencement of waste placement in cell 3, the applicant shall submit to the Department for review and approval an updated operations manual, including a finalized conceptual cell development plan for the life of the landfill and a detailed cell development plan for the next 2 years of operation. The updated operations manual shall address all staff recommendations as agreed to in SME's January 22, 2004 submittal addressing staff memoranda. The operations manual shall be updated again following completion of the test plot program and prior to excavation of sludge from cells 1 and 2. All changes to the operations manual for the facility are to be implemented as approved by the Department.

11. The applicant shall include in each of the facility's annual reports proposed revisions to the operations manual, including an annually updated cell development plan. Each year's annual report shall also include an evaluation of the sizing and the installation timing of the active gas extraction system components over the reporting period, and an evaluation of the effectiveness of the system based on the quantities and types of wastes projected for the next year.

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The operations manual shall be revised as conditions dictate and to comply with any changes in the operating requirements in the Rules.

12. Prior to the commencement of operations in cell 3, the applicant shall install overhead lights, or another lighting system that identifies the entrance road into the facility, at the entrance to the facility.

13. The applicant shall obtain prior to construction of the MSE berm, and comply with the standards of during construction, permits-by-rule under 06-096 CMR Chapter 305.4 and 305.9.

14. At least 60 days prior to the planned commencement of operations in cell 3, the applicant shall submit to the Department for review and approval the following information on the perimeter hydrogen sulfide monitoring program: the number and locations of instruments, based on meteorological conditions; system security measures; monitoring program details and responsibilities; and reporting procedures.

15. At least 6 months prior to the planned commencement of operation of new cells or other structures, the applicant shall submit to the Department for review and approval detailed design packages for each construction activity. The detailed design packages shall include a complete set of project specific contract bid documents, including construction drawings, technical specifications, contract administrative documents, construction monitoring and documentation provisions, construction quality assurance plans, erosion and sedimentation control plans, and the following information:

    A. For the landfill cells other than cell 3, the perimeter berm, the leachate storage tank and the ancillary structures, the detailed design packages shall also address all staff recommendations regarding the design, the technical specifications, the construction drawings, and the construction quality assurance plan as agreed to in SME's January 22, 2004 responses to the comments provided in 3 initial engineering review memoranda by staff. In addition, the applicant shall include a demonstration of financial capacity for costs associated with the construction of each cell developed after cell 3.;

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B. For the active gas extraction system, the detailed design package shall also address staff recommendations regarding the design, the technical specifications, the construction drawings, and the construction quality assurance plan as agreed to in SHA's submittal dated January 21, 2004 and the applicant's letter dated February 4, 2004. The detailed design package for the initial construction of the active gas extraction system shall also include the active gas system operating plan, inclusive of monitoring, record-keeping, and reporting procedures; and the provisions to be implemented to protect and provide safe access to the well-heads if temporary geomembrane tarps are proposed for intermediate cover; and

C. For the phased final cover system, the detailed design package shall include the supporting information required by the applicable provisions of Chapter 401.5 of the Rules, and address the recommendations in staff memoranda as agreed to in SME's submittal dated January 22, 2004 and as responded to in staff memoranda dated January 26, 28 and 30, 2004.

If the Rules applicable to any aspect of the design and construction of the vertical increase of the landfill and its ancillary structures change during the development of the landfill, the applicant shall address the new requirements in subsequent submittals.

16. With regards to the acceptance of MSW for disposal, consistent with its proposal, the applicant:

A. shall not dispose of unprocessed MSW from any source other than bypass from the following sources: PERC incinerator in Orrington and the Maine Energy incinerator in Biddeford; waste delivered under an interruptible contract with PERC; or waste delivered in excess of processing capacity at other MSW incinerators in Maine;

B. shall not accept waste from an incinerator without verifiable authorization from either the owner/operator of an incinerator or from a regulatory entity with jurisdiction over the incinerator that a bypass has been called

or, for holders of interruptible contracts, the contracts have been interrupted in accordance with the contractual provisions;

C. shall limit the total amount of (a) unprocessed MSW incinerated at Maine Energy and (b) MSW bypassed from Maine Energy for disposal at the WOTL and at Pine Tree Landfill's Secure III Landfill Expansion to no more than 310,000 tons in any calendar year, unless changes in conditions or circumstances occur that cause the Department to revise this cap; and

D. shall notify the Department if waste deliveries in excess of processing capacity at MSW incinerators continue from a particular incinerator for a period exceeding 1 week, and provide such information as the Department may request to demonstrate that the deliveries are due to either planned outages or unplanned production problems.

17. The monthly activity reports submitted to the Department by the applicant shall provide the data needed to determine the quantities of the various waste types, and their sources, delivered to the landfill. The monthly reports on the wastes accepted for disposal at the landfill shall include the amount and source of unprocessed MSW accepted for disposal.

18. Prior to accepting for disposal any waste not listed in the application, the applicant shall submit an application for the new waste to the Department for review and approval.

19. The applicant shall include in the annual reports for the facility submitted to the Department, in addition to the specific requirements of Chapter 401.4(D) of the Rules, the amount of unprocessed MSW received at WOTL from each of the approved sources.

20. If Department staff find that operation of the landfill as proposed unreasonably adversely results in unreasonable odors or fugitive dust emissions, the Department shall require additional odor control measures or fugitive dust control measures at the facility.

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21. The applicant shall perform 2 additional noise studies in accordance with the provisions of the Rules: one within the first month of operation of cell 3, and the other within the first month of operation of cell 9. The results of each of the noise studies shall be submitted to the Department for its review and comment within 2 weeks of completion. If the actual noise levels are above the limits prescribed in the Rules, additional noise measures shall be implemented to meet the requirements of the Rules within 1 month of the submittal of the noise study.

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.

24. The applicant shall submit the detailed construction plans for the placement of phased final cover to the Department for its review and approval at least 90 days prior to each application of final cover. In addition, the applicant shall submit to the Department for its review and approval a final closure plan for the landfill, prepared in accordance with the Rules in effect at that time, and complete final closure of the landfill in accordance with the approved final closure plan. The final closure plan shall include a post-closure monitoring and maintenance plan covering a period of at least 30 years following closure. The post-closure monitoring and maintenance plan shall be revised throughout the post-closure period to comply with changes in site conditions or any changes in

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the post-closure monitoring and maintenance requirements of the Rules. Post-closure monitoring and maintenance shall continue until the Department approves its cessation.

DONE AND DATED AT AUGUSTA, MAINE THIS 9th DAY

OF April, 2004.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Dawn R Gallagher

Dawn R. Gallagher, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of initial receipt of application: October 30, 2003
Date application accepted for processing: November 21, 2003

Date filed with Board of Environmental Protection:

XCD51106/cwd

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

BOARD ORDER

IN THE MATTER OF

STATE OF MAINE, ACTING THROUGH	)	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N	)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

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STATE OF MAINE, ACTING THROUGH	3	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N	)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

Pursuant to the provisions of the *Maine Hazardous Waste, Septage and Solid Waste Management Act*, 38 Maine Revised Statutes (M.R.S.) §§ 1301 to 1319-Y; *Solid Waste Management Hierarchy*, 38 M.R.S. §2101; the *Rule Concerning the Processing of Applications and Other Administrative Matters*, 06-096 Code of Maine Rules (C.M.R.) ch. 2 (last amended October 19, 2015); the *Solid Waste Management Rules: General Provisions*, 06-096 C.M.R. ch. 400 (last amended April 6, 2015), *Landfill Siting, Design and Operation*, 06-096 C.M.R. ch. 401 (last amended April 12, 2015), and *Water Quality Monitoring, Leachate Monitoring, and Waste Characterization*, 06-096 C.M.R. ch. 405 (last amended April 12, 2015) (collectively, the Rules); the *Natural Resources Protection Act* (NRPA), 38 M.R.S. §§ 480-A to 480-JJ; Section 401 of the *Federal Water Pollution Control Act*, 33 U.S.C. § 1341; *Wetlands and Waterbodies Protection*, 06-096 C.M.R. ch. 310 (last amended January 26, 2009); and *Assessing and Mitigating Impacts to Existing Scenic and Aesthetic Uses*, 06-096 C.M.R. ch. 315 (effective June 29, 2003), the Board of Environmental Protection (Board) has considered the application of the State of Maine acting through the Bureau of General Services, with all supportive data, agency review comments, and other related materials on file, and FINDS THE FOLLOWING FACTS:

APPLICATION OVERVIEW AND PROCEDURAL HISTORY

1. APPLICATION SUMMARY

A. Application

The State of Maine, acting through the Bureau of General Services (BGS), has applied for Maine Hazardous Waste, Septage and Solid Waste Management Act, Natural Resources Protection Act, and Water Quality Certification approval to construct a 9.35 million cubic yard expansion of the existing Juniper Ridge Landfill (JRL), located in Old Town, Maine. The northern edge of the property parcel borders, and a portion of the access road is located in, Alton, Maine. The solid waste application under the Maine Hazardous Waste, Septage, and Solid Waste Management Act and the land application under NRPA were processed as a consolidated licensing proceeding and are both addressed in this license.

BGS, as the owner of JRL, and NEWSME Landfill Operations, LLC (NEWSME), as the operator of JRL, prepared the application for the proposed expansion.

The NRPA application was originally identified as license #L-24251-TG-C-N, which was incorrect. It is now correctly identified as license #L-19015-TG-D-N.

B. History

The following history is a summary and does not include all licensing actions:

STATE OF MAINE, ACTING THROUGH THE BUREAU OF GENERAL SERVICES OLD TOWN, PENOBSCOT COUNTY, ME JUNIPER RIDGE LANDFILL EXPANSION #S-020700-WD-BI-N and #L-19015-TG-D-N (APPROVAL WITH CONDITIONS)	4)))))	SOLID WASTE LICENSE, NATURAL RESOURCES PROTECTION ACT, AND WATER QUALITY CERTIFICATION NEW LICENSE

(1) On July 28, 1993, James River Paper Company, Inc. was issued a license to construct and operate a 68-acre secure landfill, known as the West Old Town Landfill, to dispose of the James River Paper Company's pulp and papermaking residuals (license #S-020700-7A-A-N). The project impacted 1.31 acres of freshwater wetland. The compensation package included preservation of 27.92 acres of land adjacent to the facility and the restoration and enhancement of 1.76 acres of wetland within the preserved parcel.

(2) On August 24, 1995, the Department approved, with conditions, a modification to the compensation package (licenses #L-19015-31-A-M and #S-20700-DW-B-M).

(3) On October 21, 2003, the Department issued conditional approval for the transfer of licenses for the West Old Town Landfill, from the Fort James Operating Company, to the State of Maine, State Planning Office (SPO) (licenses #S-020700-WR-M-T and #L-019015-TH-C-T); the transfer became effective when the sale of the landfill to the State of Maine, acting by and through SPO, occurred on February 5, 2004.

(4) On February 5, 2004, the State of Maine, acting by and through the SPO, and Casella Waste Systems, Inc. (Casella) entered into an Operating Services Agreement (OSA) for the operation of the West Old Town Landfill.

(5) On April 9, 2004, the Department approved an amendment application (license #S-020700-WD-N-A) for a vertical increase in the final elevation of the landfill and the disposal of additional waste streams.

(6) In 2006, the West Old Town Landfill became known as the Juniper Ridge Landfill.

(7) On January 31, 2012, the Department issued to the State of Maine, acting through the SPO, a Public Benefit Determination (license #S-020700-W5-AU-N) partial approval, with conditions, for additional landfill capacity of 9.35 million cubic yards, decreased from the original 21.9 million cubic yard capacity proposed.

(8) Pursuant to PL 2011, ch. 655, § GG-69, on July 1, 2012, the BGS, within the Department of Administrative and Financial Services (DAFS), became the state agency acting as the owner and licensee of JRL. The Department

of Economic and Community Development is the manager of JRL. NEWSME, a wholly-owned indirect subsidiary of Casella, operates the landfill for the State of Maine, acting through the Bureau of General Services.

(9) To date, approximately 62.6 acres of the facility's 68-acre existing licensed footprint have been developed, including Cells 1, 2, 3A, 3B, 4, 5, 6, 7, 8, and 9 (current active cell).

C. Terms and Acronyms

The following terms and acronyms can be found in this license and are listed in Table 1 for ease of reference:

Table 1: License Terms and Acronyms

applicant	Refers to both BGS and NEWSME (or a successor operator)
Board	Maine Board of Environmental Protection
BGS	Bureau of General Services
BMP	Best Management Practices
Casella	Casella Waste Systems, Inc.
CDD	Construction and Demolition Debris
C.M.R.	Code of Maine Rules
dBA	Decibels adjusted for frequency extremes
Department	Maine Department of Environmental Protection
EMP	Environmental Monitoring Plan
FEMA	Federal Emergency Management Agency
FEPR	Front End Process Residue
GCL	Geosynthetic Clay Liner
H_2S	Hydrogen Sulfide
HDPE	High-Density Polyethylene
JRL	The Juniper Ridge Landfill
LFG	Landfill Gas
MDOT	Maine Department of Transportation
M.R.S.	Maine Revised Statutes
MSW	Municipal Solid Waste
MSW Bypass	Any MSW that is destined for disposal or processing at a solid waste incinerator, but that cannot be disposed of or processed at that incinerator because of the incinerator's malfunction, insufficient capacity, inability to process or burn, down-time, or any other comparable reason as approved by the Department
NEWSME	NEWSME Landfill Operations, LLC
NRPA	Natural Resource Protection Act

OBW	Oversized Bulky Waste
OSA	Operating Service Agreement
ppb	Parts per Billion
PBD	Public Benefit Determination License
PIR	Preliminary Information Report
Rules	The Department's Solid Waste Management Rules, including 06-096 C.M.R. chs. 400, 401, and 405
SME	Sevee & Maher Engineers, Inc.
Soft Layer	A protective layer of waste above the liner and leachate collection systems
State Plan	Maine Materials Management Plan: 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, January 2014, prepared by the Maine Department of Environmental Protection
SVP	Significant Vernal Pool

D. Summary of Proposal

The application is for the construction and operation of a 9.35 million cubic yard expansion at JRL. The existing solid waste footprint is proposed to be expanded by 54 acres, to be developed in phases. An additional 20 acres is planned for ancillary infrastructure including roads, piping, sedimentation ponds, scales, and buildings. The proposed expansion would extend the life of the landfill by approximately 10 to 12 years.

The proposed expansion design consists of various engineered systems for the construction and operation of the landfill. Landfill gas generated on-site will be combusted in the facility's flare. The leachate from the expansion will be treated off-site, as is the current practice.

The requested wastes to be placed in the proposed expansion are similar to the accepted wastes currently allowed in the existing landfill. The accepted wastes will include only non-hazardous waste generated within the State and will not include MSW, except for MSW bypass as described in Finding 37 of this license.

The application for the proposed expansion includes the direct alteration of 2.04 acres of freshwater wetlands. A compensation plan was proposed for wetland impacts. Additionally, a Permit-by-Rule Notification Form (PBR#60159) was submitted for clearance for an electrical line and perimeter fence through the critical terrestrial habitat of a significant vernal pool (SVP) pursuant to *Permit By Rule Standards*, 06-096 C.M.R. ch. 305, § 19 (last amended June 8, 2012). The Department accepted the PBR on July 29, 2015.

The solid waste and NRPA applications were accepted as complete for processing on August 7, 2015 and July 31, 2015, respectively. The Department commented on various aspects of the application and received responses. These include the following: November 12, 2015 Department review letter on select portions of the application; January 22, 2016 Department review transmittal letter with two technical memoranda; March 4, 2016 BGS and NEWSME response to comments; April 4, 2016 Department follow-up comment transmittal letter with two technical memoranda; May 13, 2016 BGS and NEWSME follow-up responses; and July 1, 2016 Department letter with two memoranda.

E. Ownership and Operation of the Juniper Ridge Landfill

The State of Maine, acting through BGS, owns JRL. Casella is the operator of the landfill through NEWSME, a Casella subsidiary. The terms and conditions of NEWSME's operation of the landfill are established by the OSA between the State of Maine and Casella dated February 5, 2004, and amended on July 24, 2006 and November 2, 2006.

In accordance with the OSA, Casella is required to pay all costs associated with the development, operation, closure and post-closure care of the landfill and the proposed expansion. In addition, Casella is required by the OSA to establish and maintain financial assurances for the landfill and the expansion sufficient to meet the closure and post-closure care provisions of the applicable Rules, assume liability for the landfill and the proposed expansion under both the current and future conditions, and assure that adequate disposal capacity is provided for the wastes currently disposed in the landfill for at least a 20-year period. Resolve 2003, Chapter 93 requires contract terms and conditions to be "revenue-neutral to the State and as the office [former Executive Department, State Planning Office] determines are advisable and in the public interest."

NEWSME has prepared an application to expand JRL in accordance with the terms of the OSA. The OSA is a contract between the State of Maine, acting through BGS, and Casella. The Board and Department are not parties to the OSA. Section 4.1 of the OSA includes language that specifies that the State shall work with Casella in maintaining in the State's name the existing permit, amendments, and all permits, licenses, statutory amendments and legislation, approvals and authorizations reasonably requested by Casella and agreed to by the State for the operation of the landfill in accordance with the terms of the OSA, including without limitation the expansion permit.

Reference to the "applicant" in this license determination refers to both BGS, as the owner of JRL, and NEWSME, as the current operator, acting as an agent on behalf of BGS in accordance with the terms in the OSA.

2. PUBLIC PARTICIPATION

A. Pre-Application Requirements

(1) Preliminary Information Report

A Preliminary Information Report (PIR) is required by 06-096 C.M.R. ch. 401, § 1(E). The PIR, prepared by SME, was submitted to the Department on November 22, 2006 for a larger 106-acre expansion with 22 million cubic yards of capacity. The proposed 54-acre expansion is to be located within the boundary of the area described in the original submittal. A follow-up meeting was held on February 21, 2007 among representatives of the SPO (since abolished), the Department, NEWSME, SME, and Pierce Atwood, LLP to discuss the PIR.

(2) Determination of Environmental Feasibility

The Department issued a letter addressing the PIR on April 13, 2007 stating that the proposed expansion appeared to be environmentally feasible and that the siting criteria of 06-096 C.M.R. ch. 401, § 1(C)(2) did not prohibit the proposed expansion.

(3) Pre-Application Meetings

The Department's rule at 06-096 C.M.R. ch. 2, § 10 includes requirements for pre-application and pre-submission meetings. The applicant held four pre-application meetings in 2014 with the Department and interested persons, including the City of Old Town, the Landfill Advisory Committee, the Penobscot Nation, and the general public. The Town of Alton did not attend the pre-application meetings. The meetings took place September 9, October 16, November 20, and December 18. Additional meetings also occurred among the applicant, the Department, and the U.S. Army Corps of Engineers on October 29, 2014 and April 27, 2015. A representative of the U.S. Fish and Wildlife Service attended the October 29, 2014 meeting.

B. Public Informational Meeting

A public informational meeting was held on June 3, 2015 in the City of Old Town as required by 06-096 C.M.R. ch. 2, § 13. The applicant mailed notice of the public informational meeting to the abutters, the Old Town and Alton municipal offices, the Landfill Advisory Committee and the Penobscot Nation. The notice was published in the Bangor Daily News on May 22, 2015.

C. Notice of Intent to File

A Notice of Intent to File an application was published in the Bangor Daily News and Penobscot Times on July 9, 2015, in addition to being mailed to the abutters, the Old Town and Alton municipal offices, the Landfill Advisory Committee and the Penobscot Nation. The notice and mailing of the notice to the Landfill Advisory Committee fulfilled the public and local participation requirement of 38 M.R.S. § 1310-S(1), the citizen's advisory committee notification requirement of 38 M.R.S. § 1310-N(12), and the public notice requirements of 06-096 C.M.R. ch. 2, § 14.

D. Public Hearing Requests and Board Jurisdiction

The Department received 27 timely requests in August 2015 for a public hearing. On September 17, 2015 the Board, on the recommendation from the Department, voted to assume licensing jurisdiction over the application and convene a public hearing.

E. Public Hearing Process

(1) Intervenors

a. Petitions to Intervene

Intervenor status was requested by several entities. State law at 38 M.R.S. § 1310-S(3) provides municipal intervenor status, if requested, for the municipality in which the facility would be located. The City of Old Town requested intervenor status on June 4, 2015. The Town of Alton notified the Department on July 30, 2015 that it would not be requesting intervenor status. The Board received intervenor status requests from two abutting property owners, Jesse Pekkala and SSR, LLC, who have intervenor status under 38 M.R.S. § 1310-S(3-A). Petitions for intervenor status

were received from three interested persons: Edward Spencer, Dana Snowman, and Antonio Blasi.

b. Board Action on Petitions to Intervene by Interested Persons

The Board's First Procedural Order, issued on January 21, 2016, granted intervenor status to Mr. Spencer and Mr. Snowman. Mr. Blasi was denied intervenor status due to the finding that his petition did not demonstrate that he may be substantially and directly affected by the proceeding.

c. Withdrawal from Participation

On May 10, 2016, Mr. Pekkala withdrew as an intervenor.

d. Intervenor Designations

The following entities participated as intervenors in the licensing process:

i. City of Old Town, as a municipal intervenor;

ii. Edward Spencer, as an interested person petitioner;

iii. Dana Snowman, as an interested person petitioner; and

iv. SSR, LLC, as an abutter.

(2) Procedural Orders

Prior to the public hearing, the Board issued six Procedural Orders:

a. The First Procedural Order, issued on January 21, 2016, addressed the designation of intervenors as described in Finding 2(E)(1) of this license.

b. The Second Procedural Order, issued February 25, 2016, documented the pre-hearing conference held on February 10, 2016. The pre-hearing conference included a review of the procedural rules in preparation for, and during, the hearing; the roles and responsibilities of the applicant, intervenors, and Department staff; and the relevant licensing criteria. The Second Procedural Order

established the deadline for the intervenors to submit a list of issues they expected to address at the hearing through testimony, along with a list of expert witnesses.

c. The Third Procedural Order, issued May 27, 2016, documented the pre-hearing conference held on May 18, 2016. The pre-hearing conference included a review of the list of issues submitted by the intervenors, agreement on issues not contested by the intervenors, and discussion of the Board's site visit and schedule of pre-hearing testimony submissions. The Third Procedural Order established submission deadlines for the applicant's and intervenors' lists of witnesses, pre-filed direct testimony and exhibits, and pre-filed rebuttal testimony, as well as setting the dates for the public hearing.

d. The Fourth Procedural Order, issued July 7, 2016, addressed the requirements for submission of pre-filed testimony and scheduling decisions made in consultation with the parties following the June 23, 2016 Board meeting.

e. The Fifth Procedural Order, issued August 25, 2016, addressed the rulings of the Presiding Officer on the motions to strike pre-filed direct testimony.

f. The Sixth Procedural Order, issued September 28, 2016, documented the pre-hearing conference held on September 14, 2016. The pre-hearing conference included a review of procedures and a draft schedule for the public hearing.

(3) Site Visit

A site visit to JRL occurred on June 23, 2016 for the purpose of allowing Board members to view the physical features of the site and the nature of the surrounding areas. The applicant and intervenors were also present during the tour. Department staff conducted the tour and responded to Board members' questions.

(4) Public Hearing

The Board held a public hearing on the proposed expansion application on October 18 and 19, 2016 in Bangor, Maine pursuant to the Maine Administrative Procedure Act, 5, §§ 9051-9064; 38 M.R.S. §§ 341-D(2)

and 1310-S(2); and the *Rules Governing the Conduct of Licensing Hearings*, 06-096 C.M.R. ch. 3 (last amended February 16, 2015). At the hearing, the witnesses for the parties summarized their pre-filed direct and rebuttal testimony, and were subject to cross-examination by the other parties and questioning by Board members and staff.

The Board held an evening session on October 18 to receive testimony from members of the general public, and 33 persons testified at that session. Prior to the close of the evidentiary record, the Board received 31 written comments from the general public. The testimony and written comments by the general public included opposition to, and support for, the proposed expansion.

Following the filing of post-hearing briefs by the parties on November 23, 2016, the Board held a deliberative session on December 15, 2016 to review the evidentiary record with Department staff.

Issues addressed in pre-filed testimony, hearing testimony, and post-hearing briefs included, but were not limited to: the solid waste management hierarchy regarding CDD and OBW, site geology, design and operation of the proposed expansion, the facility's odor complaint procedure, stormwater management and extreme weather events, ground and surface water monitoring, leachate treatment and disposal, NRPA alternative analysis, impacts to Atlantic salmon, fees and payments to the City of Old Town for the use of CDD fines and soft layer waste, traffic on Bennoch Road, third party administration of the Declaration of Covenants and Restrictions, and hydrogen sulfide action levels and notification procedures.

Issues raised in testimony by the general public in opposition to the project included: impacts on the Penobscot River and natural resources, impacts on public health, leachate treatment, prohibiting additional waste disposal at the site, out-of-state waste coming into the State for disposal at a State landfill, and the solid waste hierarchy.

Issues raised in testimony by the general public in support of the project included: the facility as a well-designed, operated, and maintained landfill; the importance of the landfill to businesses and the community; and the need for a landfill option for material that cannot be reduced, reused, or recycled utilizing current technology and practices.

The hearing transcript and hearing documents are included in the record on file. Additional discussion of testimony and comments are addressed in the findings of fact of this license, as appropriate.

F. Draft License Comment Period

A draft license was made available for comment on April 14, 2017 through notification to the applicant, intervenors, and interested persons. The draft license was posted on the Department's website and the 15 working day comment period closed on May 8, 2017. A total of 48 commenters submitted written comments on the draft license. All of the comments were reviewed and given consideration in relation to the relevant review criteria of State laws and rules.

Comments were received from the applicant, intervenor Edward Spencer, intervenor Dana Snowman, intervenor City of Old Town, and the public (including three industry entities) and included, but were not limited to, the following:

(1) Applicant

Comments on the draft Board Order included:

a. Insertion of NEWSME in the header as an additional licensee;

b. Removal of sand dune references;

c. Changes to the test pad requirements; and

d. Comment to allow MSW if needed for the soft layer.

(2) Intervenor Edward Spencer

Comments on the draft Board Order included:

a. Hierarchy findings and the definition of waste generated within the state;

b. Usage of vague language;

c. Regulated and regulator control;

d. Non action on the PBD recommendation to review CDD imported and processing residue disposed;

e. OBW information;

f. A need for a more thorough evaluation of other viable site locations;

g. Impact on the Penobscot Nation;

h. Technical issues (underdrains and pumping with possible effect on wetlands, site selection process with respect to wetlands and surface water used, odor);

i. Leachate disposal;

j. Financial ability and criminal or civil record;

k. The endangered species evaluation; and

l. MSW bypass issues.

(3) Intervenor Dana Snowman

Comments on the draft Board Order included opposition to the acceptance of out-of-state waste.

(4) Intervenor City of Old Town

No additional comments on the Board Order were stated.

(5) Industry Entities

Comments on the draft Board Order included:

a. MSW bypass language;

b. Utilizing enforceable provisions to preclude MSW for disposal if it can be processed at another facility;

c. Removal of the clause allowing bypass of waste delivered under interruptible contracts with the PERC incinerator;

d. Additions of definitions and limits on the PERC incinerator's FEPR that may be disposed of at JRL;

e. Recalculation of the OBW limits to use an average tons/year over 5 years and to apply the Consumer Price Index (CPI) for 3 years; and

f. Clarification that if the required third party OBD audit is not completed in a timely manner through no fault of the processing facility, the OBW may be disposed of at the expansion.

(6) Public

Comments on the draft Board Order included:

a. Harm to the environment (air, land, and waters);

b. Environmental justice;

c. Meeting hierarchy requirements;

d. Not taking proactive action to meet the State's waste management goals, priorities, and policies; and

e. State designations of in-state waste and out-of-state waste.

Based on comments received, revisions were made to the draft license that address the relevant review criteria and issues raised within the purview of the Board's authority. The revisions include, but are not limited to, general clarification language, revisions to the liner system barrier soil test pad language, added information in Finding 38 on the association between wetlands and the proposed underdrains, additional clarification of the allowance of only MSW bypass in the proposed expansion, removal of the provision governing waste delivered under an interruptible contract, revisions to the bypass notification requirement, and the addition of a provision concerning the receipt if the third party OBW audit is not completed in a timely manner.

All comments received are part of the record and were made available to the Board and posted on the Department's website.

3. PROJECT DESCRIPTION AND SITE DESIGN

The 9.35 million cubic yard proposed expansion of the existing Juniper Ridge Landfill will be located within the 780-acre parcel in Old Town. The northern edge of the property parcel is on the Alton/Old Town border and a portion of the access road is located in Alton. Six cells, Cells 11 through 16, are proposed to be constructed in a phased manner. The construction is projected to begin in 2018 with Cell 11 and then is proposed to continue with a new cell constructed approximately every 2 years. In total, the proposed expansion footprint will be approximately 54 acres, plus an additional 20 acres of ancillary infrastructure, with the same peak elevation as the existing landfill, approximately 390 feet above mean sea level. The side slopes are designed at 3H:1V (horizontal to vertical), with the south side of the expansion to abut the northern side of the existing landfill.

The proposed expansion design includes an underdrain system and augmented secondary liner system over portions of the proposed expansion footprint, a secondary liner system, a leak detection system, a primary liner system, leachate collection and off-site treatment for liquid in contact with waste, landfill gas collection and control infrastructure, stormwater management, and a water quality monitoring network. Similar types of non-hazardous waste generated within the State, as currently placed in existing landfill cells, are proposed for the expansion, including CDD, FEPR, MSW incinerator ash, wood biomass ash, sludges, contaminated soil, OBW, MSW bypass, and other approved special wastes.

The proposed expansion will have direct impacts on 2.04 acres of freshwater wetlands. As stated in Finding 1(D) of this license, the applicant previously obtained a permit-by-rule for clearing of 0.1 acres of the critical terrestrial habitat associated with a significant vernal pool for construction of the fence and electrical line. The applicant also identified additional vernal pools subject to regulation by the U.S. Army Corps of Engineers. The applicant submitted a compensation plan consisting of a designated on-site preservation area of 266 total acres for impacts to both the wetlands regulated by the State and those regulated by the U.S. Army Corps of Engineers.

GENERAL SOLID WASTE PROVISIONS

4. HOST COMMUNITY AGREEMENTS AND MUNICIPAL INTERVENOR GRANTS

A. Host Community Agreement

State law at 38 M.R.S. § 2170-A requires that host community agreements be in place with all applicable communities prior to issuing a license to a solid waste disposal facility owned or operated by the State. Copies of the two host

community agreements with the City of Old Town and the Town of Alton were submitted with the application. The Host Community Compensation and Facility Oversight Agreement, dated December 8, 2005, was signed by the State of Maine, the City of Old Town and Casella Waste Systems, Inc. The Community Benefits Agreement, dated October 6, 2005, was signed by the State of Maine, the Town of Alton, and NEWSME Landfill Operations, LLC.

B. Municipal Intervenor Grants

The Department's rule at 06-096 C.M.R. ch. 400, § 7(B) establishes procedures for the use of funds by a municipality that has requested intervenor status, pursuant to 38 M.R.S. § 1310-S(4), for an expanded solid waste disposal facility proposed to be located in that municipality. A municipal intervenor may request financial assistance to pay for direct expenses associated with its substantive participation in the application review process.

The City of Old Town requested, and was automatically granted, intervenor status on June 4, 2015. The City of Old Town meets the eligibility requirements to receive financial grants to support participation in the licensing process. The Town of Alton notified the Department on July 30, 2015 that it would not be requesting intervenor status.

5. TITLE, RIGHT OR INTEREST

The applicant must demonstrate sufficient title, right, or interest in all of the property which is proposed for development or use pursuant to 06-096 C.M.R. ch. 400, § 4(A). The applicant has provided evidence of the State's title to the property pursuant to the Rules by submitting a copy of its warranty deed to the 780-acre parcel of land on which the proposed expansion will be located. The deed for the parcel is recorded in Book 9188, page 152 at the Penobscot County Registry of Deeds. A deeded right-of-way to the parcel from Route 16 is also recorded in the Registry. The Board therefore finds that the applicant has demonstrated sufficient title, right, or interest in the property proposed for the expansion.

6. FINANCIAL ABILITY AND FINANCIAL ASSURANCE

State law at 38 M.R.S. § 1310-N(2-F)(A) (siting standards) requires that the applicant have the financial ability to develop the project in a manner consistent with state environmental standards and the provisions of the statute. State law at 38 M.R.S. § 1310-Y requires the applicant to provide assurance of its financial ability to satisfy the estimated costs for corrective action and assurance of financial capacity to satisfy the estimated costs of closure and post closure care; however, 38 M.R.S. § 1310-Y applies to

privately owned solid waste facilities. The Department's rules at 06-096 C.M.R. ch. 400, § 4(B)(1) and § 11 require financial ability and financial assurance for the design, construction, operation, maintenance, closure and post-closure care of a proposed solid waste facility; however, as a State-owned facility the proposed expansion is not subject to the requirements of § 11 to provide financial assurance sufficient to ensure that funds are available to pay for the anticipated costs of compliance with all facility closure, post-closure maintenance, post-closure monitoring requirements, and corrective action.

Although not all of the financial requirements of the State laws and Rules apply to the State owned JRL, Casella maintains financial assurance as required by the OSA and as described below.

A. Financial Ability: Design, Construct, Operate, Maintain, Close, and Post-Closure Care

Permitting, design, construction, operation, and closure of JRL are funded by Casella, as set forth in the OSA with the State of Maine. Ongoing activities at JRL are funded by revenues generated from the operation of the landfill (i.e., tipping fees). The applicant provided a letter dated May 21, 2015 from the Bank of America, N.A. showing that Casella maintains a secured credit facility administered by that bank. The applicant represented that this letter demonstrates the ability of NEWSME and its ultimate parent company, Casella, to fund the expansion of JRL from working capital, if necessary.

Table 2 includes the opinion of expansion costs submitted by the applicant (Volume I of the application, Table 3-1, page 3-2). The application included an estimated cost of construction for the first cell of the expansion, Cell 11, of $6,240,000.

Table 2: Opinion of Expansion Costs

Activity	Estimated Cost ($)
Design and Permitting	$4,800,000
Construction	$19,800,000
Operations	$7,000,000
Closure	$12,400,000
Post-Closure Care	$8,700,000

Notes:
1. Design costs include MEDEP permit fees in 2015.
2. Construction costs are in 2015 dollars.
3. Operations costs represent estimated yearly costs.
4. Closure costs for the entire project in 2015 dollars at a per acre closure cost at $226,000 per acre.

5. Post-closure care includes costs to maintain and monitor the facility for the 30-year post-closure period in 2015 dollars based on a per-acre cost of $160,400 per acre.

The Board finds that financial ability is maintained by NEWSME as the current operator of JRL to design, operate, maintain, close, and accomplish post-closure care in a manner consistent with applicable State law and Rule requirements.

B. Financial Assurance

The applicant maintains a surety bond as financial assurance for final closure costs and post-closure care costs for the entire developed site for a 30-year period. Financial assurance is required by the OSA, Sections 13.7 and 21. A surety bond will be utilized as financial assurance for the proposed expansion, as well. The closure and post-closure care costs are updated yearly with updates of costs by an independent third party and the documentation of any changes made to the funding agreement submitted in the facility's Annual Report. The most recent updated surety bond documentation was submitted to the Department in an August 9, 2016 letter with attachments.

The Board finds that sufficient financial assurance is maintained by NEWSME as the current operator of JRL for closure and post-closure care, provided NEWSME submits the appropriate financial assurance package updates to the Department on an annual basis.

7. TECHNICAL ABILITY

The applicant must have the technical ability to develop the project in a manner consistent with State environmental standards in accordance with the 38 M.R.S. § 1310-N (2-F)(A) siting standards and must submit evidence that affirmatively demonstrates the technical ability to design, construct, operate, maintain, close, and accomplish post-closure care, as well as meeting civil or criminal record standards as stated in 06-096 C.M.R. ch. 400, § 4(C)(1).

A. Technical Experience

NEWSME has managed JRL since April 2004 and employs qualified management and staff at the facility, along with utilizing qualified consultants for design, construction, and operations. The application included position descriptions and responsibilities, along with resumes, of key personnel. NEWSME's parent company, Casella is also available to provide extensive

expertise in solid waste, recycling, and resource management. The specific consultants retained for the proposed expansion application include: SME of Cumberland, Maine as the primary consultant with expertise in geology, hydrogeology, and landfill design; Sanborn, Head & Associates, Inc. of Concord, New Hampshire for landfill gas design; Gorrill Palmer of Gray, Maine for traffic assessment; SMRT, Inc. of Portland, Maine for visual assessment; Epsilon Associates, Inc. of Maynard, Massachusetts for noise assessment; and Stantec Consulting Services, Inc. (Stantec) of Topsham, Maine for wetland and other natural resources assessments.

The Board finds that the combination of BGS staff, NEWSME operations and management personnel, and the consultants retained by the applicant have the technical ability to develop the proposed expansion in a manner consistent with the applicable State law and Rule requirements.

B. Civil or Criminal Record

Finding 23 of this license contains the information on civil and criminal disclosure.

8. PROVISIONS FOR TRAFFIC MOVEMENT

The applicant must make adequate provisions for safe and uncongested traffic movement of all types into, out of, and within the proposed solid waste facility as set forth in the 38 M.R.S. § 1310-N(2-F)(B) siting standards and in 06-096 C.M.R. ch. 400, § 4(D)(1).

The primary waste haul route to JRL utilizes the Interstate system, I-95, to the Route 16 Bennoch Road interchange (exit 199), then Route 16 West for 0.1 miles to JRL's site access road. This haul route is to remain unchanged. New internal roads required for the proposed expansion have been designed for continuous traffic flow to minimize danger to pedestrians or other vehicles. The site access and internal site roads are maintained by NEWSME, including winter plowing and summer dust control.

The applicant submitted a traffic assessment prepared by Gorrill Palmer, dated June 2015, to determine if traffic increase due to the expansion will be adequately accommodated. Based on 2014 weight scale records and turning movement volumes collected on September 30, 2014, it was determined that the 2014 peak design hour trip generation was 28 during the morning and 25 during the afternoon. The proposed expansion is expected to increase accepted waste tonnages to 700,000 tons annually from about 629,000 tons received in 2014, resulting in an estimated 31 and 28 truck round trips during the peak morning and afternoon hours, respectively. For the proposed expansion, the total daily vehicle trips generation is expected to be 203 (one way traffic, therefore,

approximately 101 total vehicles per day), of which 20 would be non-trucks and 183 would be various trucks with gross vehicle weights from 70,000 to 100,000 pounds. Gorrill Palmer noted that a disposal volume of approximately 700,000 tons was accepted in both 2010 and 2011.

For the proposed expansion, the primary 30-foot wide paved access road to the landfill will remain at its current location. Prior to a federal law change in 2011 which increased the allowable gross vehicle weight on I-95 from 80,000 to 100,000 pounds, vehicles over 80,000 pounds were required to use the state and local roadways. The weight limit change has reduced the traffic on local roadways by allowing trucks to utilize I-95. The applicant will encourage trucks to utilize the I-95 haul route when trucking waste to the proposed expansion.

In addition to addressing the existing and future traffic volumes and haul routes, the traffic assessment also looked at the future capacity of the facility, the Maine Department of Transportation (MDOT) accident inventory, sight distances, and internal access roads. The assessment concluded that the existing street system will continue to accommodate the vehicles associated with operation of the expansion.

During the course of the application review, traffic issues were raised by the City of Old Town regarding JRL related truck traffic on Bennoch Road (State Route 16). To address road conditions, BGS contacted MDOT concerning the possibility of improvements to the northern part of Bennoch Road. Preservation paving and highway rehabilitation work were added to MDOT's 2018 work plan. To encourage truck usage on I-95 rather than Bennoch Road, the facility has installed two signs that read "Trucks Please Use I-95". One sign is located just beyond the scale house, seen by drivers leaving the scales, and the other is located across from the landfill entrance, seen by drivers as they leave the facility. In addition, MDOT agreed to install two additional signs. At the hearing, the City of Old Town stated that their concerns regarding expansion truck traffic impacts have been addressed.

The Board finds that the applicant has demonstrated that the roads and intersections in the vicinity of JRL have the ability to safely and appropriately handle all of the traffic attributable to the proposed expansion into, out of, and within the facility pursuant to the applicable State law and Rule requirements. The Board further finds that the applicant will continue its policy of encouraging trucks to utilize I-95.

9. FITTING THE SOLID WASTE FACILITY HARMONIOUSLY INTO THE NATURAL ENVIRONMENT

In accordance with the 38 M.R.S. § 1310-N(2-F)(C) siting standards, the applicant must make adequate provisions for fitting the proposed solid waste facility harmoniously into

the existing natural environment. Pursuant to the requirements in 06-096 C.M.R. ch. 400, § 4(E)(1), JRL must have buffer strips of sufficient size and quality to adequately protect aquatic and wildlife habitat and the natural environment; and may not unreasonably adversely affect protected natural resources and rare, threatened and endangered plant and animal species. The buffer must be a minimum of 100 feet between the facility site and the listed locations and habitats, unless otherwise approved or required.

The applicant retained Stantec to identify and inventory the presence of wetlands; potential significant wildlife habitats, unusual natural areas; vernal pools; and rare, threatened, and endangered species on the proposed project site. A review of records and contact with the following agencies occurred: the Maine Department of Inland Fisheries and Wildlife, the Department of Agriculture, Conservation, and Forestry, the Department, and U.S. Fish and Wildlife Service. Field studies were performed to assess the potential presence of State or federally listed rare, threatened, and endangered species, along with the delineation of wetlands and waterbodies.

Stantec did not directly observe State or federally listed rare, threatened and endangered plant or wildlife species on site during the field work which took place in 2008-2009 and 2014-2015. However, two areas were identified at the facility for further review: the forested area on site which is located in the range of the northern long-eared bat and the northeast portion of the facility which is located in the National Oceanic Atmospheric Association's mapped critical habitat for Atlantic salmon.

The northern long-eared bat (Myotis septentrionalis) was listed as threatened effective May 4, 2015 with a 4d ruling by the U.S. Fish and Wildlife Service under the Endangered Species Act. Stantec conducted an acoustic bat survey during the nights of June 10 and 11, 2015 utilizing the current U.S. Fish and Wildlife Service guidelines and did not detect the presence of the northern long-eared bat.

Atlantic salmon are protected under the final 2009 ruling issued by the National Marine Fisheries Service and U.S. Fish and Wildlife Service under the Endangered Species Act. The expansion is proposed to be located approximately 800 feet from an unnamed intermittent brook, 950 feet from an unnamed tributary to Pushaw Stream and 2,350 feet from Judkins Brook. All of these streams are located in the watershed of the Penobscot River which contains Atlantic salmon. Isolated freshwater wetlands occur within the 780 acre facility parcel, including approximately two acres directly impacted by the proposed expansion; however, no delineated or mapped streams were identified within the proposed development area of the site. The Department of Marine Resources (DMR) stated that the proposed project should not cause any significant adverse impact to Atlantic salmon or other marine resources. The Maine Department of Inland Fisheries and Wildlife (MDIFW) stated that fisheries staff does not anticipate any adverse impacts on fisheries resources associated with this landfill expansion.

At the hearing, intervenor Edward Spencer's expert witness, Dr. Stephen Coghlan, questioned the applicant's conclusions regarding no expected impacts to Atlantic salmon. He testified on the life history and habitat requirements of Atlantic salmon and its sensitivity to various toxins, and argued that leachate generated by the project as well as impacts to the freshwater wetlands on-site have the potential to negatively impact its viability. He also argued that potential impacts to Atlantic sturgeon (federally-listed as threatened) and shortnose sturgeon (federally-listed as endangered) which are found in the lower Penobscot River Watershed should be considered. Dr. Coghlan testified that continued deforestation, urbanization and wetland alteration in the Penobscot River watershed have a detrimental impact on the habitat and viability of these endangered species as a result of increased runoff of nutrients and toxic chemicals. Dr. Coghlan also stated that in the event of a catastrophic breach of the liner system or a large storm event, leachate and/or stormwater runoff may contaminate adjacent waterways and ultimately the Penobscot River. Dr. Coghlan pointed out that in light of the success of the Penobscot River Restoration Trust's work on the Penobscot River that other important anadromous fish species have seen population increases recently and that the proposed expansion may put those species at risk again.

In response, Bryan Emerson, the applicant's wetland's expert, stated in his rebuttal testimony that the proposed expansion does not directly impact any river, stream or brook. The largest wetland being impacted in the middle of the proposed expansion is "an isolated forested wetland with no surface hydrological connection to a stream or floodplain wetlands, and the wetlands being impacted on the edge of the expansion are not floodplain wetlands. Therefore, no direct impacts to Atlantic salmon or their habitat are likely to occur." He further testified that Judkins Brook, which is within federally mapped Critical Habitat for Atlantic salmon, is located in a different watershed than the landfill expansion. With respect to Dr. Coghlan's concerns regarding potential impacts to Atlantic sturgeon and shortnose sturgeon in the Penobscot River, Mr. Emerson testified that Judkins Brook is located approximately 6.5 river miles upstream from the Stillwater River, and Pushaw Steam, more than 8.4 river miles. The Stillwater River then flows approximately 6 to 8 river miles before it reaches the mainstream of the Penobsot River, making it "highly unlikely" that there would be any adverse impacts to Atlantic sturgeon or shortnose sturgeon as a result of the JRL expansion.

Based on Stantec's evaluation results; the design of the landfill; the distance from the solid waste boundary to the intermittent and perennial streams; the fact that these streams do not contain habitat for Atlantic Salmon, Atlantic sturgeon, or shortnose sturgeon; and that the leachate is collected and treated at an off-site facility that has a waste discharge license from the Department, the Board finds the project will not have an unreasonable impact to Atlantic salmon, Atlantic sturgeon, or shortnose sturgeon.

The expansion will impact approximately 2.04 acres of primarily forested freshwater wetlands through direct filling and 0.1 acres of the critical terrestrial habitat of one significant vernal pool regulated under the Natural Resources Protection Act. The impacts to the significant vernal pool were authorized in a permit-by-rule that was accepted by the Department on July 29, 2015. Finding 38 of this license addresses impacts to freshwater wetlands and compliance with the Natural Resources Protection Act and associated rules.

In addition to the NRPA regulated wetlands, the applicant identified 14 vernal pools within and adjacent to the expansion area, 12 of which are regulated by the U.S. Army Corps of Engineers. Stantec prepared a Wetlands Compensation Plan to meet both NRPA and Corps requirements.

The MDIFW reviewed the proposed project and stated that, with the exception of one Significant Vernal Pool, there are no other essential or significant wildlife habitats at the project site.

The Board finds that the applicant has demonstrated that the facility will have sufficient buffers to adequately protect aquatic life and wildlife habitat and the natural environment; and that there will be no unreasonable adverse effects to protected natural resources and rare, threatened and endangered plant and animal species pursuant to 38 M.R.S. § 1310-N (2-F)(C) and 06-096 C.M.R. ch. 400, § 4(E)(1).

10. NO UNREASONABLE ADVERSE EFFECT ON EXISTING USES AND SCENIC CHARACTER

The solid waste facility may not unreasonably adversely affect exiting uses and scenic character as set forth in the 38 M.R.S. § 1310-N(2-F)(C) siting standards and in 06-096 C.M.R. ch. 400, § 4(F)(1), including consideration of bird hazard to aircraft, historical sites, established public viewing areas, excessive noise at the property boundary or at any protected location, or existing uses of neighboring property.

A. Bird Hazard to Aircraft

The proposed expansion is located over 13,000 feet from Dewitt Field Old Town Municipal Airport, the closest airfield. The Rules require a description of all airport runways within 10,000 feet of the facility.

Based on the distance to the airport, the Board finds that the expansion is not expected to present a bird hazard to aircraft.

B. Historical Site Preservation

In a letter dated January 15, 2015, from the Deputy State Historic Preservation Officer of the Maine Historic Preservation Commission, it was concluded that there would be no historic properties affected by the proposed expansion.

The Board finds that the proposed expansion will not unreasonably adversely affect historic properties.

C. Visual Assessment

A visual assessment dated July 2015 was prepared for the applicant by SMRT Inc. to evaluate whether the proposed expansion will unreasonably interfere with views from established public viewing areas. Public viewing area is defined in 06-096 C.M.R. ch. 400, § 1(Ll) 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." The Rules require descriptions of protected locations and established public viewing areas within 2,000 feet of the proposed expansion.

The visual assessment included defining the existing site characteristics around the facility, quantification of the site viewshed, identification of public viewing areas, development of maps for line of site and viewsheds, and preparation of final landfill topography illustrations. Computer-generated modeling, weather balloons at strategic locations and elevations, field visits, and photography were used. To determine public viewing areas within 2,000 feet of the proposed expansion, stakeholders contacted by correspondence included Maine Bureau of Parks and Lands, MDOT, City of Old Town, the towns of Alton, Glenburn, Greenbush, Hudson, and Milford, and the Penobscot Nation. No public viewing areas were identified within 2,000 feet of the proposed expansion, but the study area was expanded to a 6-mile distance based on a question raised in a pre-submittal meeting regarding possible views from the western shore of Pushaw Lake and vicinity. The stakeholder process identified the following potential scenic resources within 6 miles of the proposed expansion: Pushaw Lake, Pushaw Stream, Penobscot River, Stillwater River, Hirundo Wildlife Refuge, Sunkhaze Meadows National Wildlife Refuge, Mud Pond (also known as Perch Pond) and the Perch Pond Recreational Trail, the Costigan Historical Cemetery, and the Penobscot River corridor at the public boat launch. Views were also considered from the following roadways: Route 16, I-95 Southbound, and Route 43.

The assessment performed using U.S. Forest Service standards and guidelines in 06-096 C.M.R. ch. 315 concluded that Pushaw Lake and the Penobscot and Stillwater Rivers had no significant scenic features reported or identified within the study area. The scenic resources within the study area were determined not to have views to the landfill or are considered background by the U.S. Forest Service as being 4 miles to the horizon. The area roadways were not defined as public viewing areas, scenic resources, or scenic byways. The views from Route 16 were considered intermittent, the distant view from I-95 includes broken line of sight by roadside vegetation, and Route 43 has a screening of plantings.

Views of the landfill will change during construction and operation. The operating landfill will generally be seen as grayish in color with equipment in sight. Prior to final closure, the landfill is proposed to be covered by a temporary black geomembrane, and at closure it will be fully planted with a vegetative layer and will resemble nearby hillsides with similar height, scale, and form.

The Board finds that the design of the proposed expansion takes into account the surroundings and when completed, capped, and vegetated, the expansion will not have an unreasonable adverse effect on the scenic character of the surrounding area as required pursuant to 38 M.R.S. § 1310-N(2-F)(C) siting standards and in 06-096 C.M.R. ch. 400, § 4(F)(1).

D. Noise

A Sound Level Assessment Report, dated July 2015, was prepared for the applicant by Epsilon Associates, Inc. to evaluate sound levels from the proposed expansion. The Rules include noise standards, as noise is considered unwanted sound and sound levels can be measured in decibels (dBA = decibels adjusted to reflect the ear's response to different frequency of sound). Table 3 includes the sound level limit standards of 06-096 C.M.R. ch. 400, § 4(F)(2).

Table 3: Sound Level Limit Standards

Sound Level Limit	**Applicable Hours** Daytime: 7:00 am to 7:00 pm Nighttime: 7:00 pm to 7:00 am	**Location**
75 dBA	Daytime and Nighttime	Facility property boundary
60 dBA	Daytime	Protected location zoned or usage not predominantly commercial or industrial (i.e., residential)
50 dBA	Nighttime	

The assessment included existing sound levels around the operating landfill and measurement of potential noise sources (operations and equipment), computer

modeling to predict future sound levels for various operating scenarios, and comparisons to the sound level limits. Sound levels from mobile equipment (excluding registered and inspected on-road vehicles), the Thiopaq® landfill gas treatment facility, and the anticipated future on site landfill gas-to-energy plant were included in the modeling. Operations for the proposed expansion were considered to be the same as current operations: 6:00 am to 6:00 pm Monday to Friday and 7:30 am to 2:30 pm Saturday and Sunday.

During periods of operations, modeled results were below the 75 dBA sound level limits for daytime and nighttime at the facility property boundary. However, residential areas are considered protected locations in the Rules and the western and northern property lines border residential properties. Additionally, there is a residential parcel to the south beyond the property boundary. These locations were assessed for compliance with the more restrictive sound level limits. The assessment results were below 60 dBA for the daytime operations, but were above 50 dBA for the one operating hour from 6:00 am to 7:00 am considered nighttime. To meet the sound level limit for this one hour of operation, the facility will be restricted to utilizing landfill equipment with a combined sound level of 77 dBA at 50 feet or less during the 6:00 am to 7:00 am hour when within 60 feet from the western solid waste boundary (approximately 480 feet from the western property line). This equates to utilizing a Caterpillar 836 compactor (77 dBA or less at 50 feet) or a Caterpillar 826 compactor (75 dBA or less at 50 feet), but not both compactors simultaneously.

The applicant will continue to maintain buffer vegetation between the proposed expansion and property lines to minimize sound levels from the facility, with the exception of tree clearing to install the relocated electrical line. The proposed pump stations, future gas-to-energy plant, and other mechanical structures will incorporate acoustical enclosures. Construction and maintenance activities will include environmental noise control devices in proper working condition and maintained as originally provided with the equipment by its manufacturer. Although vehicle warning signals and alarms are exempt from the sound limit levels, NEWSME has replaced the original backup alarms on operating equipment at the landfill with broadband backup alarms having less abrupt sounds.

The Board finds that the noise study for the proposed expansion indicates that routine operations will not generate excessive noise at the property boundary or at any protected location as defined by the Rules; provided that during the hour of 6:00 am to 7:00 am, only equipment with a combined sound level of 77 dBA at 50 feet or less are utilized if within 60 feet of the western solid waste boundary (approximately 480 feet from the western property line).

E. Neighboring Property

The portions of the 780-acre parcel to be developed will be a continuation of the existing site use, with buffers as required by 06-096 C.M.R. ch. 401, §§ 1(C)(2) and (3). Existing land in the vicinity of the expansion is locally zoned for landfilling, rural residences, farming, and under resource protection. The setbacks and buffers from the solid waste boundary in comparison to the Rule requirements are listed in Table 4 (modified from Volume I of the application, Table 3-3, page 3-12):

Table 4: Proposed Expansion Setback and Buffers

Setbacks from the Solid Waste Boundary to:	Actual Proposed (feet)	Rules Setback Requirements (feet)
Prohibitive Siting Criteria		
Class AA or Class SA Waters	> 10,560 (> 2 miles)	1,000
Significant sand and gravel aquifer	5,230 (approximately 1 mile)	300
Fault displaced in Holocene time	None identified on 780-acre parcel. Nearest mapped fault approximately 6 miles northeast of site.	200
Restrictive Siting Criteria		
Nearest public road	2,400	300
Property boundary	420	300
Nearest residence	2,100	1,000
Stratified sand and gravel deposit	275	100
Classified surface water	950	100
Water supply spring or water supply well not owned by the applicant	2,100	1,000

The Board finds that the proposed facility will have no unreasonable adverse effect on existing uses of property neighboring the proposed expansion based on the facility's buffers and setbacks as required in State law and the Rules.

11. NO UNREASONABLE ADVERSE EFFECT ON AIR QUALITY

The solid waste facility may not unreasonably adversely affect air quality pursuant to the siting standards of 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(G)(1). The facility must obtain an air emission license, if required; control fugitive dust and

nuisance odor; and prohibit open burning of solid waste other than clean or painted wood waste.

A. Air Emission License

Air emission license renewal #A-921-70-B-R was issued on October 7, 2014 for the existing landfill facility with findings that emissions from the source will receive Best Practical Treatment, will not violate applicable emissions standards, and will not violate applicable ambient air quality standards in conjunction with emissions from other sources. The air emission license renewal includes State and federal emission limits and operational requirements associated with landfill gas collection and control, as well as monitoring and reporting requirements.

The 2014 air emission license renewal addresses control of landfill gas emissions through use of a landfill gas collection and control system, with the extracted and collected landfill gas passing through a Thiopaq® sulfur removal system, then being combusted in either the main flare (Flare #4) or back-up flares prior to release to the atmosphere. In the future, a landfill gas-to-energy facility may be located at the site, at which time the extracted Thiopaq® treated gas may be combusted in engines to produce power as an alternative to flaring. The Thiopaq® system was required to be installed to decrease total reduced sulfur (mainly H_2S) prior to combustion to reduce sulfur dioxide air emissions. Thiopaq® operations began in early 2015, with a sulfur removal Sulfatreat® system installed as backup. In addition to monitoring air emissions from the control equipment, as well as control equipment parameters, the facility is also required by the Federal New Source Performance Standards (NSPS) to perform periodic gas surface scans on the landfill.

An LFG System Expansion Design Report, dated June 2015, was prepared by Sanborn, Head & Associates, Inc. for the proposed expansion consisting of estimates of future landfill gas generation, descriptions of the proposed gas collection and control system, and how the proposed system would connect to the existing gas collection system infrastructure. The report stated that Flare #4 is adequate for the proposed expansion. Flare #4 capacity and operations are addressed in the air emission license renewal.

The Board finds that the applicant has an air emission license, as required by State law and the Rules.

B. Fugitive Dust

The measures to control dust at the proposed expansion will include utilizing water spray trucks to wet secondary roads during dry weather, paving the primary access road to the proposed expansion, and making use of a road sweeper to remove dirt buildup on paved roadways. Calcium chloride may be utilized on an as-needed basis, primarily on internal cell access roads.

On the landfill's active working area, ash will be off-loaded and primarily utilized as a mix within daily cover or as a bulking agent for sludge. The ash will not be prone to being windblown due to quenching, which is to occur at the point of generation, and the placement of ash and ash mixtures on the active landfill area.

The Board finds that the dust control measures proposed by the applicant are sufficient to control fugitive dust as required by State law and the Rules.

C. Nuisance Odors and H_2S

Three potential primary sources of odor identified by the applicant were odors associated with incoming wastes, leachate storage and transport, and landfill related gases. The facility's Odor Complaint Management and Response Plan to manage landfill-related odors and limit off-site odor migration is part of the facility's current Operations Manual. Incoming waste types with the highest potential for odor generation are FEPR, MSW bypass, and wastewater treatment plant sludge. The leachate has potential for odor during storage at the facility and transport to the wastewater treatment facility. Landfill gases, including odorous H_2S, are produced as the waste in the landfill decomposes.

Measures for minimization of odor associated with incoming odorous waste streams will include placement within a small area in the cell, waste compaction, and placement of another lift (or layer) of non-odorous waste such as ash or CDD waste above it. Daily cover will be applied over the active portion of the landfill at the end of each day of waste placement. The facility will also utilize odor neutralizing spray systems, as needed, such as a bulldozer mounted system within the active cell, a trailer spray system for incoming and outgoing trailer loads, and a perimeter misting system.

To minimize leachate odors, the leachate will be collected and transported by piping systems and stored in an enclosed tank sized to hold all of the leachate generated at the landfill prior to being transported for treatment and disposal. Tanker trucks used to haul the leachate to the wastewater treatment facility will be

required to have their tanker filling points tightly sealed during transportation and have the ability to add chemicals for odor reduction.

Odor from LFG produced as waste degradation occurs will be minimized by the installation of intermediate or final cover over non-active portions of the landfill and the operation of the facility's LFG collection and control system, which will be expanded to accommodate the proposed expansion.

The facility monitors H_2S concentrations through real-time data collected using six Honeywell Analytics Single Point Monitors, four located off-site (on the access road, West Coiley Road, Route 43, and Old Stagecoach Road), and two located on-site, one adjacent to the perimeter fence and one on NEWSME owned land on Route 16. The location and operation of the four off-site monitors have been pre-determined with the Department's approval. The two on-site monitors are solely utilized to assist in operations, and the location and operation of these monitors may change or cease based on ongoing operations. If the monitors detect concentrations of 15 parts per billion (ppb) or above at any of the off-site monitors, the scale house is alerted by automated telephone message. Personnel then report any alert to supervisory staff for follow-up. In addition to monitoring for compliance with the action level of 15 ppb, the monitor data can be utilized in assisting with odor complaints.

Odor complaints received by the facility will follow a specific procedure. Information will be obtained from the complainant and then given to the appropriate complaint response personnel. Follow-up steps will be taken during the complaint investigation including filling out a Complaint Record Form with data about the day, time, wind direction and speed, H_2S levels, unusual conditions at the landfill, and observed waste materials accepted at the time of complaint. Landfill personnel will communicate directly with the complainant, either in person or by phone. For all complaints, the following will also be documented: remedial actions taken, resolution of the complaint, comments made during the investigation, and any other recommendations.

During the licensing proceedings, the City of Old Town raised the issue of H_2S as it relates to odor and exposure. The City's consultant and expert witness, Denis St. Peter, P.E. of CES, Inc., recommended that the facility use acute action levels for concentrations of H_2S exceeding 15 ppb (for reporting of events in the facility's Monthly Status Report) and 30 ppb, with the Old Town Code Enforcement Officer to be contacted if H_2S levels exceed 30 ppb. The applicant agreed and has incorporated the action levels into the facility's Operations Manual. Mr. St. Peter also recommended that the City set forth its own evaluation protocol to review the effect of possible chronic (long-term) exposure

to H_2S on members of the public since JRL does not currently use a chronic exposure standard. A portion of the Host Community funding will be used to hire a consultant to annually review the facility's H_2S data, with the City reporting the findings to the applicant and the Department.

Intervenor Edward Spencer testified on the odor complaint procedure and suggested consideration be made to include law enforcement officials in the process to verify nuisance odors. In response to this concern, Jeremy Labbe, P.E., Environmental Manager at JRL, testified that the City of Old Town receives a summary of every odor complaint at JRL and that JRL can provide copies of individual completed complaint forms to the City if requested. Mr. Labbe further testified that any City employee or citizen may call in an odor complaint.

The Board finds that the applicant has proposed odor control mechanisms sufficient to control nuisance odors from the proposed expansion as required by State law and the Rules. The Board further finds that the facility's current odor complaint procedure includes appropriate documentation and follow-up to odor complaints at this time.

12. NO UNREASONABLE ADVERSE EFFECT ON SURFACE WATER QUALITY

In accordance with the 38 M.R.S. § 1310-N(2-F)(C) siting standards of no unreasonable adverse effect on water quality and the requirements of 06-096 C.M.R. ch. 400, § 4(H)(1), the solid waste facility: may not 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; may not discharge any pollutant without first obtaining a license pursuant to 38 M.R.S. § 413 (waste discharge licenses); may not degrade water quality by contributing to the phosphorous concentrations in "waterbodies most at risk from new development" as defined in *Direct Watersheds of Lakes Most at Risk from New Development, and Urban Impaired Streams,* 06-096 C.M.R. ch. 502 (last amended December 27, 2006); and may not cause the discharge of a nonpoint source of pollution to waters of the United States that violates any requirement of an area-wide or State-wide water quality management plan that has been approved in compliance with Section 319 of the *Federal Water Pollution Control Act*, as amended.

The proposed expansion includes a leachate collection and off-site treatment system for precipitation that comes into contact with waste and stormwater management and erosion sedimentation control plans to control surface water runoff from covered portions of the facility, construction activities, and non-operational areas. The proposed expansion is not located within the watershed of a "lake at most risk from new development" or an "urban impaired stream." The applicant submitted a Stormwater Management Plan and an Erosion Sedimentation Control Plan, both dated July 2015 and prepared by SME. The

plans address effective drainage, flood prevention, and erosion control. The applicant's best management practices include stormwater detention basins, low velocity (lined) ditches, and stone check dams within on-site ditches. The plans are described in more detail in Findings 14 and 17 of this license.

The facility holds a Multi-Sector General Stormwater Permit (#MER05B477) for the discharge of stormwater associated with industrial activity for Sector L: landfills. The facility also submitted the existing Stormwater Pollution Prevention Plan, originally prepared in April 2006 and most recently revised in June 2013. The Stormwater Pollution Prevention Plan will be updated as necessary to address construction as the proposed expansion is developed.

Leachate generated by the proposed expansion will be collected, stored onsite, and trucked off-site to the MFGR, LLC wastewater treatment plant in Old Town. The project was reviewed by the Department's Bureau of Water Quality, which stated that the treatment plant is licensed to accept the leachate and is currently operating in compliance with that license (Department Order #W-002226-5O-O-R, entered into the evidentiary record). Leachate management is described in more detail in Findings 26(D) and 28(E) of this license.

The Board finds that the stormwater and leachate management systems for the proposed expansion meet the applicable State laws and Rules and are designed to prevent the discharge of sediment and other contaminants conveyed by stormwater from polluting the waters of the State and otherwise unreasonably affecting surface water quality.

13. NO UNREASONABLE ADVERSE EFFECT ON OTHER NATURAL RESOURCES

The solid waste facility may not unreasonably adversely affect other natural resources in the municipality or in neighboring municipalities pursuant to the 38 M.R.S. § 1310-N(2-F)(C) siting standards and 06-096 C.M.R. ch. 400, § 4(I)(1). The facility must conform to the standards of NRPA, 38 M.R.S. §§ 480-A to 480-Z, if proposed to be located in, on, over, or adjacent to a protected natural resource; and must be permitted by the federal government for any activities that require a Federal Wetlands permit.

Finding 38 of this license addresses impacts to protected natural resources under the NRPA and includes the Board's findings regarding compliance with NRPA requirements. The applicant has applied to the U.S. Army Corps of Engineers for a permit for impacts to federally regulated wetlands located in and adjacent to the expansion area.

14. SOIL TYPES THAT ARE SUITABLE AND WILL NOT CAUSE UNREASONABLE EROSION

In accordance with 38 M.R.S. § 1310-N(2-F)(D) siting standards and 06-096 C.M.R. ch. 400, § 4(J)(1), the solid waste facility must be located on soil types suitable to the nature of the undertaking and the facility must not cause unreasonable erosion of soil or sediment.

An Erosion and Sediment Control Plan, dated July 2015 and prepared by SME, was submitted with the application to address the site setting including watersheds, wooded areas, and surficial soils; existing and proposed drainage structures, timing and sequence of land disturbance activities during cell construction, landfill operations, and cover placement; temporary, permanent, and standard erosion control measures; and maintenance and inspection of erosion control features to ensure proper function. In addition, a site assessment report was submitted with the application consisting of site investigation findings and site characteristics, along with other analyses.

The surficial soils were investigated with the use of site test pits and soil borings and through the use of the Natural Resources Conservation Service Web Soil Survey of Penobscot County, Maine 2014. The surficial soils under and around the proposed expansion footprint are primarily Plaisted very stony loam and Howland very stony loam. On-site observations and a review of soils mapping did not identify areas near the proposed expansion that would be prone to or highly susceptible to erosion, such as exposed sideslopes.

The design and implementation of all erosion control measures will follow the requirements of the Rules and will be in accordance with the appropriate version of Maine's Erosion and Sediment Control Best Management Practices (BMP) Manual, most recently updated in March 2015 for Contractors and in October 2016 for Designers and Engineers (the previous version was dated 2003). BMP's to minimize erosion from the proposed expansion will include utilizing grass lined and riprap lined channels, catch basins, sediment detention ponds, culverts, ditches, storm drains, riprap aprons, riprap plunge pools, and level spreaders. Analyses were performed to appropriately size and locate these structures. Some existing structures will be utilized as they exist without modifications and others will be modified or removed. For example, Detention Ponds 1 and 9 will be modified, Detention Pond 5 will be removed, Detention Ponds 2 and 6 will remain unmodified, and Detention Ponds 10, 11, and 12 will be added.

Prior to disturbance of soil during development, appropriate erosion and sedimentation control measures will be put in place. Temporary measures will include silt fences, temporary seeding, mulching, and stone check dams. Permanent measures will include downspouts, sedimentation ponds, permanent seeding, mulching, and culvert inlet and

outlet protection. The amount of area disturbed at any one time will be minimized by the phased development of the landfill over time.

The Board finds that the construction and operation of the proposed expansion will not cause unreasonable sedimentation or erosion of soil and that suitable soil types underlie the landfill, meeting the applicable State laws and Rules; provided that the erosion and sedimentation control plan is implemented as proposed, incorporating any future revisions as a result of the Department's review and approval of each new cell construction as detailed in a specific design package as phased landfill development occurs.

15. NO UNREASONABLE RISK THAT A DISCHARGE TO A SIGNIFICANT GROUND WATER AQUIFER WILL OCCUR

Pursuant to 38 M.R.S. § 1310-N(2-A), the 38 M.R.S. § 1310-N(2-F)(E) siting standards, and 06-096 C.M.R. ch. 400, § 4(K)(1), the proposed solid waste facility may not: overlie any significant sand and gravel aquifers; pose an unreasonable threat to the quality of a significant sand and gravel aquifer; pose an unreasonable threat to the quality of an underlying fractured bedrock aquifer; or pose an unreasonable risk that a discharge to a significant ground water aquifer will occur. Significant ground water aquifer is defined in 06-096 C.M.R. ch. 400, §§ 1(Ccc) as "a porous formation of ice contact and glacial outwash sand and gravel supplies or fractured bedrock that contains significant recoverable quantities of water likely to provide drinking water supplies", with a similar definition found in 38 M.R.S. § 1310-N(2-A).

The application included a comprehensive Site Assessment Report dated July 2015, prepared by SME, of the geologic and hydrogeologic characteristics of the site, in addition to the water quality of the site, future water quality monitoring, and travel time analyses.

The Maine Geological Survey maps (Open File 08-87, Tolman and Lanctot, 2008) show the nearest mapped sand and gravel aquifer in the vicinity of the proposed expansion is approximately one mile east of the landfill. There are no stratified sand and gravel deposits mapped by the Maine Geological Survey within the facility site (Borns and Thomspson, 1981; Foster and Smith, 2001). Therefore, the proposed expansion does not overlie any significant sand and gravel aquifers.

An investigation was performed to determine whether the proposed expansion would pose a risk or affect the quality of a significant sand and gravel aquifer or a bedrock aquifer. Although no mapped stratified sand and gravel deposits are located near the proposed expansion and ground water from bedrock beneath, directly adjacent to, and immediately downgradient of the proposed site is not likely to be used for domestic

consumption due to the State's ownership of land 400 feet downgradient of the proposed solid waste boundary, two formations were evaluated further. These formations consist of the isolated stratified sand zones contained within the basal till greater than 100 feet beyond the southeast side of the proposed expansion boundary and the off-site bedrock immediately adjacent to the site property boundary.

The on-site stratified sand and off-site bedrock formations were evaluated utilizing the time of travel analysis and the contaminant transport analysis included in the application. These analyses are described in more detail in Findings 25 and 29 of this license, respectively.

The Board finds that the proposed expansion will not be located over a significant sand and gravel aquifer and that the facility poses no unreasonable risk to a significant sand and gravel aquifer or underlying fractured bedrock aquifer, as required by State law and the Rules. Adequate protection of water quality will be provided by the soils under the proposed expansion, the design of the proposed expansion, the ground water flow conditions, and implementation of the Water Quality Monitoring Program discussed further in Finding 33 of this license.

16. ADEQUATE PROVISION FOR UTILITIES AND NO UNREASONABLE ADVERSE EFFECT ON EXISTING OR PROPOSED UTILITIES

The applicant shall provide for adequate utilities, including adequate water supplies and appropriate sanitary wastewater disposal, and the facility may not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by those utilities, in accordance with the 38 M.R.S. § 1310-N(2-F)(F) siting standards and in 06-096 C.M.R. ch. 400, § 4(L)(1).

Existing sanitary wastewater disposal systems located at the maintenance buildings (on the southeast side of the facility) and the office building and scale house (currently located on the north side of the facility) will continue to be utilized by personnel. However, with the development of Cell 12, the office building and scale house will be relocated northeast from its current position and a well and new on-site sanitary wastewater disposal system will be installed.

Water for dust control, leachate pipe cleaning, and other needs of the facility will continue to be met by the existing on-site water supply sources. The leachate generated by the landfill will continue to be collected and stored on-site and treated off-site.

As part of the proposed expansion, an approximate 3,700-foot portion of the facility's three-phase, 480-volt power electrical service will be relocated. This electrical service enters the site along the existing access roadway which will be modified to accommodate

the development of the proposed expansion. The new leachate pump stations associated with the proposed expansion will require three-phase, 480-volt power, which will be supplied to each pump station through additional on-site electrical cables to be installed along the site access roads.

The Board finds that the applicant has provided for adequate utilities and the proposed facility will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by the utilities, pursuant to the applicable State law and Rules.

17. NOT UNREASONABLY CAUSE OR INCREASE FLOODING

The solid waste facility may not unreasonably cause or increase flooding on-site or on adjacent properties nor create an unreasonable flood hazard to a structure pursuant to the 38 M.R.S. § 1310-N(2-F)(G) siting standards. As set forth in 06-096 C.M.R. ch. 400, § 4(M)(1), the facility may not be located in a 100-year flood plain or restrict the flow of a 100-year flood. In addition, the facility must include a stormwater management system that controls run-on and run-off; and infiltrates, detains, or retains precipitation falling on the facility site during a storm of an intensity up to and including a 25-year, 24-hour storm, such that the rate of flow of stormwater from the facility after construction does not exceed the rate of outflow of stormwater from the facility site prior to the construction of the facility.

The most recent Federal Emergency Management Agency (FEMA) flood plain map of the proposed expansion's location shows that the proposed expansion is not located on a 100-year flood plain (Quad panel number 2301120002A, dated April 1978).

The Stormwater Management Plan prepared by SME and dated July 2015 for the proposed expansion application included pre-and post- development stormwater analyses, for storm events up to and including a 25-year, 24-hour storm event. The post-development design includes modifications to some of the existing stormwater structures, along with the addition of three detention ponds and various drainage ditches, catch basin, storm drains, and culverts. The stormwater analyses showed that post-development peak flows did not exceed pre-development peak flows. The results of the submitted analyses are shown in Table 5 (Volume I of the application, Appendix J, Table 4-1, page 9). Changes in precipitation data, requirements, or cell development plans may result in revisions to the analyses as the proposed expansion is developed.

Table 5: Summary of Peak Flows

Analysis Point	Peak Flow (cubic feet per second, cfs)					
	Pre-Development			Post-Development		
	2-Year	10-Year	25-Year	2-Year	10-Year	25-Year
1	29.5	92.6	130.9	16.2	50.4	68.3
2	10.2	26.6	36.0	9.8	24.6	33.2
3	29.1	74.1	100.3	29.1	74.1	100.3
4	36.1	92.1	124.5	33.4	84.7	112.5
5	6.2	14.6	19.3	5.7	13.4	17.7

Note: Peak flow of analysis point after routing through the detention pond and/or reaches.

Dr. Stephen Coghlan, Intervenor Spencer's expert witness, raised concerns in pre-filed direct testimony on the date of the 1978 flood plain map used by the applicant. Department staff verified through a website search of FEMA's floodplain maps that the most recent map for the proposed expansion area was utilized, as required. Dr. Coghlan also testified on the potential for extreme rainfall events and flooding due to climatic changes and questioned the adequacy of an analysis based upon a 25-year, 24-hour storm event. Michael Booth, P.E. of SME, one of the applicant's expert witnesses, testified that the rules require that an event of intensity up to and including a 25-year, 24-hour storm be utilized in the analysis. In addition, Mr. Booth testified that the stormwater ponds include structures that also allow stormwater flow from a 100-year storm to be managed without impacting the integrity of the structures and that with respect to the age of the flood plain maps, the expansion is located on a high point and not susceptible to flooding.

The Board finds that the facility will not be located in a 100-year flood plain and that adherence to the facility's stormwater management plan will control run-on and run-off; and will infiltrate, detain, or retain water falling on the facility site during a storm of an intensity up to and including a 25-year, 24-hour storm, such that post-development stormwater flows from the facility are below pre-development stormwater flows from the facility site. These findings meet the applicable requirements of State law and the Rules.

18. SOLID WASTE MANAGEMENT HIERARCHY

A. Applicable Law

As stated in 38 M.R.S. § 1310-N(1)(D) and 06-096 C.M.R. ch. 400, § 4(N)(1), the purpose and practices of the solid waste facility must be consistent with the State's solid waste management hierarchy (hierarchy) set forth in 38 M.R.S. § 2101(1), which reads as follows:

> Priorities. It is the policy of the State to plan for and implement an integrated approach to solid waste management for solid waste generated in the State and solid waste imported into this State, which must be based on the following order of priority:
>
> A. Reduction of waste generated at the source, including both amount and toxicity of the waste;
> B. Reuse of waste;
> C. Recycling of waste;
> D. Composting of biodegradable waste;
> E. Waste processing that reduces the volume of waste needing land disposal; including incineration; and
> F. Land disposal of waste.

For the purpose of 06-096 C.M.R. ch. 400, § 4(N):

> reducing, reusing, recycling, composting and/or processing waste to the "maximum extent practicable" prior to disposal means handling the greatest amount of waste possible through means as high on the solid waste management hierarchy as possible, resulting in maximizing waste diversion and minimizing the amount of waste disposed, without causing unreasonable increases in facility operating costs or unreasonable impacts on other aspects of the facility's operation. Determination of the "maximum extent practicable" includes consideration of the availability and cost of technologies and services, transportation and handling logistics, and overall costs that may be associated with various waste handling methods.

In addition, 38 M.R.S. § 2101(2) establishes that "it is the policy of the State to actively promote and encourage waste reduction measures from all sources and maximize waste diversion efforts by encouraging new and expanded uses of solid waste generated in the State as a resource."

The Department's rule at 06-096 C.M.R. ch. 400, § 4(N)(2)(a) states that for a solid waste disposal facility, the applicant must affirmatively demonstrate consistency with the hierarchy, including the following:

> that the waste has been reduced, reused, recycled, composted, and/or processed to the maximum extent practicable prior to incineration or landfilling, in order to maximize the amount of material recycled and reused, and to minimize the amount of waste

> being disposed. Such evidence shall include, but is not limited to, a description of the reduction, reuse, recycling, composting and/or processing programs/efforts that the waste is or will be subject to, and that are sufficiently within the control of the applicant to manage or facilitate, including relevant metrics to evaluate effectiveness; and a description of ongoing efforts to increase the effectiveness of these programs/efforts.

State law also imposes limits on the origin of wastes accepted at a State-owned solid waste facility. In accordance with 38 M.R.S. § 1310-N(11),

> a solid waste facility owned by the State may not be licensed to accept waste that is not waste generated within the State. For the purposes of this subsection, "waste generated within the State" includes residue and bypass generated by incineration, processing and recycling facilities within the State or waste, whether generated within the State or outside of the State, if it is used for daily cover, frost protection or stability or is generated within 30 miles of the solid waste disposal facility.

B. Applicant's Summary of Proposed Waste Streams Relative to the Hierarchy

In its application (Volume I) and the testimony of Toni King, P.E., Regional Engineer for Casella Waste Systems, Inc.'s Eastern Region, the applicant provided information, summarized below, on the wastes proposed to be disposed in the expansion and the viable waste management options for these wastes as related to the hierarchy that are sufficiently within the control of the applicant to manage or facilitate:

(1) *CDD* – JRL has received, and is expected to continue to receive in the expansion, CDD from Casella-owned companies and others. Typically, about 30% of the material disposed of at JRL is CDD. In 2014, Casella-owned companies delivered approximately 87,324 tons of CDD material to JRL. Approximately 3,335 tons of clean wood and metals had been removed from this material and JRL has a wood waste handing area which received 46 tons of clean wood and stumps in 2014. These materials were ground and recycled as alternative daily landfill cover. Additionally, Casella controlled/operated transfer stations divert tonnage from JRL, including clean and processed wood and metal, which is removed from the CDD before the CDD is sent to JRL. These Casella facilities also direct or supply CDD to processing facilities such as ReEnergy in Lewiston for beneficial use or recycling.

(2) *FEPR* – FEPR currently comes to JRL from the PERC incinerator in Orrington. PERC's FEPR is approximately 20% by weight of the non-combustible portion of the facility's MSW that cannot be incinerated and is removed mechanically prior to combustion of the refuse-derived fuel. FEPR is currently utilized at JRL as part of the 5-foot layer, referred to as the "soft layer", which is placed above the landfill liner and leachate collection systems as a protective layer. This usage is also proposed for the expansion. At this time, there is no other disposal option allowed in Maine other than secure landfill disposal for FEPR. The applicant states that if FEPR were not available, the facility would need to purchase other materials such as tire chips and sand to provide a soft layer.

(3) *MSW Incinerator Ash and Multi-Fuel Boiler Ash* – The use or reuse of MSW incinerator ash is currently not allowed by regulatory beneficial use standards in Maine due to its chemical characteristics; therefore, the current disposal method is landfilling. Multi-fuel boiler ash is similar to MSW incinerator ash regarding the allowable disposal method, with the exception of a few ashes, such as clean wood ash. Clean wood ash may be land spread or used in the production of flowable fill for certain construction needs. Casella Organics, NEWSME's sister company, has developed, and continues to develop, programs to reuse and recycle suitable clean wood ash, diverting various amounts from the landfill. JRL will utilize ash in its operations as daily cover at the proposed expansion, eliminating the need to use virgin soil (non-waste material) to serve that purpose.

(4) *CDD Processing Fines* – The residue from the processing of CDD is currently utilized as landfill grading, shaping, and alternative daily cover material and is expected to be used in the same manner for the proposed expansion. The current allowable disposal methods for CDD processing fines are either reuse as daily cover or disposal in secure landfills. Use of CDD fines as alternative daily cover materials at landfills is a beneficial use/recycling activity. Approximately 126,000 tons of CDD fines were received at JRL in 2014 and used as alternative daily cover.

(5) *OBW* – OBW is not currently generated by entities within the control of BGS and NEWSME, and there are no prevalent, viable mechanisms for reuse, reduction, or recycling of OBW that are within the control of BGS and NEWSME. The primary management option is landfill disposal for OBW.

(6) *Municipal Wastewater Treatment Plant Sludge* – Municipal wastewater treatment plant sludge not land applied, composted, or alternatively managed is proposed as acceptable waste at the expansion. Casella Organics has developed, and continues to develop, alternative sludge usage programs; however, the usage options for municipal wastewater treatment plant sludge from Maine communities is limited due to factors such as the quality of sludge, available acres for land application, facility capacity restrictions and cost considerations. Landfilling is the disposal option for municipal wastewater treatment plant sludge not otherwise land applied, composted or alternatively managed.

(7) *Industrial Wastewater Treatment Plant Sludge and Residuals* – As with municipal wastewater treatment plant sludge, industrial wastewater treatment plant sludge and residuals are expected to be disposed of in the proposed expansion. Maine industries with wastewater or process treatment plants (the generator of this type of sludge) are responsible for reducing and recycling this waste material to the maximum extent practicable. As stated above, Casella Organics has an active alternative sludge usage program to divert some of this waste material from the landfill; however, the sludge not otherwise processed is landfilled. For example, in 2014 Casella Organics handled approximately 42,000 tons of short paper fiber from the Cascades Auburn Fiber pulp mill in Auburn, Maine, all but 8000 tons of which was diverted from disposal to beneficial uses.

(8) *Contaminated Soils and Oil Spill Debris* – Contaminated soils and oil spill debris are currently accepted at JRL at an estimated amount of about 1% of the total tonnage (approximately 6,500 tons in 2014) and are expected to be accepted in the proposed expansion. This waste type often is the result of accidental spills and releases and is managed in accordance with regulated practices (such as facility spill prevention, control, and countermeasure plans). While some of these wastes can be used in construction projects or in secure settings, reuse is typically limited due to physical and/or chemical characteristics or practical limitations such as transportation costs. Alternate use decisions are within the control of the generator, not BGS or NEWSME.

(9) *Miscellaneous Special Wastes* – Generators of miscellaneous special wastes are responsible for reducing to the maximum practicable extent the amount of these wastes that are landfilled. These special waste streams are handled either through individual one-time or ongoing special waste permits when there is not an alternative to landfilling based on regulatory

standards and practical cost and transportation considerations. Alternative use decisions are within the control of the generator, not BGS or NEWSME.

(10) *MSW Bypass from Maine MSW Incinerators* – The only MSW that will be disposed of in the JRL expansion is bypass from Maine MSW incinerators (pre-filed testimony by Ms. King page 10; pre-filed testimony by Jeremy Labbe, Environmental Manager at JRL, page 13; hearing testimony by Michael Barden, the State's Manager for State-owned landfills, pages 15 and 147 of the hearing transcript; and during questioning of Intervenor Edward Spencer page 419 of the hearing transcript). These incinerators are required by their licenses to provide an alternative management method (bypass) if the facility receives MSW that is in excess of its ability to accept, process, and/or combust that waste (i.e., during planned shutdowns or unplanned production problems). The decision to bypass and where to dispose of the bypass is made by the incinerator facility and is not within the control of BGS or NEWSME.

C. Testimony Regarding the Hierarchy

Compliance with the State's solid waste management hierarchy was a major issue at the hearing.

The applicant testified that the proposed expansion will be developed and operated consistent with the hierarchy and that JRL will promote and encourage waste reduction measures and maximize the waste diversion efforts of JRL users to the maximum extent practicable. Toni King, Regional Engineer for Casella Waste Systems, Inc.'s Eastern Region, testified that a high percentage of material to be disposed of in the proposed expansion is ranked in the State Plan (Maine Materials Management Plan: 2014 State Waste Management and Recycling Plan Update & 2012 Waste Generation and Disposal Capacity Report, January 2014, prepared by the Maine Department of Environmental Protection) as either a high or medium option for landfill disposal; i.e., landfill disposal is the primary management technique available (high) or a middle option (medium). Ms. King testified that approximately 30% of the waste material accepted at JRL is utilized in landfill operations and is considered recycling in accordance with the applicable State laws and Rules. This includes residuals from waste processing facilities used as alternative daily cover, thereby offsetting the amount of landfill capacity used by non-waste materials. Ms. King noted in her testimony that the Department evaluated JRL's use of alternative daily cover as part of the Public Benefit Determination for the proposed expansion and concluded that the amount

used at JRL is comparable to the amount used at the Crossroads landfill in Norridgewock, Maine.

Ms. King also testified that NEWSME's parent company operates Casella Recycling, LLC and Casella Organics, both of which contribute to the reduction of waste landfilled. Casella Recycling, LLC, a Zero-Sort facility in Lewiston, recycled approximately 87,700 tons of material in 2014 and the non-recyclable residuals (9% of the waste stream) were sent to the Mid Maine Waste Action Committee (MMWAC) incinerator in Auburn, with ecomaine in Portland available as backup. Casella Organics composts and land applies organic wastes, landfilling their customers' waste only when the physical or chemical properties of the material do not allow for beneficial reuse, if there is a lack of site access for land application, or when reuse/recycling outlets are not available.

Intervenor Edward Spencer addressed the following issues in his testimony and post-hearing brief: a concern that wastes have been coming into JRL without adequate assurance of source reduction; wastes sent to JRL should have been handled according to the State's hierarchy at their source, their point of discard, including wastes discarded outside of Maine and subsequently sent to Maine processing facilities; the definition of "waste generated within the State" is concerning since CDD processing facilities can accept out-of-state wastes but once processed, those wastes (fines, OBW, etc.) are considered in-state waste; and as a state-owned landfill, the focus should be on preserving capacity by exerting more control over the waste accepted for disposal.

With respect to CDD and associated residuals, Mr. Spencer testified that for the last five years (2011 through 2015) wastes categorized as CDD, OBW, and CDD process fines when combined accounted for over 57% of inputs to JRL. Mr. Spencer expressed concern over the origin of CDD ultimately disposed of at JRL, and testified that the majority of wastes entering the Lewiston processing facility (ReEnergy) and "continuing to JRL" were not discarded in Maine. Mr. Spencer expressed concern about the amount of OBW in the CDD, and questioned the amount of effort that goes into recycling various components of OBW such as mattresses, appliances, and furniture. Mr. Spencer argued in support of an annual limit on the amount of OBW disposed of at JRL and for waste audits of processing facilities as set forth in the Public Benefit Determination for the proposed expansion.

Intervenor Dana Snowman raised similar concerns regarding the amount and origin of wastes coming to JRL and the statutory definition of "waste generated within the State" in his questioning of the applicant's witnesses.

In response to these concerns, Michael Barden, the State's Manager for State-owned landfills, testified that out-of-state wastes are "excluded wastes" and disposal at JRL is prohibited, and he affirmed that JRL accepts only waste which meets the definition of "waste generated within the State."

Ms. King further testified that discussion of the "point of discard" is irrelevant; the State's solid waste rules do not require evidence of the point of origin. With respect to CDD and associated residuals, Ms. King testified that CDD processing facilities in Maine must demonstrate that they are complying with Maine State law "by recycling or processing into fuel for combustion all wastes accepted at the facility to the maximum extent practicable, but in no case at a rate of less than 50%." Ms. King testified that two processing facilities cited by Mr. Spencer, ReEnergy in Lewiston and ARC in Eliot, reported recycling rates in 2015 of 78.7% and 84%, respectively, (BGS/NEWSME Exhibits #49 and #50), and have met their statutory recycling and source reduction requirements. Therefore, residuals, including CDD fines and OBW, from these facilities are legally "waste generated within the State" and may be accepted at JRL.

Ms. King testified that the question for the applicant is whether the applicant could further reduce, reuse, compost, or incinerate the post-processing CDD material that JRL receives from these processing facilities. Her response was that it could not; she testified that the fines are used as alternative daily cover (a use which is defined as recycling), the primary option for handling of OBW is landfilling, and that these materials cannot be further reduced, incinerated or composted.

With respect to mattresses, a component of OBW, Ms. King testified that Casella has had limited experience with mattress recycling at other facilities in New England, but that by the time mattresses arrive at JRL, they are in poor condition (fabric contaminated, wood broken) and are not easily recycled.

Ms. King testified that waste streams entering JRL are, and will continue to be, managed consistent with the hierarchy to the extent within the applicant's control and to the maximum extent practicable, and that the hierarchy does not require a solid waste facility to control those who generate waste.

D. Board Finding

The Board finds that Casella-owned facilities have active recycling and reuse programs that divert waste from JRL. In addition, the waste management options available for most of the materials proposed to be disposed of in the landfill expansion, as set forth in the State Plan, are at or near the bottom of the hierarchy.

The concern that OBW from CDD processing facilities are landfilled without limitation is addressed by the establishment of an OBW limit for the proposed expansion in Finding 37 of this license. Compliance with the recycling and source reduction provisions of State law is further addressed in Finding 19 of this license.

With respect to intervenors Edward Spencer and Dana Snowman's argument that generators located outside Maine should be subject to Maine's laws governing recycling and source reduction, the Board finds that under current law, provided the Maine solid waste processing facilities which accept waste from outside Maine are in compliance with the terms of their licenses and State law regarding recycling, residue and bypass generated by these Maine facilities' operations sent to JRL is "waste generated within the State" and may be disposed of in the proposed JRL expansion.

The Board further finds that the applicant's purpose and practices of the proposed expansion are consistent with the applicable State laws and Rules relating to the hierarchy; provided that evolving waste management techniques and practices sufficiently within the control of the applicant continue to be explored and implemented as appropriate to reduce, reuse, recycle, compost, and/or process to the maximum extent practicable prior to landfilling. In each Annual Report, the applicant must summarize the steps taken by the facility in the respective reporting year to meet the hierarchy, submitting relevant metrics to evaluate effectiveness (i.e., tons of material diverted from landfill disposal by Casella companies; tons of materials reused, reduced, recycled at the landfill), a description of ongoing efforts to increase the effectiveness of these programs/efforts, and any additional pertinent hierarchy-related information.

19. RECYCLING

In addition to demonstrating compliance with the State's solid waste management hierarchy as described in Finding 18 of this license, State law at 38 M.R.S. § 1310-N(5-A) requires the applicant to demonstrate that the proposed solid waste disposal facility will accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those in the statute and other provisions of State law; and the applicant has shown consistency with the recycling provisions of the State Plan. Similarly, 06-096 C.M.R. ch. 400, § 6(B) requires a determination by the Department that the volume of the waste and the risks related to its handling and disposal have been reduced to the maximum practical extent by recycling and source reduction prior to being landfilled or incinerated, consistent with state recycling programs and the State Plan.

The applicant submitted the information presented in Table 6 below (Volume I of the application, Table 5-1, page 5-2 and BGS/NEWSME Pre-filed Direct Testimony Exhibit #4 appended to the testimony of Toni King) to address opportunities for recycling of the waste streams proposed to be accepted for disposal in the proposed expansion. The applicant testified that the tonnages of the various waste types in the table were estimated for design purposes and were not intended to be limits on the amounts received.

Table 6: Waste Management Techniques for Proposed Expansion Materials

Material Category	Proposed Waste Types to be Accepted in Expansion		Is Material a Residual from a Processing Facility that reduced the amount of material landfilled?	Is Material subject to recycling efforts by generator or otherwise prior to landfilling or is its use in the landfill considered recycling?	State Plan[1] Ranking of Landfill Disposal as Current Management Method	State Plan[1] Ranking for Source Reduction, Recycle, Compost, Beneficial Reuse Processing As Current Management Method
	Tons	Percentage of Total Tonnage				
Waste Treatment Plant Sludges and Biosolids	70,000	10	No	Yes	L	H,L,N,N/A
Contaminated Soils	30,000	4.3	No	Yes	H	N/A,N
Municipal Solid Waste Incinerator Ash	58,000	8.3	Yes	No	H	N/A
Front-End Processing Residue[2]	54,000	7.6	Yes	No	H	N/A
Biomass and Fossil Fuel Combustion Ash	35,000	5	Yes	Yes	M/H	N/A,M
Construction and Demolition Debris	195,000	27.9	No	Yes	H,M	N/A,N, M
Construction and Demolition Debris Processing Facility Fines	138,000	19.7	Yes	Yes	N/E	N/E
Oversized Bulky Waste	60,000	8.6	No	No	H	L

Material Category	Proposed Waste Types to be Accepted in Expansion		Is Material a Residual from a Processing Facility that reduced the amount of material landfilled?	Is Material subject to recycling efforts by generator or otherwise prior to landfilling or is its use in the landfill considered recycling?	State Plan[1] Ranking of Landfill Disposal as Current Management Method	State Plan[1] Ranking for Source Reduction, Recycle, Compost, Beneficial Reuse Processing As Current Management Method
	Tons	Percentage of Total Tonnage				
Miscellaneous special waste	35,000	5	No	No	M,H	N/A,N,M
MSW Bypass and Soft Layer Material[3]	25,000	3.6	Yes	Yes	M, H	N, N/A
Total[4]	**700,000**	**100**	**44.2**	**70.5**		

Notes: [1] Source: MEDEP Maine Materials Management Plan, January 2014, Appendix C Current Management of Maine's Solid Waste by Type; N=None L=Low; M=Medium; H=High; N/A = Not Applicable (not possible); N/E Not Evaluated.
[2] Listed as shredder residuals.
[3] Note included in Table as an individual category compared to MSW Other Organics.
[4] Values are percent of total material landfilled except tons total.

The applicant also presented evidence on Casella's efforts to facilitate recycling of a number of other waste streams and thereby decrease the volume of wastes landfilled including Casella Recycling's Zero-Sort system used by Maine municipalities (which recycles paper, cardboard, plastic, glass and metals) and Casella Recycling's offer of waste audits to commercial and industrial customers to assist with the recycling of difficult to recycle items (Pre-filed direct testimony of Ms. King).

A summary of testimony at the hearing regarding recycling and source reduction and the hierarchy, and the applicant's responses, are summarized in Finding 18 of this license.

As shown in Table 6, it is expected that 44.2% of waste disposed will be residuals (MSW incinerator ash, 8.3%; FEPR, 7.6%; Biomass and fossil fuel combustion ash, 5.0%; CDD processing fines, 19.7%; and MSW bypass, 3.6%) from processing facilities that already reduce the amount of materials landfilled. Approximately 70.5% of the waste disposed will be materials (waste treatment plant sludges and biosolids, 10%; contaminated soils, 4.3%; biomass and fossil fuel combustion ash, 5.0%; CDD, 27.9%; CDD processing fines, 19.7%; and MSW bypass, 3.6%) subject to recycling at its source or are considered recycling based upon the landfill's use.

While the percentages in the table may vary with actual operations, a review of the data indicates that overall the facility follows the State Plan ranking for recycling. A high percentage of material to be disposed of is ranked in the State Plan as either a high or medium option for landfill disposal; i.e., landfill disposal is the primary management technique available (high) or a middle option (medium). The only low landfill disposal ranked material that will be accepted at JRL includes waste treatment plant sludges and biosolids. Casella Organics, a subsidiary of NEWSME's parent company Casella, does actively compost and reuse this material at the Hawk Ridge Compost Facility in Unity, Maine. The record indicates that in 2014, 29,068 tons of waste water treatment plant sludges and biosolids were manufactured into compost and mulches, while 38,000 tons were brought to JRL for disposal (Volume I of the application, page 5-3).

The Board finds that the applicant has demonstrated that material proposed to be landfilled in the JRL expansion has been reduced to the maximum practical extent by recycling and source reduction prior to being landfilled in accordance with applicable State law and Rules provided the facility's Annual Report includes updates on recycling information similar to that in Table 6 for the waste disposed, as specified by the Department.

20. PUBLIC BENEFIT DETERMINATION

Pursuant to the provisions of 38 M.R.S. § 1310-AA and in accordance with 06-096 C.M.R. ch. 400, § 5, proposals for new or expanded solid waste disposal facilities must be found by the Commissioner to provide a substantial public benefit.

As stated in Finding 1(B)(7) of this license, the applicant originally proposed to expand JRL by 21.9 million cubic yards. The Commissioner issued a PBD approval, with conditions, for a 9.35 million cubic yard capacity increase of JRL on January 31, 2012. On appeal, the Board affirmed the Commissioner's PBD in a decision dated July 19, 2012. Pursuant to 38 M.R.S. §1310-N(3-A)(B), the Commissioner's determination of public benefit is not subject to review by the Board as part of this licensing process.

In the PBD, the Commissioner concluded that the proposed expansion will provide a substantial public benefit, provided the expansion is limited to 9.35 million cubic yards, and provided an annual limit on OBW disposal in the expansion is established. The approval included the following conditions (among others):

3. The applicant shall, if, and when, a license is issued for the construction and operation of the 9.35 million cubic yard expansion, comply with the limit, and any subsequent modifications to the limit, established by the Department in the license on the tonnage of OBW that may be disposed in the 9.35 million cubic yard expansion.

4. Periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the 9.35 million cubic yard expansion for disposal on an annual basis shall be conducted to verify the results of the demonstrations required under the provisions of 06-096 [C.M.R. ch. 409, § (2)(C)], focused on the nature and volume of processing residues being sent to JRL for disposal. Third party audits will be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and Casella. Casella shall reimburse the Department for the cost of the audits. The first such audit(s) shall occur prior to the disposal of OBW from these processing facilities in the 9.35 million cubic yard expansion. Audits will be conducted at 2 year intervals, unless or until the Department approves their discontinuation.

These conditions of the PBD are included in the conditions of this license. See Finding 37 of this license for further discussion of a limitation on the annual amount of OBW that may be accepted at JRL.

21. HAZARDOUS AND SPECIAL WASTE HANDLING AND EXCLUSION PLAN

Pursuant to 06-096 C.M.R. ch. 400, § 9(A), only permitted wastes may be accepted for handling at a solid waste facility; the operator shall comply with all applicable Federal and State laws regarding the detection, identification, handling, storage, transportation and disposal of special wastes, biomedical wastes and hazardous wastes; and the operator shall develop and implement a Hazardous and Special Waste Handling and Exclusion Plan for the detection, identification, handling, storage, transportation and disposal of any and all wastes that may be delivered to the facility.

Consistent with JRL's current license, only non-hazardous waste will be allowed to be accepted in the proposed expansion. The types of acceptable wastes for disposal are further described in Finding 37 of this license. Included in the facility's Operations Manual is a Hazardous and Special Waste Handling and Exclusion Plan which will apply to the waste delivered to the proposed expansion. This plan includes provisions for waste inspection at the gate and at the point of offloading, as well as procedures to follow if non-acceptable waste does enter the site.

Based upon the information provided by the applicant, the Board finds that the facility will not be licensed to accept hazardous waste and has an appropriate Hazardous and Special Waste Handling and Exclusion Plan for the detection, identification, handling, storage, transportation and disposal of delivered wastes. The Hazardous and Special

Waste Handling and Exclusion Plan will be updated as necessary with the annual review and revision of the facility's Operations Manual.

22. LIABILITY INSURANCE

The Department's rule at 06-096 C.M.R. ch. 400, § 10 requires a solid waste disposal facility, except public entities, to submit proof of liability insurance for the active life and closure of the solid waste disposal facility. The applicant is a public entity and is exempt from the liability insurance requirements of 06-096 C.M.R. ch. 400, § 10. Liability insurance is required by the OSA, Section 21. NEWSME submitted the current certificate of insurance maintained for the facility and NEWSME will provide copies of the updates to the current certificate of insurance in the facility's Annual Report during operation of the proposed expansion.

The Board finds that the applicant is exempt from the liability insurance requirements of 06-096 C.M.R. ch. 400, § 10 of the Rules; however, liability assurance is being maintained by NEWSME as the current operator of JRL and will be maintained for the expansion.

23. CRIMINAL OR CIVIL RECORD

In accordance with 38 M.R.S. § 1310-N(7) and 06-096 C.M.R. ch. 400, § 12, a license for a solid waste facility or activity may be denied if the owner or the operator or any person having a legal interest in the applicant or the facility has been convicted of any criminal law or adjudicated or otherwise found to have committed any civil violation of environmental laws or rules of the State, other states, the United States, or another country.

Civil and criminal disclosure statements were submitted for the BGS and NEWSME as part of the application. The disclosure statements included those for NEWSME's operation of JRL, a related entity New England Waste Services of ME, Inc. (operator of the Pine Tree Landfill), and the five officers, directors, and partners of the two businesses. Additionally, in response to the Department's review and comment on the application, the applicant submitted an organizational chart of the Casella companies authorized to do business in Maine.

In the five year environmental compliance history submitted for New England Waste Services of ME, Inc., four notices of violations and one administrative order were listed. These have been addressed through responses required by the notices of violation and administrative order.

Based upon information in the application, the Board finds that the applicant filed complete disclosure statements as required by applicable State law and Rule. Based on the disclosure statements submitted and the evaluation criteria contained in 06-096 C.M.R. ch. 400, § 12(B), the Board finds no basis for denying the license.

24. VARIANCES

Pursuant to 06-096 C.M.R. ch. 400, § 13, an applicant may seek a variance to the requirements of the Rules for establishing, altering, operating or closing a solid waste facility or handling solid waste provided the applicant demonstrates that its proposal will comply with the intent of State laws and the Rules.

The applicant requested no variances from the Rules for siting, design, or operation of the proposed expansion. The applicant submitted two variance requests related to construction practices regarding the maximum barrier soil lift thickness required by the Rules. In lieu of the variance requests, Department staff commented that the alternative design process required by 06-096 C.M.R. ch. 401, § 2(E) should be used to clearly and convincingly demonstrate the technical equivalency of the proposed alternative (see Department technical memorandum dated January 20, 2016 from S. Farrar, V. Eleftheriou, and K. Libbey). The alternative design standard procedure was agreed to by the applicant and is addressed in Finding 27 of this license.

SOLID WASTE SITING, DESIGN, AND OPERATION

25. SITE ASSESSMENT: GEOLOGIC AND HYDROGEOLOGIC

In accordance with 06-096 C.M.R. ch. 401, § 2(B) and (C), an applicant must submit the results of site investigations and assessments performed to properly describe the surficial stratigraphy and bedrock beneath and adjacent to the proposed solid waste boundary; ground and surface water investigations performed to determine water table information and horizontal and vertical ground water flow gradients and for phreatic surface (water table) observations; and geotechnical investigations to support the stability and settlement assessments. The applicant submitted a Site Assessment Report dated July 2015 prepared by SME (Volume II of the application). The applicant must demonstrate the proposed expansion meets the performance standards and siting criteria in 06-096 C.M.R. ch. 401, § 1(C).

Department staff reviewed the geological and hydrogeological aspects of the proposed expansion prior to the hearing and submitted comments to the applicant in several memoranda. The applicant addressed a number of the staff's comments and made a number of adjustments to the application in response to those comments.

A. General Site Geology Description

Information submitted by the applicant shows that the site of the proposed expansion is in an area underlain by glacial till, on an elongated hill oriented in a northwest-southeast direction understood to have been formed as a glacial drumlin. Dense, silt-clay glacial till is primarily beneath the proposed expansion, with occasional thin, isolated portions of washed till observed typically just above the bedrock. Marine clay was observed over till beyond the proposed expansion boundary. The glacial till ranges from less than 5 feet to greater than 50 feet thick beneath the proposed expansion footprint (average thickness between the landfill base grades and bedrock surface is an estimated 24.5 feet), with approximately 3.6 acres of the footprint having an existing overburden thickness of less than 5 feet. The near-surface till was determined to be fractured above the frost/desiccation zone due to weathering and frost action.

Bedrock beneath the proposed expansion is mapped as interbedded metamorphosed quartzite, siltstone, graywacke, and phyllite of the Vassalboro Formation (Maine Geological Survey mapping, Griffen, 1979a, Osberg et al, 1985), with no bedrock faults mapped within the site. Core samples were primarily metagraywacke and phyllite, with some metasiltstone. Four bedrock outcroppings were observed directly adjacent to the proposed expansion with fracture groupings oriented northwest/southeast and northeast/southwest. The bedrock is only slightly broken, weathered, and stained within the upper several feet, but is generally hard, unweathered, and competent with depth.

Hydraulic conductivities were measured during previous JRL investigations, with the following results: brown and gray glacial tills ranged from 1.8×10^{-5} to 2.4×10^{-8} centimeters per second (cm/sec); discontinuous washed till and sandy zones within the basal till had a geometric mean of 5.3×10^{-4} cm/sec; and bedrock ranged from 3.2×10^{-3} to 9.2×10^{-8} cm/sec.

Based upon the information in the application and supporting documents in the record, the Board finds that the applicant characterized the site geology in accordance with the requirements of 06-096 C.M.R. ch. 401, § 2(B)(1).

B. General Site Ground and Surface Water Description

The application includes information showing that the total 780-acre parcel is divided into four watersheds which drain to the east, northwest, northeast, and southwest. There is a relatively shallow water table from approximately 5 to 10 feet beneath much of the facility property due to the relatively low hydraulic conductivities of the natural soils and bedrock; therefore, the ground water flow

generally follows the topography and is expected to flow from the higher elevations towards the west and east following the drumlin as a ground water divide. Recharge at the higher topographical elevations occurs primarily through precipitation and snowmelt, with ground water moving mainly horizontally and discharging to locations along streams and low-lying topography. Upward vertical seepage gradients are located on the east and west lower portion of the drumlin beyond the proposed expansion footprint.

There are no stratified sand and gravel deposits mapped by the Maine Geological Survey within the landfill site. Further discussion of standards related to significant ground water aquifer can be found in Finding 15 of this license.

Based upon the information in the record, the Board finds that the applicant characterized the site hydrogeology in accordance with the requirements of 06-096 C.M.R. ch. 401, § 2(B)(2).

C. Site Investigations and Proposed Expansion Area Specifics

The applicant submitted data and summaries of site-specific investigations conducted within and around the proposed expansion area from 2004 to the present, including:

(1) Wetlands delineation within 2,000 feet of the proposed expansion footprint;

(2) Subsurface test pits and borings to sample and evaluate soil and bedrock lithologies;

(3) Bedrock coring for mapping, fracture frequency measurement, and porosity estimation;

(4) Surficial geophysical surveys using electrical earth resistivity and Very Low Frequency-Electromagnetic (VLF-EM) methods to identify bedrock fracture zones and other features;

(5) Borehole geophysical logging to identify and quantitatively characterize bedrock fracture orientation and structural features;

(6) Installation of multi-level piezometer clusters and monitoring wells to determine seasonal ground water flow rates and direction;

(7) In-situ hydraulic conductivity testing in monitoring wells and piezometers for both till and bedrock;

(8) Testing of soil properties;

(9) Laboratory hydraulic conductivity testing of undisturbed till samples for vertical hydraulic conductivity;

(10) Natural gradient ground water tracer tests to measure ground water velocities in till and bedrock;

(11) Ground water age-dating for ground water velocity verification;

(12) Bedrock pumping tests for fracture interconnectivity; and

(13) Water quality testing of the natural background ground water.

The information collected, specific methods used, and the results of the evaluations were included in the application. The results of the evaluations were utilized to confirm the site characteristics and in the design of the proposed expansion.

The water table (ground water phreatic surface depth) was found to vary between 0 and 2 feet below the existing ground surface during the wet season, whereas the dry season water table varies between 5 and 10 feet beneath the existing ground surface. Due to the shallow water table depth, the northeast side of the proposed expansion will be subject to upward ground water seepage into the construction excavations; therefore, the applicant will install an underdrain in the 12.7-acre area. It is expected that the seepage into the underdrain will continue, but then will eventually diminish since there will be less recharge once the area is covered, first by the liner systems, and eventually by a final cover system.

Information provided by the applicant shows that the fine-grained glacial till can be considered to provide some natural containment under the proposed expansion. The applicant used a variety of hydrogeological methods to estimate the horizontal ground water velocities. The calculated ground water velocities ranged from 1 to 24 feet per year (ft/yr) through the till. The natural gradient tracer test revealed a range of horizontal ground water velocities of about 10 to 24 ft/yr for the near surface weathered till. Subsequent estimates of travel time to sensitive receptors incorporated conservative estimates of horizontal ground water velocities.

Ground water movement through the bedrock under the proposed expansion is a function of the overall interconnectivity of the bedrock's fracture and joint openings. Based on pumping tests, bedrock tracer tests, and other investigative methods, the applicant concluded that the degree of bedrock fracture interconnectivity beneath the proposed expansion allows for a level of predictability of ground water movement through the site's bedrock and could be utilized for controlling ground water flow directions by means of ground water extraction wells if a leachate leak were to occur. The applicant's estimates of site-wide horizontal bedrock ground water velocities range from about 0.4 to 10 feet per day. Based on its ground water modeling, the applicant estimated that post-construction ground water flow directions beneath the proposed expansion are projected to be in a generally southerly direction.

Over the course of the review and comment period on the application, Department staff requested the collection of supplemental data from three additional boreholes at suggested locations within the proposed expansion footprint, and the geophysical downhole logging of those boreholes and the two water supply wells serving the office and scale house. The applicant conducted the requested drilling and geophysical downhole logging and submitted the results of the data collected in a report to the Department on June 7, 2016.

During its review of the application, Department staff raised several questions regarding the interpretation of the pumping test data and resulting ground water level drawdowns. The applicant responded to the Department's questions through additional correspondence, resulting in a Department memorandum dated June 21, 2016 from R. Behr stating that the Department's concerns have been addressed.

In his testimony and cross-examination, intervenor Edward Spencer posed questions regarding the site geology, including the impact of glacial rebound on landfill stability, the use of an underdrain system below ground water level, and potential ground water flow beyond the site. One of the applicant's expert witnesses, John Sevee, P.E., C.G., testified that glacial rebounding will have no effect on the integrity of the landfill or the slope of the drainage pipes since the crustal rebound is occurring over the entire region surrounding the landfill. Michael Booth, expert witness for the applicant, testified that the underdrain system was primarily designed to facilitate construction and will be monitored as part of the water quality monitoring program. Mr. Sevee testified that ground water flow paths were investigated through wells and borings, along with utilizing ground water simulations which indicated that ground water emanating from the landfill site does not pass to ground water users along Route 16, Route 43, or Stagecoach Road.

Based upon the information in the record, the Board finds that the applicant has submitted a site assessment report and subsequent information addressing Department staff's review comments, identified the site characteristics and recommendations for landfill design and construction, identified potential impacted sensitive receptors, and estimated ground water flow time of travel as required by 06-096 C.M.R. ch. 401, §§ 2(B) and (C). See Finding 33 of this license for further discussion regarding the Water Quality Report and Ground Water Monitoring Program.

The Board further finds that the underdrain system was included and designed specifically to minimize ground water intrusion during construction and that, in the future, the ground water level will flatten due to less recharge once the proposed liner system is placed. Addressing the concern of ground water flow beyond the site, the Board finds that extensive site assessments have been undertaken and submitted in the past and with this application to characterize the geology and hydrogeology at the site and to serve as the basis for the selection of the design of the proposed expansion.

D. Geotechnical Investigation

The applicant submitted the results of its geotechnical investigations as part of the site assessment. Based on the information provided by the applicant in the site investigations, including published data, on-site field and laboratory data, and specific seismic information, the Board finds that the applicant gathered sufficient information to support the stability and settlement assessments described in Findings 28A and B of this license, as required by 06-096 C.M.R. ch. 401, § 2(B)(3).

E. Time of Travel Calculations

The applicant submitted a time of travel analysis to demonstrate conformance with the Rule's performance standard of greater than 6 years from the bottom of the landfill to sensitive receptors and greater than 3 years from leachate storage structures and pump stations to sensitive receptors set forth in 06-096 C.M.R. ch. 401, § 1(C)(1)(c). Improvement allowances for the leak detection system and a composite secondary liner system were included in the calculations as described in Finding 26B of this license. An imported soil layer of 12 inches of compacted, low permeability, marine clay to be placed below the secondary liner system in the proposed expansion area was also taken into account in the calculations as allowed in 06-096 C.M.R. ch. 401, § 2(C)(2), based on the use of improvement allowances and the hydraulic conductivity and effective porosity of the marine

clay. The analysis included time of travel from each of the proposed expansion cells and the two proposed permanent leachate sumps. The applicant did not include the existing leachate storage tank in its calculations because it was previously addressed in license #S-020700-WD-N-A, dated April 9, 2004.

The sensitive receptors were selected based on the requirements in the Rules and site-specific characteristics and are listed in Table 7 (Volume II of the application, Table 7-1, page 7-6).

Table 7: Identified Site Sensitive Receptors

Identification	Location Description
Point A	Southeast sandy zone
Point B	Hypothetical Groundwater Supply Well at Closest Property Boundary on Eastern Side.
Point C	Surface Water Discharge to the East. An Unnamed tributary to Judkins Brook.
Point D	Surface Water Discharge to the Southwest. An Unnamed Tributary to Pushaw Stream.
Point E	Hypothetical Groundwater Supply Well at Closest Northern Corner of Property Boundary on Western Side.
Point F	Hypothetical Groundwater Supply Well at Closest Southern Corner of Property Boundary on Western Side.
Point G	Surface Water Discharge to the Northwest. An Unnamed Tributary to Pushaw Stream.

The applicant provided results of the time of travel calculations as shown in Table 8 (based on combining two tables in the application, Volume II, Tables 7-3 and 7-4 on page 7-11, and the applicant's update in the second response to comments dated May 13, 2016, with added footnotes for clarity). The analysis was performed twice: under current conditions and under future conditions when the ground water table flattens due to the cutoff of precipitation recharge when the area is covered (first by the liner system, then eventually by the final cover system).

Table 8: Calculated Travel Times to Site Sensitive Receptors

Landfill Node	Site Sensitive Receptor	Offset Credits[1] (yrs)	Imported Soils[2] (yrs)	Existing Conditions		Future Conditions		Rule Requirement (yrs)
				Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	
Cell 11 Southern End	Point A	3	3	10.5	**16.5**	10.5	**16.5**	**6**
Cell 11 Center	Point B	2	3	3.9	**8.9**	3.9	**8.9**	**6**

Landfill Node	Site Sensitive Receptor	Offset Credits[1] (yrs)	Imported Soils[2] (yrs)	Existing Conditions		Future Conditions		Rule Require-ment (yrs)
				Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	Calculated Travel Time in Soil and Bedrock (yrs)	Total Travel Time (yrs)	
Cell 12 Center	Point C	2	3	11.3	**16.3**	11.4	**16.4**	**6**
Cell 13 Center	Point C	2	3	11.0	**16.0**	11.2	**16.2**	**6**
Cell 13 Leachate Sump	Point C	2	3	35.8	**40.8**	36.1	**41.1**	**3**
Cell 14 Center	Point D	3	3	47.7	**53.7**	62.2	**68.2**	**6**
Cell 14 Center	Point E	3	3	3.3	**9.3**	17.7	**23.7**	**6**
Cell 15 Center	Point F	2	3	1.2	**6.2**	1.4	**6.4**	**6**
Cell 16 Center	Point G	2	3	4.7	**9.7**	5.3	**10.3**	**6**
Cell 16 Leachate Sump	Point G	3	3	10.3	**16.3**	10.3	**16.3**	**3**

Notes: [1] Improvement allowance offset credits are described in Finding 26B of this license.
[2] 06-096 C.M.R. ch. 401, § 2(C)(2) allows for imported soils used for base preparation below liner systems to account for up to three years in the time of travel calculations, as appropriate.

Intervenor Edward Spencer testified that time of travel calculations appear to be an acknowledgement that a landfill leak will occur. Michael Booth, an expert witness for the applicant, testified that the time of travel analysis is required by the Rules and is utilized as a design evaluation tool.

Based on the information in the record, the Board finds that the applicant meets the Rule requirements of ground water time of travel from the bottom of the landfill liner systems (greater than 6 years) and leachate storage structures and pump stations (greater than 3 years) to all identified sensitive receptors. The applicant installed piezometers and water table observation wells at a sufficient number of locations to enable a calculation of ground water time of travel and performed the calculations with the appropriate information in accordance with the Rules.

26. DESIGN STANDARDS: ENGINEERING

The Department's rule at 06-096 C.M.R. ch. 401, § 2(D) requires an engineering design for a proposed landfill to meet specific design and performance standards. The applicant submitted engineering design information in support of the proposed expansion. As noted previously, a number of rounds of comments and responses occurred between Department staff and the applicant on the technical aspects of the proposed expansion design.

In general, the applicant's design of the proposed expansion consists of an underdrain and augmented secondary liner system over portions of the proposed expansion footprint, two liner systems (primary and secondary), a leak detection system, leachate and gas collection and control systems, and intermediate and final cover systems. The outer side slopes are designed at 3H:1V (3 horizontal to 1 vertical), with a maximum final elevation of 390 feet above mean sea level. Six operational cells are proposed. The applicant submitted a detailed engineering design including drawings, contract administrative documents, technical specifications and a construction quality assurance plan for Cell 11 with the application. Similar detailed engineering designs are required to be submitted for Department review and approval prior to each subsequent cell's construction.

A. Liner System Requirements

The liner system proposed for the expansion includes a composite primary liner, a leak detection system, and a secondary liner system. The proposed liner system consists of the following from top to bottom:

(1) A composite primary liner system consisting of an 80-mil HDPE textured geomembrane, a GCL, and a 12-inch compacted clay layer (hydraulic conductivity less than or equal to $1x10^{-7}$ cm/sec);

(2) A leak detection system consisting of a 12-inch layer of sand (average hydraulic conductivity greater than or equal to $1x10^{-2}$ cm/sec and a minimum hydraulic conductivity of $5x10^{-3}$ cm/sec), a network of 6-inch diameter perforated HDPE pipe, and a drainage geocomposite; and

(3) A secondary liner system consisting of a 60-mil HDPE textured geomembrane. The secondary liner system will be augmented with a GCL and 12 inches of compacted clay (hydraulic conductivity less than or equal to $1x10^{-7}$ cm/sec) on approximately 11 acres where the existing soil depth between the bedrock and landfill base grades is less than 10 feet.

Intervenor Edward Spencer voiced concerns in his testimony that the liner systems will eventually leak. In response, Michael Booth, expert witness for the applicant, countered the claim that all liner systems must necessarily leak, focusing on the following proposed expansion items: the expansion primary and secondary liner system was specifically designed to address potential leak issues, the construction process will include an electrical leak location survey of the primary geomembrane, the specifications for the geomembranes require compliance with ASTM standards (including stress cracking standards), construction specifications and practices will mitigate pressure points beneath the geomembrane that could lead to stress cracks, and the proposed expansion design eliminates liner penetrations for piping.

The Board finds that the liner system proposed by the applicant was designed in accordance with 06-096 C.M.R ch. 401, § 2(D)(1). The Board also finds that the proposed HDPE geomembranes for both the primary and secondary liner systems are thicker than the 60-mil and 40-mil Rule requirements, respectively. The Board finds that the geomembranes, GCLs, drainage geocomposites, and soils proposed will meet the performance requirements of the Rules, including material characteristics (i.e., Geosynthetic Research Institute standards and American Society for Testing and Materials (ASTM) standards) and installation requirements. Further, the applicant will be required to submit detailed design packages including the engineering design, drawings, contract administrative documents, technical specifications and a construction quality assurance plan to the Department for review and approval prior to the construction of each cell.

B. Improvement Allowance System (Time of Travel)

The Department's rule at 06-096 C.M.R. ch. 401, § 2(D)(2) allows for the use of improvement allowance offsets when calculating existing ground water time of travel to achieve the minimum 6 year time of travel to sensitive receptors.

The applicant incorporated improvement allowance offsets in the time of travel demonstration. Finding 25(E) of this license includes additional time of travel information.

The Board finds that the applicant utilized the allowance offsets appropriately as permitted by the Rules for the following two design improvements: a two year offset for the addition and monitoring of a leak detection system and geomembrane secondary liner for the areas of the proposed expansion where the design is applied; and a three year offset for the addition of a composite liner system (secondary liner augmented by a GCL) and leak detection system for the

areas where the bottom of the secondary liner system and the bedrock surface is generally less than 10 feet.

C. Base Preparation Below Liner Systems

The base preparation below the liner system proposed by the applicant includes grading native till subgrades, filling with native till material (maximum 12-inch lift), placement of an underdrain system (12 inches of sand and 4-inch collection pipes) where the proposed grades are below the phreatic surface, and placement of 12 inches of compacted clay soils (maximum hydraulic conductivity of $1x10^{-7}$ cm/sec).

Based upon the information provided by the applicant, the Board finds that the base preparation below the liner system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(3). The proposed grading plan will result in positive drainage to the perimeter of the landfill for the underdrain, leak detection, and leachate collection systems. The materials and placement will meet the performance criteria in the Rules, including gradation, moisture content, density, and hydraulic conductivity.

D. Leachate Conveyance System and Storage Structure Standards

The applicant submitted leachate collection and conveyance system designs for the proposed expansion to handle the predicted leachate, leak detection, and landfill gas condensate flows. The leachate management system components include leachate collection, leak detection, landfill gas condensate collection, leachate transport from the landfill to on-site storage, and the on-site leachate storage tank. The leachate, leak detection, and gas condensate systems include pumping systems and force mains to pump flows from each collection point to the tank. The design of the piping system for collection and conveyance accounts for the stresses due to dynamic and static loading conditions and climate effects anticipated over the life of the landfill. System designs also address filter criteria such as sizing of piping perforations, soil gradation, and component interfaces, so that clogging of the systems will be minimized. The systems were designed for use during operations, closure, and post-closure. All piping components are designed with access for inspection and cleaning.

(1) Leachate Collection System

The applicant designed the leachate collection system to allow all leachate to drain to a collection sump at the low point of the individual landfill cells. Components of the leachate collection system include 6-inch and 8-

inch diameter HDPE collection piping, 12 inches of sand (average hydraulic conductivity greater than $1x10^{-2}$ cm/sec and minimum hydraulic conductivity of $5x10^{-3}$ cm/sec), filter stone and drainage stone around the piping, and a drainage geocomposite.

The applicant used the U.S. Environmental Protection Agency (EPA)'s Hydrogeologic Evaluation for Landfill Performance (HELP) model to estimate leachate generation rates for the proposed expansion. The leachate depth (head) over the primary liner system will be limited to 12 inches, except in leachate sumps. The leachate levels within the landfill cells will be monitored using pressure transducers located at the bottom of each cell.

The application shows that a five-foot layer of select waste will be placed directly over the drainage sand component of the leachate collection system for frost protection, to protect the liner from puncture by other wastes placed in the landfill, and to serve as a filter medium.

In his testimony, intervenor Edward Spencer questioned whether the horizontal pipes in the leachate collection system may collapse. Michael Booth, expert witness for the applicant, testified that the leachate collection pipes are specifically designed for the expansion setting.

Based on the information in the application and hearing record, the Board finds the leachate collection system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(4). The Board further finds that the applicant performed static and seismic stability and settlement analyses to address potential movement of the piping in addition to including piping specifications in the application.

(2) Leak Detection System

The application shows that a leak detection system for the proposed expansion will be located under the primary liner system and will consist of the following, from top to bottom: 12-inches of drainage sand, crushed stone, perforated 6-inch diameter HDPE pipe surrounded with drainage stone and a drainage geocomposite. The applicant designed the leak detection system to detect leachate from each cell's primary liner system within 30 days. The fluids collected in the leak detection system will drain by gravity to individual collection sumps located at the low point of each cell and will be pumped to the leachate collection system and from

there pumped into the leachate transport system. Each pump will include a flow meter and sampling ports.

The Board finds the leak detection system proposed by the applicant was designed in accordance with 06-096 C.M.R. ch. 401, § 2(D)(4).

(3) Landfill Gas Condensate System

The application shows that the LFG condensate collection system for the proposed expansion consists of U-shaped condensate traps at low points in the gas conveyance pipe to remove liquid. Condensate collected in the traps will drain to a primary leachate collection system pipe. From there it will be conveyed to an existing landfill leachate header pipe and transported to the on-site leachate storage tank.

The Board finds that the applicant has appropriately addressed collection of LFG condensate as required by 06-096 C.M.R. ch. 401, § 2(D)(4).

(4) Leachate Transport

As stated in the application, leachate transport for the proposed expansion includes temporary and permanent internal cell pump stations that will deliver leachate to dual-walled force mains (6-inch by 10-inch diameter) located within the eastern and western perimeter berms. Temporary pump stations will be installed in each of Cells 11, 12, 14, and 15 and will be utilized during each cell's active period, to be discontinued when each cell becomes inactive and the subsequent lower grade cells are developed. The inactive cell's leachate piping will be connected to the next cell's piping system. The permanent pump stations will be located in Cells 13 and 16 at the lowest base grades and will be operated during active and post-closure periods. Both the temporary and permanent leachate pump stations will utilize a sump and pump design that avoids penetrations of the liner system. The pump stations were sized using the HydroCAD Model to account for storm events and storage volume. Sample ports will be included in all pump stations to allow for the sampling of leachate and each pump will have continuous recording flow meters.

The Board finds the applicant has appropriately addressed the transport of the leachate pursuant to 06-096 C.M.R. ch. 401, § 2(D)(4).

(5) Leachate Storage

As stated in the application, calculations demonstrate that the existing 921,000 gallon above ground glass-lined leachate storage tank is capable of handling the maximum anticipated leachate during the life of the proposed expansion. The storage tank is surrounded by a secondary containment structure with an available volume of 110 percent of the tank. The storage tank was addressed during the issuance of Department license #S-020700-WD-N-A. From the storage tank, tanker trucks will remove the leachate and transport it to the MFGR, LLC wastewater treatment plant in Old Town for treatment and disposal as described in the Leachate Disposal Agreement between MFGR, LLC and NEWSME, effective April 27, 2016. The City of Brewer wastewater treatment plant is available as a back-up disposal facility as described in Industrial Wastewater Discharge Permit #37-2679-07, effective March 3, 2013.

The Board finds the applicant has appropriately addressed on-site leachate storage and off-site treatment and subsequent disposal in accordance with 06-096 C.M.R. ch. 401, § 2(D)(4).

E. Seismic Impact Zone

Information in the application shows that the proposed expansion is located in a seismic impact zone as identified by U.S.G.S. Seismic Hazard Maps. The facility's structures, including liner systems, leachate collection systems, and surface water control systems for the proposed expansion were designed to withstand the maximum horizontal acceleration identified by the Hazard Maps. Additional seismic discussion can be found in Finding 28(A) of this license.

Based upon information in the record, the Board finds that the proposed expansion has been designed to meet the seismic requirements of 06-096 C.M.R. ch. 401, § 2(D)(5).

F. Phased Operations

As set forth in the application, the proposed expansion was designed for phased construction, taking into account waste operations and cover placement, stormwater run-on and run-off, leachate management, protection of the liner system from freeze and thaw effects, and stability. Individual cell size was based on the design waste disposal rates, resulting in approximately 2 years of active waste placement in each cell. Final cover will be installed in a phased manner during construction seasons when new cells are not being developed.

The Board finds that the submitted cell development plans for the 6 proposed cells meet the requirements of 06-096 C.M.R. ch. 401, § 2(D)(6).

27. ALTERNATIVE DESIGN PROCESS

Pursuant to 06-096 C.M.R. ch. 401, § 2(E), an applicant may propose alternatives to the minimum design standard and requirements of section 2(D) of the rule. An applicant is required to submit documentation to clearly and convincingly demonstrate technical equivalency of the proposed alternative.

A. Liner System Barrier Soil Lift Thickness

The landfill liner system requirements include a barrier soil layer placed in maximum lift thicknesses of 9 inches pursuant to 06-096 C.M.R. ch. 401, § 2(D)(1)(g)(iv). The applicant has proposed a barrier soil lift thickness of 12 inches, as has been utilized in the past during construction of Cells 7, 8, and 9 at the existing landfill. The test pad programs utilized during the construction of these cells demonstrated that the performance criteria required in the Rules (densities, moisture content, hydraulic conductivity, soil remolding, and lift bonding) were met utilizing the current available compaction techniques and equipment and project specific soils.

The Board finds that the applicant has submitted documentation referencing past practices that clearly and convincingly demonstrates technical equivalency of placing barrier soil in a 12-inch lift thickness compared to a 9-inch lift thickness, provided that a test pad program is undertaken as proposed in the application and described in Finding 28(L) of this license during construction of each cell of the proposed expansion to demonstrate that the required performance criteria will be met and the results submitted to the Department at least 7 days prior to full scale construction. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness will remain 9 inches.

B. Base Preparation Below Liner Systems Lift Thickness

The requirements for constructed base materials below liner systems include a base material maximum allowable compacted lift thickness of 9 inches pursuant to 06-096 C.M.R. ch. 401, § (2)(D)(3)(e). Similar to the liner system barrier soil request described in Finding 27(A) above, the applicant has proposed the placement of barrier soil in a 12-inch lift thickness compared to the required 9-inch lift thickness.

Based on the same reasons noted above for the liner system barrier soil lift thickness, the Board finds that the applicant has submitted documentation during past practices that clearly and convincingly demonstrates technical equivalency of placing barrier soil in a 12-inch lift thickness compared to a 9-inch lift thickness for base material placement, provided that a test pad program is undertaken as proposed in the application and described in Finding 28(L) of this license during construction of each cell of the proposed expansion to demonstrate that the required performance criteria will be met and the results submitted to the Department at least 7 days prior to full scale construction. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness will remain 9 inches.

28. ENGINEERING REPORT

The Department's rule at 06-096 C.M.R. ch. 401, § 2(F) requires the applicant to submit an engineering report detailing the basis for engineering design and the proposed construction procedures, utilizing site specific factors and analyzing potential modes and significance of engineered system failures. The application and subsequent information submitted by the applicant addressing Department review comments, included data, calculations, assumptions, and evaluations for the following aspects of the proposed expansion:

A. Stability Assessment

The application for the proposed expansion included a slope stability assessment which analyzed static and seismic loads during construction, operation, and post-closure periods. The stability evaluation included four cross-sections of the proposed expansion representing the steepest base liner slope angle, the steepest final sideslope angles, the greatest waste thickness, and the tallest and steepest exterior waste grades. The geotechnical properties were based on data collected from previous field and laboratory studies and construction projects. The data included density, internal and external friction properties, and cohesion/adhesion as applicable.

The applicant used two potentiometric surfaces in its assessment of landfill stability based on the following: maintenance of the leachate level within the base liner system and a conservative assumption that the potentiometric surface beneath the entire landfill is coincident with the bottom of the base liner system. A sensitivity analysis was completed to evaluate the potential impact of higher water levels. Seismic slope stability was evaluated, utilizing site specific Hazard Maps and the acceptable accelerations. As part of the seismic stability evaluation, the applicant also submitted a liquefaction and deformation analysis. In addition,

a sensitivity analysis was performed on two of the cross-sections for horizontal deformation (strain) of the base liner system.

The site specific data and design parameters were used by the applicant as input to the slope stability computer analysis program SLOPE/W. The resultant calculated factors of safety exceeded the minimum acceptable values required by the Rules, demonstrating that in-place waste and foundation soils beneath and adjacent to the waste can support the proposed expansion loads. The results of the stability assessment and comparison to the applicable safety factor requirements are presented in Tables 9 and 10 (based on the application, Volume III, Table 3-9, page 3-21 and separated into two tables for presentation clarity).

Table 9: Stability Assessment Result Summary
Calculated Slope Stability Minimum Factors of Safety
for Construction and Operations

Cross-Section	Static Condition				Seismic Condition			
	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum
A-A’	1.91	1.73	2.65	1.3	1.54	1.37	2.14	1.1
B-B’	2.43	2.01	2.93		1.88	1.50	2.26	
C-C’	1.90	1.75	2.17		1.53	1.39	1.75	
D-D’	1.92	1.82	2.61		1.55	1.45	2.07	

Table 10: Stability Assessment Result Summary
Calculated Slope Stability Minimum Factors of Safety
for Post Closure

Cross-Section	Static Condition				Seismic Condition			
	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum	Waste, Shallow surficial	Liner, Block	Foundation (circular)	Rule Minimum
A-A’	1.81	1.72	2.65	1.5	1.11	1.00	1.62	1.0
B-B’	2.33	1.98	2.90		1.32	1.05	1.64	
C-C’	1.81	1.74	2.17		1.11	1.01	1.33	
D-D’	1.84	1.81	2.54		1.11	1.04	1.52	

As the proposed expansion development occurs, the applicant will perform individual slope and interface stability assessments as part of each cell design to

confirm the construction and operational phase stability. Similar assessments for each cover system construction project will also be performed.

Based on the information provided in the application, the Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(1) for static and seismic stability factors of safety, as demonstrated in a slope stability assessment for static and seismic loads during construction, operation, and post-closure periods.

B. Settlement Assessment

The applicant submitted a settlement assessment to predict total and differential settlements of the landfill liner systems, leachate management systems, and cover system components. The settlement assessment quantified the anticipated primary and secondary settlements of the landfill waste and foundation soils and evaluated the effect of the settlements on the base liner system, leachate collection, and cover system components.

The foundation soils below the proposed expansion are a dense to very dense glacial till. Settlement of the foundation soils is predicted to be between 0.0 to 0.3 feet. It was determined that neither the base liner nor leachate collection systems will be compromised by the predicted settlement, since the strains on the geosynthetics (i.e., geomembrane, GCL, drainage geocomposite) will be within acceptable limits, the base liner slopes are estimated to change by less than 0.1% from the design slopes, and the leachate collection piping would continue to maintain positive drainage.

The waste and cover settlement was projected based on the similar composition and behavior of waste existing at the facility. The calculated combined primary and secondary settlements would be between 0 to 8 feet at the end of the 30-year post-closure period. The applicant does not expect these settlements to compromise the cover system since the settlement is projected to occur in a uniform, gradual manner, the cover system's initial slope angles are sufficient to maintain positive drainage even with the predicted settlement, and tensile strains at 0.1% are well below the allowable strain for the textured, linear low density polyethylene (LLDPE) or HDPE geomembrane to be used as a component of the final cover system.

The Board finds that the applicant has met the settlement requirements in 06-096 C.M.R. ch. 401, § 2(F)(2), confirming future predicted settlement will not adversely affect the landfill liner system, leachate collection system, and cover system components.

C. Stability and Settlement Monitoring Plan

The Stability and Settlement Monitoring Plan submitted in the Design Report prepared by SME (Volume III, Section 3.1.5, page 3-26) and the referenced geotechnical monitoring plan (Operations Manual, Volume IV, Appendix N of the application) proposed for the expansion include the installation and monitoring of pore-water pressure transducers at the base of each cell and geotechnical slope stability and settlement inspections of the facility. The pressure transducers will be connected to the pump station control panels and will measure leachate head on the liner system to confirm the leachate collection system design assumptions. The annual inspections will be performed by a qualified geotechnical engineer to observe slopes for cracks, sloughs, seeps, leachate breakouts, displacements, toe-heaving, areas of stressed vegetation; to observe any water ponding; and to compare recent waste placement topographic maps with the previous year's information.

As part of the annual geotechnical inspection, the applicant proposes to conduct an annual review of waste types, quantities, location of waste placement; evaluation of pore pressure data; and review of site aerial topographic surveys. If the design assumptions such as waste streams and pore pressures have changed, then a reassessment may be warranted. A summary of the geotechnical inspections and evaluations will be included in the facility's Annual Report.

The Board finds that the Stability and Settlement Monitoring Plan submitted by the applicant meets the requirements of 06-096 C.M.R. ch. 401, § 2(F)(3) and that the applicant must include the results of the geotechnical inspections and evaluations in a geotechnical report submitted in the Annual Report.

D. Water Balance

EPA's Hydrologic Evaluation of Landfill Performance (HELP) Model was used by the applicant to evaluate the rates and volumes of leachate, including consolidation water, to be generated by the landfill during operations, closure, and post-closure periods. The model results identified the most critical leachate generation conditions over the life of the proposed expansion and were used to design the leachate collection system. Three simulations were performed under conditions of open active waste filling assuming 10 feet of waste and no cover, an intermediate covered condition assuming 90 feet of waste and 18 inches of soil cover, and a final cover condition. The average daily leachate flows were estimated to be approximately 48,000 gallons per day from the entire facility during the operation of the proposed expansion, with an average daily flow during

the peak monthly condition of approximately 57,500 gallons per day. The estimated yearly flows ranged from approximately 22.9 million gallons per year during the operation of Cell 12 to approximately 13.8 million gallons per year during the operation of Cell 15.

The Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(4) for adequately designing the leachate collection system to convey the predicted leachate flow from the proposed expansion.

E. Leachate Management

The Rules require the applicant to select an appropriate leachate management method and require a leachate management plan. In accordance with 06-096 C.M.R. ch. 401, § 2(F)(5), leachate management options available to the applicant include "off-site transport to a licensed wastewater treatment facility for treatment and disposal." The applicant has proposed to continue the method currently employed at the existing landfill; namely, leachate will be collected and conveyed through a series of pipes above the primary liner system, pumped to the on-site leachate storage tank and trucked to the MFGR, LLC (MFGR) wastewater treatment plant in Old Town (disposal agreement signed April 27, 2016). A contingency plan for leachate disposal limitations at contracted treatment facilities is required in 06-096 C.M.R. ch. 401, § 2(F)(5)(e)(iii), including a letter of intent or service contracts for such proposed contingencies. To meet this requirement, the applicant has provided a back-up agreement for leachate treatment, held with the City of Brewer wastewater treatment plant (disposal agreement effective March 3, 2013). Both MFGR and City of Brewer disposal agreements have a term of 5 years and both treatment facilities hold current wastewater licenses from the Department, as required by the Rules.

The design calculations and drawings for the leachate collection and transport system were submitted with the application and are further described in Finding 26(D) of this license. The leak detection system, located beneath the primary liner system, includes the capability to measure both flow and quality of liquid collected by the system. The leak detection system was based on a design leakage rate as defined in 06-096 C.M.R. ch. 400. The design leakage rate for the primary liner component of the system was calculated to be 0.26 gallons per acre per day, based on potential variables such as geomembrane imperfections, the head above the primary liner, the uniformity of contact between the geomembrane and underlying soil/GCL, and the hydraulic conductivity of the material in contact with the primary liner. In conjunction with the siting and design specifics of the proposed landfill, the design leakage rate is required to be taken into account for assessing hypothetical failures. The leak detection system was designed to detect

leaks from each cell's primary liner system within 30 days, and have sufficient hydraulic capacity to transmit the flow associated with the Action Leakage Rate (ALR) for the proposed expansion. The applicant proposed to determine leachate leakage by comparing the measured specific conductance to values calculated using the selected ALR, leachate specific conductance, and baseline measurements. The monitoring methodology was included in the Liner Action Plan (LAP), submitted as part of the proposed expansion application in the Operations Manual.

During review of the application, Department staff commented on the proposed LAP and recommended an initial two-tiered ALR program based on 20 and 100 gallons per acre per day, followed by consultation with Department staff to determine the appropriate response action (Department technical memorandum dated January 20, 2016 from S. Farrar, V. Eleftheriou, and K. Libbey). Specific conductance could then be utilized to determine further action, but would not be the primary ALR method initially. The applicant may request revisions to the LAP upon submittal of actual field data as the proposed expansion is developed for the Department's approval through changes to the Operations Manual.

Contingency plans were built into the designs for conveyance and transport system failures as described in the application, including conservative design factors and assumptions; materials to be used; periodic maintenance, cleaning, and inspection; monitoring pressure transducers and pressure gauges; alarm systems; back-up pumps and generators; force main dual-containment piping; and easy access to cell pumps.

The volume of leachate generated will be measured through the use of flow meters at each pump station. Leachate and the leak detection system quality will be monitored in accordance with the facility's Environmental Monitoring Plan (EMP), as described in Finding 33 of this license. The leachate management system will be maintained, inspected, and cleaned periodically, as addressed in the facility's Operations Manual section on site maintenance and inspection.

As stated above, the applicant has proposed to transport leachate off-site to the MFGR wastewater treatment facility for treatment and subsequent disposal. Taking into account the proposed expansion, leachate hauling is expected to be approximately 48,000 gallons per day, with an estimated 57,500 gallons per day during peak months. This represents an increase from current hauling loads which average 30,000 gallons per day and 46,000 gallons per day during peak months. The quality of the leachate to be taken off-site and treated is expected to be consistent with the current leachate quality since there is no change in accepted waste types proposed. Leachate samples will be routinely collected from the on-

site storage tank and the leachate and leak detection pump stations for characterization. Data on characteristics of the leachate will be sent to the wastewater treatment facility.

During the hearing, intervenor Edward Spencer questioned the adequacy of the MFGR wastewater treatment facility given closure of the pulp and papermaking operations at the former mill site. Mr. Spencer's witness, Dr. Steve Coghlan, expressed concerns regarding the potential for the discharge of pollutants including metals from the wastewater treatment plant to adversely impact the Penobscot River.

The Board finds that evidence in the record indicates that MFGR's waste discharge license was most recently renewed and amended on October 12, 2016 to reflect the change in wastewater loading to the facility including leachate from JRL. The MFGR license specifically recognizes that "the wastewater characteristics are no longer representative of a kraft pulp mill operation as sources of wastewater are primarily storm water, landfill leachate from JRL, wastewater from the commercial LaBree's Bakery, filter backwash from the Orono-Veazie Water District and septage dewatering filtrate, leachate and storm water runoff from a composting facility" (Department license #W-002226-5O-O-R). In addition to State standards, MFGR's wastewater application was evaluated for compliance with National Effluent Guidelines set forth in 40 CFR, Part 445, *Landfills Point Source Category*, Subpart B, *RCRA Subtitle D Non-Hazardous Waste Landfill.*

MFGR's wastewater treatment license places limits on the concentration of various pollutants in the discharge and requires that discharges from the MFGR wastewater treatment facility be monitored for a range of parameters including, but not limited to, flow, pH, biological oxygen demand, total suspended solids, mercury, whole effluent toxicity, and priority pollutants. The license states that the wastewater treatment facility modifies its treatment protocols as appropriate based on operating parameters such as influent flow, strength, and temperature to meet the effluent limits, including those for metals (metals can be present in the sludge and also within the discharged effluent at allowable levels). In issuing MFGR's renewal license, the Commissioner concluded, based upon a knowledge of the influent and the operation of the MFGR facility, that all applicable licensing criteria for the proposed waste discharge had been met and that the "discharge, either by itself in combination with other discharges, will not lower the quality of any classified body of water below such classification" and that "the provisions of the State's antidegradation policy, 38 M.R.S., § 464(4)(F), will be met."

The Board finds that the applicant has met the applicable requirements in 06-096 C.M.R. ch. 401, § 2(F)(5) for leachate management, based on the submitted leachate management design plans and utilization of a licensed wastewater treatment facility, along with a back-up licensed wastewater treatment facility as the contingency plan, for the treatment of the collected leachate; provided that the applicant maintains a valid leachate disposal contract(s) with licensed waste water treatment facility(ies) for the treatment and disposal of leachate from the proposed expansion.

F. Gas Management

The Landfill Gas Expansion Design Report dated June 2015, prepared by Sanborn Head & Associates, Inc. and submitted with the application, addresses LFG management for the proposed expansion. The existing active LFG extraction system will be expanded to accommodate gas generated from future waste placement. The LFG collection and control system consists of horizontal extraction trenches and vertical extraction wells. Once extracted, the LFG passes through a moisture separator, followed by treatment at a Thiopaq® sulfur removal system to reduce hydrogen sulfide, and is then combusted at the flare. The June 2015 report demonstrates that the existing H_2S removal equipment and flares as addressed in the landfill's existing air license renewal are adequate to handle the LFG from the proposed expansion. A landfill gas to energy facility may be proposed in the future as an alternative to flaring and to generate electricity.

The application states that the LFG collection and control system is utilized to control air emissions, including methane and odors from hydrogen sulfide, as described previously in Finding 11(A) of this license. The existing facility is required to meet the EPA's New Source Performance Standards, 40 CFR Part 60, Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills* (initially published in 61 FR 9919, March 12, 1996). The application included reference to Subpart WWW, but in 2016, 40 CFR Part 60, Subpart XXX, *Standards of Performance for Municipal Solid Waste Landfills that Commenced Construction, Reconstruction, or Modification after July 17, 2014* (published in 81 FR 59368, Aug. 29, 2016) was promulgated. The proposed expansion will be subject to 40 CFR Part 60, Subpart XXX upon commencing construction of Cell 11. Requirements in the federal regulation include operational standards for gas collection and control systems, as well as provisions for compliance and monitoring.

In the application, Sanborn Head & Associates estimated the LFG generation rate using the EPA's *Landfill Gas Emissions Model, Version 3.02* (LandGEM) for the years 2004 to 2050, with a peak collection rate of approximately 3,600 standard

cubic feet per minute (scfm) in 2031, assuming LFG at 50% methane and taking into account the proposed expansion construction to commence in 2018. The application states that the LFG collection system will be installed in phases as the proposed expansion cells are built. Horizontal extraction trenches will be located in the waste mass, constructed 4-feet wide by 5-feet deep, and contain a 6-inch perforated HDPE pipe surrounded by coarse aggregate. The trenches will be installed approximately every 40 feet in vertical elevation and spaced approximately 100 feet apart. The permanent vertical extraction wells will be constructed of 8-inch diameter schedule 80 polyvinyl chloride pipe, slotted on the lower portion. They will be installed approximately 100 feet on center. Conveyance HDPE pipes will vary from 4 inches to 24 inches in diameter and will be sloped to provide condensate drainage and account for settlement.

LFG management at the facility also includes the installation of intermediate and final cover on non-active portions of the landfill to promote efficient gas collection.

Intervenor Edward Spencer questioned in testimony whether the horizontal pipes in the landfill gas collection system may collapse. Michael Booth, an expert witness for the applicant, testified that the horizontal gas collector trenches are only a temporary collection method and only need to function until the permanent vertical extraction wells are installed once the appropriate waste depth is achieved.

The Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(6) for LFG collection and control based on the submitted LFG design report and cell development plans, and the proposed expansion will be subject to the requirements of 40 CFR Part 60, Subpart XXX when JRL commences construction on the proposed expansion. The Board further finds that the design and operation of the LFG collection and control system will minimize LFG related nuisance odors.

G. Cell Development Plan

A Cell Development Plan was submitted with the application which illustrates the sequence of development for the proposed expansion in a phased manner, allowing operation in an active landfill cell while construction occurs on the next cell. Phased intermediate and final cover placement are also proposed. Table 11 includes general cell development information, with a schedule for new cell construction approximately every two years. Table 11 was compiled from information in the application, Volume III, Section 3.5.1. Specific plan details with layout of cells, projected grades, location and timing of intermediate and

final cover, location and construction of cell access, relevant aspects of leachate and stormwater management measures, relevant aspects of erosion and sedimentation control measures, and other pertinent facility-specific features are included in the facility's Operations Manual and will be updated with the facility's Annual Report.

Table 11: Proposed Expansion Cell Development Plan Summary* (cell construction listed from first to last, occurring every two years)

Cell Number	Size (acres)	Disposal Capacity (cubic yards)	Construction Items of Note
11	9.5	1,460,000	• Expansion of existing Detention Pond 9; • Year following Cell 11 construction, final cover placed over approximately 14.3 acres of existing landfill.
12	12.6	1,500,000	• Construction of Detention Pond 10; • Relocation of the administration building; • Year following Cell 12 construction, final cover placed over approximately 18.6 acres of existing landfill.
13	11.8	1,580,000	• Construction of Detention Pond 11; • Relocation of the scale house; • Year following Cell 13 construction, final cover placed over approximately 14.6 acres of existing landfill.
14	6.7	1,670,000	• Year following Cell 14 construction, final cover placed over approximately 13.3 acres of existing landfill.
15	6.0	1,500,000	• Year following Cell 15 construction, final cover placed over approximately 15.0 acres of existing landfill.
16	7.1	1,640,000	• Construction of Detention Pond 12; • Over a several year period following Cell 16 construction, final cover placed over remaining 45.5 acres.
Note: *Size and capacity information is approximate. Variations in construction scheduling may occur as development progresses.			

The Board finds that the applicant has met the Cell Development Plan Rule requirements in 06-096 C.M.R. ch. 401, § 2(F)(7), including cell development sequencing and phased placement of intermediate and final cover. The Board further finds that the applicant shall update the Cell Development Plan on an annual basis as the proposed expansion is developed.

H. Phased Final Cover System Proposal

The applicant proposed a phased final cover system for the expansion consisting of the following, from top to bottom: 12 inches of vegetative soil, 12 inches of

drainage sand, a 40-mil LLDPE or HDPE textured geomembrane, and 24 inches of barrier soil. Prior to each phase of final cover system construction, an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents and a quality assurance plan will be submitted to the Department for review and approval. The applicant anticipates that final cover system construction will occur about every other year.

The Board finds that the applicant has met the requirements in 06-096 C.M.R. ch. 401, § 2(F)(8) for a phased cover system; provided that an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents and a quality assurance plan are submitted to the Department for review and approval at least four months prior to each proposed application of a phased final cover system.

I. Waste Storage, Staging, and Burn Areas Design

The applicant has not proposed additional waste storage and staging areas outside of the solid waste boundary, or a burn area for wood waste or CDD. Rather, the applicant proposes to use the existing permitted wood waste handling area adjacent to the maintenance facility for the proposed expansion. In addition, areas within the existing landfill may be used to temporary stockpile soft layer material to be placed in the bottom of newly constructed cells.

The Board finds that the applicant is not proposing additional waste storage and staging areas outside of the solid waste boundary, or a burn area for wood waste or CDD and will utilize the existing permitted wood waste handling area. Therefore, the provisions requiring submittal of a design and operating plan in accordance with 06-096 C.M.R. ch. 401, § 2(F)(9) do not apply to the proposed expansion; however, the facility shall continue to operate the existing storage and burn area in accordance with the applicable operating requirements.

J. Waste Characterization and Design Compatibility

The Department's rule at 06-096 C.M.R. ch. 401, § 2(F)(10) requires that the wastes proposed to be accepted at the expansion must be characterized to enable the Department to determine that the wastes to be landfilled are non-hazardous and suitable for disposal in accordance with the proposed design, and to support the analytical parameters proposed in the Environmental Monitoring Plan (EMP).

The procedures for the characterization, testing and acceptance of waste at JRL are included in the facility's Solid Waste Characterization Plan in the Operations

Manual. The wastes proposed to be accepted in the expansion are similar to the wastes currently approved for JRL, with the exception of MSW (except for bypass) which will not be accepted in the proposed expansion. Generally, the waste types include wastewater treatment plant and miscellaneous sludge, FEPR, contaminated soils, MSW incinerator ash, biomass and fossil fuel ash, MSW bypass from incinerators, CDD, OBW, CDD process fines, and miscellaneous waste. Finding 37 of this license addresses the acceptable wastes in more detail.

The applicant states that the currently accepted waste types have been previously determined by the Department and JRL to be non-hazardous, compatible for commingling, and compatible with the engineered systems components.

The Board finds that the applicant has provided appropriate waste characterization procedures for the proposed expansion as required by 06-096 C.M.R. ch. 401, § 2(F)(10).

K. Surface Water Control Plans

The Department's Rules at 06-096 C.M.R. ch. 401, § 2(F)(11) require that an applicant submit two surface water control plans: an erosion and sedimentation control plan which meets the standards and submission requirements of 06-096 C.M.R. ch. 400, § 4(J) and a stormwater management plan which meets the standards and submission requirements of 06-096 C.M.R. ch. 400, § 4(M). The applicant's Erosion and Sedimentation Control Plan and the Stormwater Management Plan are described in Findings 14 and 17 of this license.

The Board finds that the applicant has submitted the two required surface water control plans required by 06-096 C.M.R. ch. 401, § 2(F)(11) and that these plans meet the requirements of 06-096 C.M.R. ch. 400, §§ 4(J) and 4(M) as set forth in Findings 14 and 17 of this license.

L. Test Pad Submission

The applicant has proposed to utilize test pads to demonstrate that the proposed barrier soil material and construction methods will result in barrier soil meeting the specified requirements. The test pad program will evaluate the construction techniques to determine conformance with the project technical specifications, similar to the program used during construction of the existing cells at JRL. For base grade, liner, and final cover system construction, a test pad covering an area of approximately 50,000 square feet will be constructed in the cell or cover area. During placement and compaction of the test pad, testing will be performed for moisture, density, and in-place hydraulic conductivity at the appropriate locations

and frequencies. Once the performance criteria is met, up to four shallow test pits will be excavated in the test pad area to evaluate the remolding and bonding of the barrier soil. If the entities involved in construction and oversight, including the Department, concur with the results, the construction techniques utilized on the test pad will continue for the project and the frequency of in-place hydraulic conductivity testing may be reduced with approval from the Department. If the borrow source or material properties change during the course of construction, a new test pad will be required.

The Board finds that the applicant has submitted an appropriate test pad program as required by 06-096 C.M.R. ch. 401, § 2(F)(12). Any reduction in the frequency of the in-place hydraulic conductivity testing must be authorized by the Department.

M. Special Construction Requirements

In accordance with 06-096 C.M.R. ch. 401, § 2(F)(13), at facilities where ground water monitoring in bedrock is anticipated or is being conducted, the applicant must submit information on all measures to be taken to minimize the disturbance of soil material within five feet of the bedrock surface.

The applicant submitted information on measures to be taken to minimize the disturbance of soil material within 10 feet of the bedrock surface where the augmented secondary liner system will be installed. In these areas, the base grade will be cut one foot to accommodate the additional foot of compacted clay to be placed under the secondary liner system. To achieve minimal soil disturbance, the excavator will complete the cut prior to placement of imported soils.

In other areas of the site where the proposed base grades are below the phreatic surface, the applicant has proposed to install an underdrain system to assist with dewatering and to facilitate base liner system construction.

The Board finds that the applicant has submitted measures to minimize soil disturbance that meet the 5 feet to bedrock separation requirement in 06-096 C.M.R. ch. 401, § 2(F)(13).

29. CONTAMINANT TRANSPORT ANALYSIS

In accordance with 06-096 C.M.R. ch. 401, § 2(G), an applicant is required to provide a thorough analysis of the proposed site and the adjacent area that could be affected during operation and after closure of the landfill in the event of releases of contaminants to ground water beyond engineered systems to assess the potential for an unreasonable

threat to sensitive receptors and to identify any operational or monitoring measures needed to ensure protection of sensitive receptors. As defined in the Rules, the potential for an unreasonable threat to a sensitive receptor is an arrival time of less than 6 years from the landfill or less than 3 years from leachate storage structures and pump stations of a concentration of a pollutant which would result in contamination of that sensitive receptor.

The contaminant transport analysis submitted by the applicant consisted of modeling potential leakage scenarios using information from site investigations and appropriate inputs and assumptions. An analytical three-dimensional ground water solute transport equation was used to simulate leachate concentrations from hypothetical leaks. Evaluated hypothetical scenarios included complete failure of the liner system, a leaking liner system, and a leaking leachate force main. The leachate constituents modeled were iron, nitrate, alkalinity, arsenic, chloride, and ammonia since these constituents have the highest concentrations in leachate relative to the ground water and surface water criteria. A sensitivity analysis was also performed.

Based upon information in the application, the Board finds that under the hypothetical failure scenarios, the results of the analysis showed that sensitive receptors in the vicinity of the proposed expansion will not be unreasonably threatened by leachate leaks; the proposed monitoring locations and monitoring frequency will be sufficient to detect changes in water quality from potential failures; and the currently proposed design will provide greater than six years travel time from the landfill's base liner to the sensitive receptors.

The Board further finds that the applicant provided an analysis of potential releases of contaminants to ground water that meets the requirement of the 06-096 C.M.R. ch. 401, § 2(G) and has demonstrated that the proposed expansion will not pose unreasonable threats to sensitive receptors.

30. PLAN VIEW AND PROFILE VIEW DRAWINGS

The Department's rules at 06-096 C.M.R. ch. 401, § 2(H) require that an applicant submit plan and profile drawings that provide information specified in the rule.

The Board finds that the applicant submitted the drawings required in 06-096 C.M.R. ch. 401, § 2(H), including the drawings for existing site conditions, site development, site base grading, underdrain piping, leak detection piping, leachate collection piping, the gas collection and control system, final site drainage, final site development, landfill cross-sections, and specific details of engineered systems.

31. QUALITY ASSURANCE PLAN

The Department's rules at 06-096 C.M.R. ch. 401, § 2(I) requires that an applicant submit a Quality Assurance Plan to assure that design specifications and performance requirements for all facility components are met during construction. The Quality Assurance Plan submitted by the applicant for the proposed expansion includes the following, as related to construction: quality assurance measures to be implemented; the relationship between the Quality Assurance Plan, construction quality control, and the construction contract bid documents; responsible authorities and a resolution process; qualifications of quality assurance personnel and testing laboratories; inspections and tests to be performed for construction conformance; sampling details; recordkeeping and reporting requirements; and a list and description of all items requiring quality assurance certification.

The Board finds that the applicant has submitted a Quality Assurance Plan that addresses the items required by 06-096 C.M.R. ch. 401, § 2(I) to verify conformance with construction design specifications and performance requirements.

32. CONSTRUCTION CONTRACT BID DOCUMENTS

Pursuant to 06-096 C.M.R. ch. 401, § 2(J), an applicant is required to submit construction bid documents. The applicant may submit draft documents at the time the application is filed, and subsequently submit final detailed construction contract bid documents to the Department for review and approval on a schedule approved by the Department.

The application included construction bid documents for Cell 11 consisting of contract administrative documents, technical specifications, and drawings.

The Board finds that the applicant provided the construction contract bid documents for Cell 11 in accordance with the Rules. Prior to the construction of individual subsequent cells (Cells 12 through 16), detailed construction contract bid documents shall be submitted to the Department for review and approval four months prior to commencing construction activities at each cell.

33. WATER QUALITY REPORT AND PROPOSED MONITORING PROGRAM

In accordance with 06-096 C.M.R. ch. 401, § 2(K), an applicant is required to provide a water quality report addressing the site characterization requirements of 06-096 C.M.R. ch. 405, including a water quality monitoring program.

The application includes information on the water quality monitoring program which was established at the site in 1990 and currently includes periodic sampling of 22 monitoring

wells, 3 ground water discharge locations, 6 surface water locations, 10 underdrain locations, and 1 leachate location. The specific sampling and monitoring procedures utilized are detailed in the facility's EMP. The proposed expansion will be integrated into the existing water quality monitoring program, with updates and revisions as appropriate.

The proposed expansion will include the addition of 45 monitoring locations consisting of: background and downgradient piezometers and wells, additional surface water and pore water sampling points, and leak detection and underdrain system monitoring points. The locations will be phased in with the development of the proposed cells over a 10 to 12 year period.

Leachate monitoring for the proposed expansion will consist of sampling at the leachate tank; each leak detection sump discharge; and underdrain discharge. Ground water monitoring for the proposed expansion will consist of sampling of 23 new monitoring wells and 11 existing wells and piezometers. Several existing ground water monitoring wells, piezometers, and open-boreholes in the area of the proposed expansion footprint will be abandoned in accordance with the provisions of 06-096 C.M.R. ch. 405, § 5(H). Surface water monitoring will include sampling of two additional locations to characterize potential shallow ground water discharge and runoff impacts to nearby streams and wetland areas. Water quality sampling for the leachate tank, underdrain and leak detection systems, and monitoring wells will be performed three times a year. The leak detection sump discharges and underdrain discharge will be assessed monthly for flow and specific conductance (the Liner Action Plan, included in the Operations Manual, addresses steps to be taken if water quality changes occur).

During review of the application, Department staff commented that the ground water flow directions are anticipated to change with proposed expansion development and that the EMP should provide for an annual assessment of ground water flow directions (Department technical memorandum dated April 1, 2016 from R. Behr).

As set forth in the application, the water quality monitoring program will continue to be adjusted annually based on the operational status of the cells, development at the facility, the previous year's water quality evaluation, and the results of the Department's annual review of the water quality data.

The Board finds that the applicant submitted a water quality report which both characterized the existing site and proposed a water quality monitoring program as required by the Rules. Water quality monitoring shall be performed according to the EMP for the site. An Annual Water Quality Report evaluating JRL's water quality and an assessment of ground water flow directions as the proposed expansion is developed shall

be compiled each year and submitted with the facility's Annual Report. Proposed changes to the water quality monitoring program shall require Department approval.

34. OPERATIONS MANUAL

In accordance with 06-096 C.M.R. ch. 401, § 2(L), a copy of the facility's operations manual must be submitted as part of the application. The facility's Operations Manual was prepared in accordance with 06-096 C.M.R. ch. 401, § 4(A) and contains revisions to JRL's existing operations manual to address the proposed expansion. As required, the Operations Manual will be reviewed annually by the operator and will be updated as necessary. Since the July 2015 version of the Operations Manual submitted with the application, updates to portions of the Operations Manual have been submitted to the Department as a result of Department comments during the application review process.

The Board finds that the applicant has submitted an Operations Manual in accordance with the requirements of 06-096 C.M.R. ch. 401, § 2(L).

35. CONSTRUCTION

The proposed expansion is subject to the regulatory requirements of 06-096 C.M.R. ch. 401, § 3 during construction, as summarized below:

A. Preconstruction Conference

Unless waived by the Department, a pre-construction conference will be held between the applicant and/or the agents of the applicant and the Department, with at least a 7-day advance notice given to the Department.

B. Quality Assurance Plan

The Quality Assurance Plan (QAP) must be implemented at the beginning of construction. Construction Quality Assurance (CQA) must include continuous site inspections by the CQA personnel. Geosynthetics and barrier soil layers must be inspected, tested, and certified by qualified CQA personnel separate from the owner/operator and contractor.

C. Liner Installation

Before installation of any type of liner system, the applicant must evaluate the impacts of climatic conditions, proposed installation procedures, and the proposed installation schedule on liner system integrity. Results and recommendations from the test pad program must be submitted to the Department for review and

approval. Liner systems may be installed only between April 15 and November 1, and only when the ambient temperature exceeds 32 degrees Fahrenheit, unless a specific cold weather installation plan is submitted to the Department for review and approval.

D. Changes from Approved Plans and Specifications

Prior to implementing any changes to the approved landfill design, the leachate management systems, or project specifications, the applicant must receive approval from the Department through an amendment or minor revision, or through a change order approval.

E. Weekly Inspection Reports

The CQA team responsible for construction inspection at the landfill shall keep daily and weekly construction inspection reports and provide a copy to the Department within one week after each construction week.

F. Photographic Documentation

In the final construction report, the applicant shall provide the Department with representative photographic documentation of each stage of construction.

G. Record Drawings

The applicant shall provide record drawings, signed and stamped by a State of Maine Licensed Professional Engineer, to the Department within 45 days after construction completion of each cell.

H. Final Construction Report and Commencement of Operations

The applicant shall submit a written request that the Department conduct an inspection of the completed construction for a finding of compliance with the facility license. The applicant may commence operations of the landfill upon Departmental approval or ten working days after submitting the written certification stating that the project was constructed in accordance with the approved plans and specifications, and after the Department conducts or waives the need for a final construction inspection. The Department may delay commencement of operations pending resolution of issues identified during its inspection and/or during review of the written certification.

The applicant shall submit a final construction report to the Department within 45 days following construction completion of each cell which includes the items specified in the Rules. The written certification is required as part of the final construction report, but may be submitted prior to the final report in order to expedite approval for commencement of operations.

The Board finds that the applicant must follow the applicable regulatory requirements of the Rules during construction.

36. OPERATIONS

The proposed expansion is subject to the regulatory requirements of 06-096 C.M.R. ch. 401, § 4 during landfill operations, as summarized below.

A. Operations Manual

The Operations Manual must be reviewed annually by the operator and updated as necessary. These updates shall be distributed to the entities holding certified copies, including the Department and key operating and management personnel of the landfill. The landfill operator shall familiarize operating personnel with relevant sections of the Operations Manual.

B. Operator Training and Certification Program

At least two key personnel must be trained in the operation of, and regulatory requirements for, the landfill and be certified as required by the Rules.

C. Operating Requirements

The policy and procedures utilized by JRL to meet the operating requirements in the Rules are addressed in the facility's Operations Manual. These operating requirements include, but are not limited to, updating the Operations Manual on an annual basis, accepting only wastes allowed by the facility's licenses and characterizing these wastes appropriately, and providing for facility inspection and maintenance on a regular basis. Requirements for utilization of an approved cell development plan, environmental monitoring and the appropriate installation of daily, intermediate and final cover are also outlined in the Operations Manual.

D. Annual Report

Pursuant to 38 M.R.S. § 1310-N(6-D) and as stated in 06-096 C.M.R ch. 401, §(4)(D), an Annual Report and fee shall be submitted to the Department in the

timeframe stated in the Rules, currently by April 30 of each year. The Annual Report shall contain the applicable information required by the Rules. The operator shall keep copies of the Annual Reports submitted to the Department throughout the operational and the post-closure care period of the landfill.

The Board finds that the applicant has submitted an Operations Manual for the proposed expansion in accordance with the applicable requirements of the Rules, as also discussed in Finding 34 of this license.

37. ACCEPTABLE WASTE AND OBW LIMIT

A. Acceptable Waste

JRL is currently licensed to accept non-hazardous waste generated within the State, including up to 81,000 tons of MSW a year until March 31, 2018 (license #S-020700-WD-BG-Z issued June 19, 2014). The proposed expansion will be licensed to accept similar waste types; however, the proposed expansion will be prohibited from accepting municipal solid waste, except MSW bypass material. For the purpose of this license, MSW bypass is defined as any MSW that is destined for disposal or processing at a solid waste incinerator, but that cannot be disposed of or processed at that incinerator because of the incinerator's malfunction, insufficient capacity, inability to process or burn, down-time, or any other comparable reason as approved by the Department.

Table 12 is a summary of the non-hazardous waste generated within the State currently allowed in the existing landfill (Volume IV of the application, Table 7-1, page 7-2) and also proposed for disposal in the expansion with the exception of MSW as referenced in the paragraph above.

Table 12: Summary of Acceptable Waste for Disposal in the Proposed Expansion

Air & Water Filtration Media	Leather Scrap Waste
Approved Landfill Utilization Wastes	Municipal Solid Waste (MSW)/MSW Bypass
Asbestos (non-friable)	Municipal Solid Waste Ash
Biomass Boiler Ash	Non-hazardous Chemical Related Products
Biomedical Incinerator Ash	Oversized Bulky Wastes
Burned Railroad Ties & Associated Ash	Pigeon Waste
Catch Basin Grit	Pulp & Paper Mill Sludge
Clean Wood Open Burn Ash	Sandblast Grit
Construction & Demolition Debris	Spoiled Foods
Dredged Spoils from Waterways	Sulfur Scrubbing Residue
Dried Paint Residue & Related Debris	Treated Biomedical Waste
Filter Press Cake & Collagen Scrapings	Urban Fill-type Soils

Fossil Fuel Boiler Ash	Virgin Petroleum Contaminated Soil & Debris
Gasoline Contaminated Soil & Debris, Surface Spill	Waste Oil Contaminated Soil & Debris (Oily Debris)
Gasoline Contaminated Soil & Debris, (UST)	Wastewater Treatment Plant Sludge
Grit Screening Waste	Water Treatment Plant Sludge
Laundry Sludge	

In addition to the above waste streams, JRL may accept individually approved wastes after obtaining the proper special waste licenses from the Department.

In accordance with 38 M.R.S. § 1310-N(11), a solid waste disposal facility owned by the State may not be licensed to accept waste that is not waste generated within the State. As set forth in 38 M.R.S. § 1310-N(11) "waste generated within the State" is defined as including "residue and bypass generated by incineration, processing and recycling facilities within the State or waste, whether generated within the State or outside of the State, if it is used for daily cover, frost protection or stability or is generated within 30 miles of the solid waste disposal facility."

During the hearing, intervenor Edward Spencer and a number of commenters at the public session voiced concerns that incinerators, and processing and recycling facilities are allowed to accept waste from out of state, and once the material is processed by these Maine facilities, the residue and bypass is then considered in-state waste that may be taken to JRL for operational use or disposal. Mr. Spencer and commenters raised concerns that waste with out-of-state point of origins would be allowed to be disposed in a state-owned landfill.

The Board finds that the definition of "waste generated within the State" applies to wastes to be disposed of in the proposed expansion. The Board has no authority to alter State statute.

The Board finds that all waste streams accepted at the facility must be characterized (i.e., tested) and accepted following the procedures in the facility's Solid Waste Characterization Plan. For actual delivery onto JRL's site, waste haulers must have the proper manifest documentation as required in the Operations Manual.

B. OBW Limit

Condition 3 of the PBD requires the applicant to comply with a Department-established OBW tonnage disposal limit, and any subsequent modification to this limit, for the proposed expansion. The PBD condition is stated in full in Finding 20 of this license.

Condition 4 of the PBD requires periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the proposed expansion on an annual basis, focusing on the nature and volume of processing residues sent to JRL for disposal. The third party audits are to be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and the applicant, with the applicant providing reimbursement for the cost of the audits. The first audit(s) is(are) to occur prior to the disposal of OBW from these processing facilities in the proposed expansion and at subsequent 2-year intervals, unless or until the Department approves their discontinuation. The PBD condition is stated in full in Finding 20 of this license.

The term OBW is not defined in regulation or statute; therefore, for the purpose of this licensing action, OBW refers to the standard industry meaning that includes large items that may be difficult to process, such as mattresses, furniture, appliances, and certain other components of demolition debris.

During the hearing, the applicant and the intervenors presenting testimony were asked to propose an OBW limit. The City of Old Town did not propose a limit. Intervenor Edward Spencer testified that he would need to perform calculations utilizing data from other waste disposal facilities and consider the population to determine a limit. Toni King, Regional Engineer for Casella Waste Systems, Inc.'s Eastern Region, initially testified that no OBW limit was necessary since circumstances related to OBW management have changed since the PBD was issued. Later in the hearing, Ms. King testified that if a limit was to be set, she suggested an OBW limit of 118,000 tons, based on the rounded 2011 amount of 99,000 tons and a 3% Consumer Price Index (CPI) annualized to current time. With respect to the amount of 60,000 tons, as listed in Finding 19, Table 6 of this license, Ms. King testified that 60,000 tons was used in the application for design purposes and was not a proposed OBW quantity limit.

In order to establish an appropriate OBW tonnage limit for the proposed expansion, the Board took into consideration the intent of the PBD condition, the expected operating conditions of the proposed expansion, currently available recycling options and potential future conditions. Table 13 below presents the actual data of OBW disposed at JRL over the last 5 years (excerpted from information submitted in the August 1, 2016 letter from Donald Meagher, NEWSME; note added for clarification).

Table 13: Historical Disposal of OBW at Juniper Ridge Landfill

Year	Generator	Tons	Generator	Tons	Generator	Tons	Generator	Tons	Total
2011	KTI Biofuels	97,584	MERC	1,129	PERC	174	-	-	98,887
2012	KTI Biofuels	62,945	MERC	1,700	PERC	44	-	-	64,689
2013	KTI Biofuels	29,873	MERC	126	PERC	24	ReEnergy	24,330	54,353
2014	-	-	-	-	-	-	ReEnergy	48,219	48,219
2015	-	-	-	-	-	-	ReEnergy	47,388	47,388

Note: From 2011 to 2012 operational efficiencies and recovery capability improvements occurred at the KTI Biofuels facility which reduced the volume of OBW sent to JRL.

The median disposal amount of OBW for the five years was determined to be 54,353 tons. The median CPI from this 5 year timeframe was determined to be 1.5% (the five-year period CPIs were 3.0% (2011), 1.7% (2012), 1.5% (2013) 0.8% (2014), and 0.7% (2015)). During hearing cross-examination, Ms. King noted that 10,000 tons of OBW from the PERC facility will likely need to be disposed of annually at JRL due to an operations change at PERC (based on current 2016 data). Utilizing this information, a calculation consisting of the median plus the estimated PERC amount multiplied by the median CPI was performed with a result of approximately 65,000 tons OBW [((54,353 + 10,000) x 1.015) = 65,000].

The Board finds that an OBW limit of 65,000 tons on an annual basis at the proposed expansion is consistent with the intent of Condition 3 of the PBD and is appropriate to meet the State's current OBW solid waste needs provided that the OBW limit is evaluated annually and adjusted as necessary based on current OBW recycling opportunities, economic factors, and other relevant factors at the time of the annual evaluation. If a limit adjustment is required, the OBW limit will be revised either through the provisions of 38 M.R.S. § 341-D(3) or a license application submitted by the applicant through the provisions of 38 M.R.S. § 344(9) and 06-096 C.M.R. chs. 2 and 400. The Board further finds that the Department will coordinate periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the proposed expansion on an annual basis consistent with Condition 4 of the PBD.

STATE OF MAINE, ACTING THROUGH	90	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N	)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

NATURAL RESOURCES PROTECTION ACT

38. NATURAL RESOURCES PROTECTION ACT AND WATER QUALITY CERTIFICATION

In accordance with the Natural Resources Protection Act, 38 M.R.S. § 480-D, the Department shall grant a permit when it finds that the applicant has demonstrated that the proposed activity meets the applicable standards including provisions pertaining to the following: existing scenic, aesthetic, recreational and navigational uses; soil erosion; harm to habitats and fisheries; interference with natural water flow; water quality; flooding; sand or gravel supply; and outstanding river segments. NRPA standards applicable to the proposed expansion are discussed in this Finding section.

To identify and assess impacts to protected natural resources, the applicant submitted a natural resources assessment for the expansion prepared by Stantec Consulting Services, Inc. (Stantec).

The natural resources assessment indicates that the proposed expansion will impact approximately 2.04 acres of primarily forested freshwater wetlands through direct filling and 0.1 acres of the critical terrestrial habitat of one significant vernal pool (SVP) due to clearing for a relocated perimeter fence and an electric line. The impacts to the NRPA regulated SVP were authorized in a permit-by-rule that was accepted by the Department on July 29, 2015 and are not further considered in this licensing proceeding. With the exception of the one vernal pool addressed in the permit-by-rule, the wetlands that will be impacted by the expansion are not Wetlands of Special Significance as defined in 06-096 C.M.R. ch. 310, § 4.

Stantec evaluated the functions and values of the impacted wetlands and prepared a Wetlands Compensation Plan which was submitted in support of its NRPA permit application. The Wetlands Compensation Plan also addresses 12 vernal pools within and adjacent to the expansion area which are regulated by the U.S. Army Corps of Engineers but which are not regulated by the Department under NRPA.

A. Existing Scenic, Aesthetic, Recreational, or Navigational Uses

Pursuant to 38 M.R.S. § 480-D(1), the applicant must demonstrate that the activity will not unreasonably interfere with the existing scenic, aesthetic, recreational or navigational uses of the protected natural resources. The Department's rule 06-096 C.M.R. ch. 315, guides the Department in its analysis of impacts to existing scenic and aesthetic uses resulting from activities in, on, over or adjacent to protected natural resources subject to NRPA.

In support of its application and in accordance with 06-096 C.M.R. ch. 315, the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the NRPA application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site including an aerial photograph. The Board visited the project site on June 23, 2016 to view the physical features of the site, including portions of the wetlands that will be filled by the expansion, and the nature of the surrounding area.

An unreasonable adverse visual impact is defined in 06-096 C.M.R. ch. 315, § 4 as one that is "expected to unreasonably interfere with the general public's visual enjoyment and appreciation of a scenic resource." The freshwater wetland impacted by the expansion does not meet the definition of a scenic resource as set forth in 06-096 C.M.R. ch. 315 § 10 in that it is not one of the listed scenic resources nor is it a wetland that is "visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities."

Finding 10(C) of this license analyzes and makes findings on the proposed expansion's compliance with the scenic character criteria under the solid waste Rules.

There is no evidence of any existing recreational or navigational uses of the impacted wetlands.

Based upon the information in the record including the applicant's scenic assessment, photographs of the site, and the site visit, the Board finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the protected natural resource.

B. Soil Erosion

In accordance with 38 M.R.S. § 480-D(2), the applicant must demonstrate that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

As discussed in Finding 14 of this license, the applicant conducted an assessment of surficial soils at the site and submitted an Erosion and Sedimentation Control Plan, dated July 2015, prepared by SME. The applicant proposes to install silt fence and other temporary erosion control measures, detention ponds and berms for each landfill cell prior to the construction of the cells. Once a cell has been

completed and filled with waste, the cell cover will be installed, and final stabilization measures will be taken. The applicant states that the design and implementation of all erosion control measures will follow the requirements of the solid waste Rules and will comply with Maine's Erosion and Sedimentation Control Best Management Practices.

Based upon the information in the record including the construction plan with phased development of landfill cells and the Erosion and Sedimentation Control Plan, the Board finds that the proposed expansion will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment, as required by 38 M.R.S. § 480-D(2).

C. Habitat Considerations

Pursuant to 38 M.R.S. § 480-D(3), the applicant must demonstrate 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.

The expansion will impact 2.04 acres of primarily forested freshwater wetland due to filling. Impacts to these wetlands and associated compensation are discussed in Finding 38(F). Additionally, the proposed expansion is located approximately 800 feet from an unnamed intermittent brook, 950 feet from an unnamed tributary to Pushaw Stream, and approximately 2,350 feet from Judkins Brook. All of these streams are located in the watershed of the Penobscot River which contains Atlantic salmon, and Judkins Brook is located within federally mapped Critical Habitat for Atlantic salmon.

Intervenor Edward Spencer's expert witness, Dr. Steve Coghlan, testified that the expansion could negatively impact Atlantic salmon, Atlantic sturgeon, and shortnose sturgeon due, in part, to the potential for stormwater and leachate to contaminate adjacent waterways and ultimately the Penobscot River.

The applicant responded that its natural resources assessment prepared by Stantec inventoried and assessed potential impacts to natural resources at the site, including rare, threatened and endangered species. Stantec concluded that the project would not have an unreasonable adverse impact on these resources due in part to the location of the expansion relative to the protected resources, the design of the expansion, and management of stormwater and leachate.

Dr. Coghlan's concerns and the applicant's response are discussed further in Finding 9 of this license which is incorporated herein.

Additionally, Mr. Spencer commented that pumping groundwater to allow for construction will have an impact on the adjacent wetlands and Atlantic salmon habitat. Many of the wetlands surrounding the site are forested wetlands and their hydrology is not due to groundwater discharge, but rather results from surface water perched on the low permeability glacial till. Furthermore, the technical design of the underdrain system is that the underdrains (sand and piping) will collect and transport groundwater by gravity, not by active pumping, over portions of three cells where the bottom of the cell will be below the groundwater table. It is expected that the seepage into the underdrain will continue, but then will eventually diminish over time.

The Maine Department of Marine Resources (DMR) reviewed the proposed project and stated that it should not cause any significant adverse impact to Atlantic salmon or other marine resources.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that, with the exception of one SVP (impacts to which were authorized in the permit-by-rule), there are no other essential or significant wildlife habitats at the project site.

Based on the setback of the expansion from the streams, the evidence supplied by the applicant in its natural resources assessment and related expert testimony, and the review comments submitted by sister agencies DMR and MDIFW, the Board finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life pursuant to 38 M.R.S. § 480-D(3).

D. Water Quality Considerations

Pursuant to 38 M.R.S. § 480-D(4), the applicant must demonstrate that the activity will not unreasonably interfere with the natural flow of any surface or subsurface waters. Pursuant to 38 M.R.S. § 480-D(5) and Section 401 of the Federal Water Pollution Control Act, the applicant must demonstrate that the activity will not violate any state water quality law, including those governing the classification of the State's waters.

As set forth above, the expansion will be located approximately 800 feet from an unnamed intermittent brook, 950 feet from an unnamed tributary to Pushaw

Stream, and approximately 2,350 feet from Judkins Brook. Information in the record shows that the nearest mapped sand and gravel aquifer is located approximately one mile east of the landfill expansion area.

As discussed more fully in Findings 12, 14, and 15 of this license, the applicant submitted a Stormwater Management Plan and an Erosion and Sedimentation Control Plan, dated July 2015, prepared by SME to manage surface water runoff and minimize impacts to surface water quality from siltation. Additionally, the landfill expansion is designed in accordance with the Department's solid waste Rules to minimize the potential for contamination of groundwater. Leachate from the expansion will be collected, stored on-site, and trucked off-site to the MFGR, LLC wastewater treatment plant in Old Town which is licensed to accept the leachate. The project was reviewed by the Department's Division of Water Quality Management which stated that the treatment plant is currently operating in compliance with its license.

The Board finds that the proposed expansion meets state water quality law, including those governing the classification of the State's waters based on the location of the expansion relative to the protected natural resources, the existing and proposed Stormwater Management System, the Erosion and Sedimentation Control Plan, and the collection and subsequent treatment of the leachate at a licensed wastewater treatment facility.

E. Flooding

In accordance with 38 M.R.S. § 480-D(6), the applicant must demonstrate that the activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

As discussed in Finding 17, the expansion will not be located in a 100-year flood plain or restrict the flow of a 100-year flood. The applicant also submitted a Stormwater Management Plan which included pre- and post-development stormwater analyses up to and including a 25-year, 24-hour storm event which demonstrate that post-development peak flows will not exceed pre-development peak flows.

Based upon the location of the expansion outside the floodplain and the Stormwater Management Plan, the Board finds that the expansion will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

F. Wetlands and Waterbodies Protection Rules

The applicant proposes to directly alter 2.04 acres of primarily forested freshwater wetlands to construct the proposed landfill expansion. Including this proposed project and the previous projects on this site, the total cumulative amount of wetland alteration at the site will be 3.35 acres.

The Department's rule at 06-096 C.M.R. ch. 310 elaborates on the NRPA criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a freshwater wetland alteration must provide an analysis of alternatives.

(1) Alternatives Analysis

The applicant provided an alternatives analysis (Volume V, Attachment 2 of the Application) which summarized the need for the project and examined alternatives to the selected project site and project design, including: development of alternative sites, a "no build" alternative, waste reduction/alternative waste management strategies, and alternative designs on-site that would impact less wetland area. The applicant stated that alternative State-owned landfill sites, such as Dolby in Millinocket and Carpenter Ridge in T2R8 NWP (currently undeveloped), and the one commercial landfill (Crossroads in Norridgewock) were not viable options because JRL was the only site which had a Public Benefit Determination. The applicant stated that the "no build/do nothing" option was not viable because existing landfills could not accommodate the anticipated waste volumes and a need for 9.35 million cubic yards of additional landfill capacity had already been documented and approved in the PBD for JRL. The alternatives analysis also considered waste management options (discussed in Findings 18 and 19 of this license). Finally, the analysis examined the placement of the expansion on the site and the design of the expansions cells in relationship to the existing waste disposal cells at JRL.

Intervenor Edward Spencer questioned whether the applicant would be required to demonstrate that the proposed expansion could not occur at another location, such as the state-owned Dolby Landfill in Millinocket or by development of the state-owned site at Carpenter Ridge. In response, the Board Chair ruled in the Third Procedural Order that since the Commissioner had issued a PBD for a 9.35 million cubic yard expansion

at JRL, consideration of alternative sites and the no-build alternative were not issues to be addressed in the current licensing proceeding. The Third Procedural Order states:

> The Applicant has received a Public Benefit Determination for the proposed expansion at the Juniper Ridge site and that determination was upheld by the Board on appeal. As stated in the Second Procedural Order, statute prohibits the Board from revisiting the Public Benefit Determination in this licensing proceeding (38 M.R.S. § 1310-N(3-A)(B)). Therefore, the Board will not allow testimony or cross-examination by the parties regarding the need for the proposed 9.35 million cubic yard expansion. Additionally, testimony that the State should seek to develop other landfill sites is not relevant to the current licensing proceeding. However, to the extent the Public Benefit Determination imposes conditions on any license that may be issued in this proceeding, including limits on the types and volumes of waste, those limits are arguably relevant and may be addressed in testimony and cross-examination (Third Procedural Order).

The Board finds that the amount of capacity needed and the general location of disposal were settled with the Commissioner's issuance of the PBD, leaving only the question of whether or not the proposed project could be located on the subject parcel and designed to avoid and minimize wetland impacts.

(2) Avoidance of On-Site Impacts

As discussed above, the applicant submitted an alternatives analysis for the proposed project dated July 2015. The applicant considered two other on-site designs for the JRL expansion, a 70-acre expansion which would have resulted in 4.5 acres of wetland impact and a 60-acre expansion which would have resulted in 3.4 acres of wetland impact. The design submitted for approval and which is the subject of this license will expand the solid waste footprint at JRL by approximately 54 acres and will directly impact 2.04 acres of freshwater wetlands. In its application, the applicant stated that it has located all roads, stormwater ponds, administrative buildings, and other infrastructure to avoid the greatest amount of wetland impacts. According to the applicant, in order to meet

the stated project purpose, some impacts to freshwater wetlands are unavoidable.

(3) Minimization of On-Site Impacts

In accordance with 06-096 C.M.R. ch. 310, § 5(B), the amount of freshwater wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project. The applicant's design of the expansion utilizes upland areas for a majority of the expansion. The applicant proposes to build cells vertically, thereby minimizing the horizontal footprint and associated wetland impacts. Finally, additional capacity is obtained by utilizing the "in-fill" areas between existing landfill cells and the proposed expansion cells. The Board finds that the applicant's design minimizes impacts to wetlands to the greatest extent practicable.

(4) Compensation

In accordance with 06-096 C.M.R. ch. 310, § 5(C), compensation is the off-setting of a lost wetland function with a function of equal or greater value. The goal of compensation is to achieve no net loss of freshwater wetland functions and values. The amount of compensation required to replace lost functions depends on a number of factors including: the size of the alteration activity, the functions of the wetlands to be altered, the type of compensation to be used, and the characteristics of the compensation site. When wetland preservation is the type of compensation proposed, Department rules generally require a ratio of 8:1 (area preserved to area impacted). As stated previously, the applicant's Wetlands Compensation Plan was designed to address both NRPA and Corps requirements.

The applicant proposes to preserve a 266-acre area on the same parcel as the landfill expansion to address NRPA compensation requirements as well as Corps compensation requirements. The proposed preservation area is adjacent to an existing 16-acre preservation area along Judkins Brook. The functions and values of the freshwater wetlands on the parcel were evaluated by the applicant using the U. S. Army Corps of Engineers Highway Methodology (September, 1999). The functions and values of the freshwater wetlands proposed to be impacted by the project include flood flow alteration, nutrient removal, sediment and toxicant removal, and wildlife habitat. There are no SVPs (other than the one which was the

subject of the permit-by-rule) or other significant wildlife habitats in the wetlands to be impacted.

The preservation area contains 57 acres of freshwater wetland, 25 vernal pools, and upland habitat. Three of the vernal pools are SVPs and eight others are highly functioning vernal pools that met the biological criteria to be considered an SVP, but did not meet all of the necessary criteria. The functions and values of the preservation area include sediment and toxicant removal, flood flow alteration, nutrient removal, and wildlife habitat. Bryan Emerson, professional wetland scientist and witness for the applicant, testified that the applicant has proposed compensation in excess of that required by both NRPA and the Corps. NRPA requires approximately 16.3 acres of wetland compensation for the 2.04 acres of direct impact to wetlands. The Corps compensation requirements differ from those of the Department and require a greater ratio of acres preserved to acre impacted.

The applicant proposes to preserve the area through the use of a Declaration of Covenants and Restrictions (Declaration) and submitted proposed language that meets Department standards. The City of Old Town has agreed to be the Third Party under the Declaration, with third party rights of administration and enforcement. Prior to the start of construction, the applicant must record the Declaration in the Registry of Deeds and must submit a copy of the recorded deed to the Department's Bureau of Land Resources within 60 days of recording.

Based on the Public Benefit Determination, the applicant's alternatives analysis, the project's design, and the land preservation proposal, the Board finds that the applicant has avoided and minimized freshwater wetland impacts to the greatest extent practicable, and has provided compensation for wetland impacts in accordance with Department rules and in exceedance of NRPA requirements. The Board further finds that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project provided that, prior to construction, the applicant records the Declaration of Covenants and Restrictions and submits a copy to the Department's Bureau of Land Resources as described above.

BASED on the above Findings of Fact, and subject to the Conditions listed below, the Board makes the following CONCLUSIONS pursuant to 38 M.R.S. §§ 1310 to 1319-Y, 38 M.R.S. § 2101, and the applicable Department Rules:

STATE OF MAINE, ACTING THROUGH	99	SOLID WASTE LICENSE,
THE BUREAU OF GENERAL SERVICES	)	NATURAL RESOURCES
OLD TOWN, PENOBSCOT COUNTY, ME	)	PROTECTION ACT, AND
JUNIPER RIDGE LANDFILL EXPANSION	)	WATER QUALITY CERTIFICATION
#S-020700-WD-BI-N and #L-19015-TG-D-N	)	
(APPROVAL WITH CONDITIONS)	)	NEW LICENSE

1. The applicant has submitted evidence that the proposed expansion will not pollute any water of the State, contaminate the ambient air, constitute a hazard to health or welfare, or create a nuisance pursuant to 38 M.R.S. § 1310-N(1)(A) and 06-096 C.M.R. ch. 400, § 3(D).

2. The applicant has complied with the public and local participation and notification requirements pursuant to 38 M.R.S. §§ 1310-S(1) and 1310-N(12) and 06-096 C.M.R. ch. 2, §§ 10, 13, and 14.

3. The applicant has demonstrated sufficient title, right, or interest in all of the property which is proposed for development or use pursuant to 06-096 C.M.R. ch. 400, § 4(A).

4. The applicant has provided a sufficient demonstration of financial ability and assurance and technical ability for the permitting, design, construction, operation, closure, and post-closure care of the proposed landfill expansion pursuant to 38 M.R.S. §§ 1310-N (2-F)(A) and § 1310-Y, and 06-096 C.M.R. ch. 400, §§ 4(B)(1) and 4(C)(1), provided NEWSME submits the appropriate financial assurance package updates in accordance with the Rules on an annual basis.

5. The applicant has provided a civil/criminal disclosure statement demonstrating that the entities are not in violation of environmental or criminal law pursuant to 38 M.R.S. § 1310-N(7) and 06-096 C.M.R. ch. 400, § 4(C)(1)(b) and § 12.

6. The applicant has provided sufficient provisions for safe and uncongested traffic movement of all types into, out of, and within the proposed landfill expansion pursuant to 38 M.R.S. § 1310-N (2-F)(B) and 06-096 C.M.R. ch. 400, § 4(D)(1); provided the facility continues to encourage waste haulers to use I-95 as a primary hauling route.

7. The applicant has provided sufficient provisions for fitting the proposed landfill expansion harmoniously into the existing natural environment; has provided buffer strips of sufficient size and quality to adequately protect aquatic and wildlife habitat and the natural environment; and will not unreasonably adversely affect protected natural resources and rare, threatened and endangered plant and animal species pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(E)(1).

8. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect existing uses and scenic character, including bird hazard to aircraft, historical sites, established public viewing areas, excessive noise at the property boundary or at any protected location, or existing uses of neighboring property pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(F)(1); provided equipment use is restricted in the operating hour of 6:00 am to 7:00 am to only equipment

with a combined sound level of 77 dBA at 50 feet or less if within 60 feet of the western solid waste boundary (approximately 480 feet from the western property line).

9. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect air quality pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(G)(1).

10. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect water quality or cause an unreasonable threat to the quality of a classified body of surface water pursuant to 38 M.R.S. §§ 1310-N(2-F)(C) and 1310-N(1-A) and 06-096 C.M.R. ch. 400, § 4(H)(1).

11. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably adversely affect other natural resources in the municipality or in neighboring municipalities pursuant to 38 M.R.S. § 1310-N(2-F)(C) and 06-096 C.M.R. ch. 400, § 4(I)(1).

12. The applicant has sufficiently demonstrated that the proposed expansion will not: overlie any significant sand and gravel aquifers; pose an unreasonable threat to the quality of a significant sand and gravel aquifer; pose an unreasonable threat to the quality of an underlying fractured bedrock aquifer, or pose an unreasonable risk that a discharge to a significant ground water aquifer will occur, pursuant to 38 M.R.S. §§ 1310-N(2-A) and 1310-N(2-F)(E), and 06-096 C.M.R. ch. 400, § 4(K)(1).

13. The applicant has made sufficient provisions for adequate utilities, including adequate water supplies and appropriate sanitary wastewater disposal, and sufficiently demonstrated that the facility will not have an unreasonable adverse effect on existing or proposed utilities in the municipality or area served by those utilities, pursuant to 38 M.R.S. § 1310-N(2-F)(F) and 06-096 C.M.R. ch. 400, § 4(L)(1).

14. The applicant has sufficiently demonstrated that the proposed expansion will be located on soils types suitable to the nature of the undertaking and the facility will not cause unreasonable erosion of soil or sediment pursuant to 38 M.R.S. §§ 1310-N(2-F)(D) and 1310-N(1-A)(A) and 06-096 C.M.R. ch. 400, § (4)(J)(1).

15. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably cause or increase flooding on-site or on adjacent properties nor create an unreasonable flood hazard to a structure pursuant to 38 M.R.S. §§ 1310-N(2-F)(G) and 06-096 C.M.R. ch. 400, § 4(M)(1).

16. The applicant has sufficiently demonstrated that the purpose and practices for the proposed expansion are consistent with the solid waste management hierarchy pursuant

to 38 M.R.S. §§ 2101 and 1310-N(1)(D) and 06-096 C.M.R. ch. 400, § 4(N)(1), provided that a summary of continued efforts to meet the hierarchy and relevant supporting data are submitted annually in the Annual Report.

17. The applicant has sufficiently demonstrated that the proposed expansion will accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those in the statute and other provisions of State law; the volume of the waste and the risks related to its handling and disposal have been reduced to the maximum practical extent by recycling and source reduction prior to being landfilled or incinerated; and the applicant has shown consistency with the recycling provisions of the State plan pursuant to 38 M.R.S. § 1310-N(5-A) and 06-096 C.M.R. ch. 400, § 6(B).

18. The applicant is exempt from the liability insurance requirements of 06-096 C.M.R. ch. 400, § 10.

19. The applicant has clearly and convincingly demonstrated the technical equivalency of placing a barrier soil layer in a 12-inch lift thickness compared to the required 9-inch lift thickness, provided that a test pad program is undertaken during construction of each cell of the proposed expansion as described in the application and Finding 28(L) of this license to demonstrate that the required performance criteria have been met and the results are submitted to the Department at least 7 days prior to full-scale construction. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness will remain 9 inches.

20. The applicant has completed a site assessment report that adequately supports the design of the proposed expansion and will conduct water quality monitoring in accordance with the Rules.

21. The applicant has submitted a quality assurance plan and construction contract bid documents including drawings, technical specifications, and contract administrative documents for Cell 11 of the proposed expansion in accordance with 06-096 C.M.R. ch. 401, § 2 (I) and (J).

22. The applicant has proposed an expansion design meeting the requirements of the Rules, provided that, an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents, a quality assurance plan and erosion and sedimentation control and stormwater management plans are submitted to the Department for review and approval at least four months prior to the commencement of construction activities within each subsequent cell (Cells 12 through 16) of the proposed expansion; and the applicant maintains a valid leachate disposal contract(s) with licensed waste water treatment facility(ies) for the treatment and disposal of leachate from the proposed expansion.

23. The applicant has submitted a phased final cover system meeting the requirements of the Rules, provided that an engineering report, construction contract bid documents, including drawings, technical specifications, and contract administrative documents, and a quality assurance plan and erosion and sedimentation control and stormwater management plans are submitted to the Department for review and approval at least four months prior to the proposed application of a phased final cover system.

24. The applicant has submitted an Operations Manual that meets the operating requirements of 06-096 C.M.R. ch. 401, § 2(L), provided that the Operations Manual is reviewed annually and updated as necessary with the Annual Report.

25. The PBD partial approval issued by the Commissioner in 2012 requires that an annual limit be established in this license on the tonnage of OBW that may be disposed of in the proposed expansion, with future review and potential subsequent modification to the OBW limit, and established provisions for the independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the proposed expansion for disposal on an annual basis.

BASED on the above Findings of Fact, and subject to the Conditions listed below, the Board makes the following CONCLUSIONS pursuant to 38 M.R.S. §§ 480-A through 480-JJ, Section 401 of the Federal Water Pollution Control Act, and the applicable Department rules:

26. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses pursuant to pursuant to 38 M.R.S. § 480-D(1).

27. The applicant has sufficiently demonstrated that the proposed expansion will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment pursuant to 38 M.R.S. § 480-D(2).

28. The applicant has sufficiently demonstrated that the proposed expansion 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 pursuant to 38 M.R.S. § 480-D(3), provided the applicant records the Declaration of Covenants and Restrictions as described in Finding 38(F) of this license above.

29. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably interfere with the natural flow of any surface or subsurface waters pursuant to 38 M.R.S. § 480-D(4).

30. The applicant has sufficiently demonstrated that the proposed expansion will not violate any state water quality law, including those governing the classification of the State's waters pursuant to 38 M.R.S. § 480-D(5) and Section 401 of the Federal Water Pollution Control Act.

31. The applicant has sufficiently demonstrated that the proposed expansion will not unreasonably cause or increase the flooding of the alteration area or adjacent properties pursuant to 38 M.R.S. § 480-D(6).

THEREFORE, the Board APPROVES the noted applications of the applicant, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. The Standard Conditions of Approval for Solid Waste and NRPA, copies attached.

2. Severability. The invalidity or unenforceability of any provisions, or part thereof, of this license shall not affect the remainder of the provision or any other provision. This license shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

3. Soil Erosion. The applicant shall take all necessary actions to ensure that its activities or those of its agents do not result in unnecessary or noticeable erosion of soils on site during construction and operation of the landfill expansion.

4. Financial Assurance. The applicant shall submit the appropriate financial assurance package updates in accordance with the Rules on an annual basis, including the most recent surety bond documentation.

5. New Cell Construction Submittals. At least 4 months prior to new cell construction and related infrastructure, the applicant must submit the detailed design package for the Department's review and approval. The submittal shall contain the information required by the Rules, including, but not limited to an engineering report, construction contract bid documents consisting of technical specifications, drawings and contract administrative documents, a quality assurance plan and erosion and sedimentation control and stormwater management plans. If the Rules applicable to any aspect of the design and construction of the landfill expansion and its ancillary structures change during the development of the proposed expansion, the applicant shall address the new requirements in subsequent pertinent submittals.

6. Equipment Use - Noise Limitation. From the hour of 6:00 am to 7:00 am, the applicant shall limit equipment use within 60 feet of the western solid waste boundary

(approximately 480 feet from the western property line) to equipment with a combined sound level of 77 dBA at 50 feet or less.

7. Hauler Policy. The applicant shall continue its policy of encouraging hauling trucks to utilize I-95 to reduce use of the Bennoch Road (Route 16).

8. Leachate Disposal Contracts. In accordance with the Rules, the applicant shall maintain valid leachate disposal contract(s) with licensed waste water treatment facility(ies) for the treatment and disposal of leachate from the proposed expansion. A contingency plan for leachate disposal limitations at contracted treatment facilities shall be in place, including a letter of intent or service contracts for such proposed contingencies. Subsequent updates to the leachate disposal documentation shall be submitted to the Department to demonstrate compliance with the leachate management requirements of the Rules.

9. Liner Action Plan (LAP). The LAP shall initially consist of two-tiered action leakage rates of 20 and 100 gallons per acre per day, requiring notification and follow-up interactions with the Department to determine the appropriate response action. Specific conductance shall be utilized as the secondary approach for determining additional response action. As the proposed expansion is developed and upon submittal of actual field data, the applicant may request revisions to the LAP through Operations Manual updates requiring Department approval through the Annual Report.

10. Acceptable Waste

A. In the landfill expansion, the applicant may accept the same non-hazardous waste generated within the State allowed in the existing landfill and under the previously issued waste stream licenses for the facility, with the exception of MSW.

B. The applicant is prohibited from accepting MSW in the landfill expansion. MSW bypass may be accepted in accordance with Condition 11 of this license.

C. OBW disposal at the proposed landfill expansion shall be limited pursuant to Condition 12 of this license.

D. Prior to accepting any waste for disposal not listed or referenced in the application and previously licensed, the applicant shall submit an application for the new waste to the Department for review and approval.

E. Allowable wastes shall be accepted at the landfill expansion in accordance with the facility's Solid Waste Characterization Plan and regulatory and statutory requirements.

11. MSW Bypass

A. The applicant shall not dispose of any unprocessed MSW from any source other than MSW bypass from MSW incinerators located in Maine.

B. The applicant shall not accept MSW bypass from an incinerator without verifiable authorization from the owner/operator of an incinerator that a MSW bypass event has been called.

C. The applicant shall notify the Department within 24 hours if a MSW bypass event continues from a particular incinerator for a period exceeding 2 days, and provide the reason for the MSW bypass event.

12. OBW

A. The applicant shall be restricted to an OBW disposal limit of 65,000 tons on an annual basis in the proposed expansion.

B. No OBW from the CDD processing operations subject to audit shall be disposed in the proposed expansion prior to the first independent third party audit of CDD processing operations conducted as set forth in Condition 12(D) of this license, unless otherwise approved by the Department.

C. The OBW limit shall be evaluated annually by the Department and modified as needed based on current OBW recycling opportunities, economic factors, and other relevant factors. Modification of the OBW limit will be accomplished either through a license modification process pursuant to 38 M.R.S. § 341-D(3) or a license application submitted by the applicant pursuant to 38 M.R.S. § 344(9) and 06-096 C.M.R. chs. 2 and 400.

D. NEWSME shall reimburse the Department for periodic independent third party audits of CDD processing operations that are anticipated to transport more than 10,000 tons of OBW to the expansion for disposal on an annual basis. The audits shall be conducted to verify the results of the demonstrations required under the provisions of *Processing Facilities,* 06-096 C.M.R. ch. 409, § 2(C), focused on the nature and volume of processing residues being sent to the JRL expansion for disposal. The independent third party audits shall be conducted by a qualified consultant selected by the Department in consultation with the affected CDD processing facilities and NEWSME. The first such audit(s) shall occur prior to the disposal of OBW from these processing facilities to the proposed expansion,

unless otherwise approved by the Department. Audits will be conducted at 2-year intervals, unless or until the Department approves their discontinuation.

13. Monthly Activity Reports. Monthly activity reports shall be provided to the Department and include the quantities of the various waste types, and their sources, delivered to the proposed expansion.

14. Annual Reports

In addition to the specific requirements set forth in the Rules, the applicant shall include the following in the facility's annual reports submitted to the Department:

A. The amount of unprocessed MSW bypass received at the proposed expansion from each of the approved sources.

B. A summary of the steps taken by the facility in the reporting year to continue to meet the hierarchy, including relevant metrics to evaluate effectiveness (i.e., tons of material diverted from landfill disposal by Casella companies; tons of materials reused, reduced, recycled at the landfill); a description of ongoing efforts to increase the effectiveness of these programs/efforts; and any additional pertinent hierarchy-related information.

C. A geotechnical report, including a summary of the geotechnical inspections; the annual review of waste types, quantities, and location of waste placement; the evaluation of pore pressure data; and the review of site aerial topographic surveys.

15. EMP - Ground Water Quality and Flow. The applicant shall provide for an annual assessment of ground water quality and flow directions as the proposed expansion is developed through updates to the EMP which shall occur on an ongoing basis and in accordance with Department recommendations.

16. Construction Requirements. The applicant shall meet the construction requirements of 06-096 C.M.R. ch. 401, § 3 for the proposed expansion, including, but not limited to: implementing the Quality Assurance Plan; meeting liner installation requirements; receiving approval from the Department for changes to the approved plans and specifications; and documenting and reporting appropriately, including submittal of a final construction report. At least 7 days prior to full scale barrier soil construction, the applicant shall submit the results of a test pad to demonstrate the technical equivalency of placing barrier soil in a 12-inch lift thickness compared to a 9-inch lift thickness. If the applicant cannot demonstrate technical equivalency, the maximum barrier soil lift thickness shall remain 9 inches.

STATE OF MAINE, ACTING THROUGH THE BUREAU OF GENERAL SERVICES OLD TOWN, PENOBSCOT COUNTY, ME JUNIPER RIDGE LANDFILL EXPANSION #S-020700-WD-BI-N and #L-19015-TG-D-N (APPROVAL WITH CONDITIONS)	107)))))	SOLID WASTE LICENSE, NATURAL RESOURCES PROTECTION ACT, AND WATER QUALITY CERTIFICATION NEW LICENSE

17. Operating Requirements. The applicant shall meet the operating requirements of 06-096 C.M.R. ch. 401, § 4 for the landfill expansion, including, but not limited to: reviewing and updating the Operations Manual as applicable; training and certifying key personnel; operating the facility per the Rule requirements; and submitting an Annual Report and associated fee.

18. Federal Requirements - LFG Collection and Control System. The applicant shall meet the applicable requirements of 40 CFR Part 60, Subpart XXX for the LFG collection and control system for air emissions minimization and odor control.

19. Phased Final Cover. The applicant shall submit the engineering report, construction contract bid documents, consisting of technical specifications, drawings, and contract administrative documents, a quality assurance plan and erosion and sedimentation control and stormwater management plans for the placement of phased final cover to the Department for its review and approval at least 4 months prior to each proposed application of final cover.

20. Declaration of Covenants and Restrictions. Prior to the start of construction, the applicant shall record the Declaration of Covenants and Restrictions for the preservation area in the Registry of Deeds and shall submit a copy of the recorded deed to the Department's Bureau of Land Resources within 60 days of recording.

21. The Findings of Fact, Conclusions and Conditions remain as approved in Department license #L-19015-31-A-M dated August 24, 1995, and subsequent Licenses to date.

DONE AND DATED AT AUGUSTA, MAINE THIS 1st DAY OF June, 2017.

BOARD OF ENVIRONMENTAL PROTECTION

BY: _____
James W. Parker, Board Chair and Presiding Officer

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of initial receipt of application: July 21, 2015
Date of application acceptance: August 7, 2016 (solid waste); July 31, 2016 (NRPA)

Date filed with the Board of Environmental Protection:

Appendix A

STANDARD CONDITIONS
TO ALL SOLID WASTE LANDFILL LICENSES

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL. VIOLATIONS OF THE CONDITIONS UNDER WHICH A LICENSE IS ISSUED SHALL CONSTITUTE A VIOLATION OF THAT LICENSE AGAINST WHICH ENFORCEMENT ACTION MAY BE TAKEN, INCLUDING REVOCATION.

1. **Approval of Variations from Plans.** The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed by the license. Any consequential variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

2. **Compliance with All Applicable Laws.** The licensee shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

3. **Compliance with All Terms and Conditions of Approval.** The licensee shall submit all reports and information requested by the Department demonstrating that the licensee has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.

4. **Transfer of License.** The licensee may not transfer the solid waste facility license or any portion thereof without approval of the Department.

5. **Initiation of Construction or Development Within Two Years.** If the construction or operation of the solid waste facility is not begun within two years of issuance of within 2 years after any administrative and judicial appeals have been resolved, the license lapses and the licensee must reapply to the Department for a new license unless otherwise approved by the Department.

6. **Approval Included in Contract Bids.** A copy of the approval must be included in or attached to all contract bid specifications for the solid waste facility.

7. **Approval Shown to Contractors.** Contractors must be shown the license by the licensee before commencing work on the solid waste facility.

8. **Background of key individuals.** A licensee may not knowingly hire as an officer, director or key solid waste facility employee, or knowingly acquire an equity interest or debt interest in, any person convicted of a felony or found to have violated a State or federal environmental law or rule without first obtaining the approval of the Department.

9. **Fees.** The licensee must comply with annual license and annual reporting fee requirements of the Department's rules.

10. **Recycling and Source Reduction Determination for Solid Waste Disposal Facilities.** This condition does not apply to the expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling.

The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by 38 M.R.S. Ch. 13.

11. **Deed Requirements for Solid Waste Disposal Facilities.** Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following must be expressly stated in the deed:

A. The type of facility located on the lot and the dates of its establishment and closure.

B. A description of the location and the composition, extent, and depth of the waste deposited.

C. The disposal location coordinates of asbestos wastes must be identified.

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S.A. § 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

APPENDIX B

COMPLIANCE SELF-AUDIT CHECKLIST

SME
SEVEE & MAHER
ENGINEERS

JUNIPER RIDGE LANDFILL
COMPLIANCE SELF-AUDIT EVALUATION
REPORT YEAR

This Compliance Self-Audit Evaluation is to be used to perform an annual audit of landfill operations as required by of Chapter 401, Section 4.D. (1) (b) of the State of Maine Solid Waste Management Rules. The purpose of this audit is to verify general compliance with the site operations manual, licenses and regulatory requirements. Qualified facility personnel performed the audit.

Facility Name	Juniper Ridge Landfill
Location	Old Town, Maine
Audit for Calendar Year	
Compliance Auditor	
Title	
Signature of Auditor	

GENERAL EVALUATION

Are active facility licenses kept on file at the facility?

Do the facility licenses have special license conditions relating to landfill operations?
What pending licenses or approvals were sought from the MEDEP at the time of this audit.

Date of payment of MEDEP Annual License Fee.

Date of submittal of previous MEDEP Annual Report & Fee.

Does the facility have a Host Community Agreement in-place and on file?

Does the facility have a current liability insurance policy in-place and on file at the facility?

Has the facility submitted an executed financial assurance instrument for closure and post closure care along with updated closure/post closure cost estimates to the MEDEP?

Last date a certified copy of the facility Operations Manual was updated.

MEDEP approval date of last updated Operations Manual.

Number and locations of the Certified Copies of the Operations Manual.

Operational personnel who received landfill training during audit year.

Are only solid wastes or special wastes as allowed in the landfill's current license accepted and are those wastes handled as described in the landfill's Operations Manual?

Are solid wastes and special wastes permitted for acceptance characterized on an ongoing basis in conformance with the characterization plan approved by the Department?

Is access to the facility controlled so that the public is not exposed to potential health and safety hazards and access is only permitted when an attendant is on duty?

Are the hours of operation and other limitations for access and use prominently posted at the entrance

to the landfill?

Are the access roads within the facility maintained?

Are any access roads into the active cell of the landfill constructed and maintained to prevent migration of leachate outside of the cell.

Is a road maintenance program appropriately implemented to prevent the accumulation of dust, mud, or wastes from the facility access, public, or private roads?

Are the appropriate signs posted or other approved means implemented to indicate clearly where solid waste is to be unloaded and the location of any separate handling areas?

Are the setbacks and buffer strips approved by the Department being maintained?

Are the cell development plans up-to-date and submitted with the annual report?

Is compaction performed at least once per operating day and more often as necessary unless otherwise approved by the Department?

Has cover been placed as outlined in the operations manual?

Have stormwater management and erosion control measures been implemented as outlined in the operations manual?

Are leachate management systems including collection, transport, storage, and pumping systems maintained in accordance with the site Operations Manual?

Are landfill gas systems installed and maintained as outlined in the Operations Manual?

Is a methane gas-monitoring program implemented to verify the concentration of explosive gases generated by the landfill, and if an exceedance is triggered, appropriate steps are taken to protect human health and the Department notified of the occurrence and the protective steps that were taken?

Are routine inspections of the landfill facilities performed as outlined in the Operations Manual, and are records of the inspections kept on file at the facility?

Does the facility have a fire protection plan in-place and is it outlined in the operations manual?

Does the facility have a hazardous and special waste handling and exclusion plan and is it implemented at the facility?

Does the facility have a litter control plan and is it implemented as outlined in the Operations Manual?

Has the Environmental Monitoring Program been implemented as outlined in the Operations Manual?

Environmental sampling events being conducted as required and results reported to the MEDEP.

Are waste staging and storage areas maintained as outlined in the Operations Manual?
Is a vector control program in-place and implemented as outlined in the operations manual?

Does the facility accept asbestos wastes?

APPENDIX C

OPERATOR TRAINING PROGRAM OUTLINE

SME
SEVEE & MAHER
ENGINEERS

CASELLA RESOURCE SOLUTIONS 2025 ANNUAL SAFETY TRAINING SCHEDULE

	Landfill / GTE	Complete	Not Complete	Mechanics	Administrative	Go Canvas training list	Go Canvas other training
January	Fire Precautions / Fire Extinguisher Truck Fire Procedures Landfill Equipment Procedures Landfill Fire Procedures			Fire Precautions Fire Extinguisher Truck Fire Procedures Safe Backing	Fire Precautions Fire Extinguisher	Fire Training	
February	Forklift / Skid-Steer Safety Forklift Certification/Observation Pushing Waste Landfill Driver Safety			Forklift / Skid-Steer Safety Forklift Certification/Observation Machine Guarding		Resp training for LF Asbestos response	Hearing protection
March	Emergency Response Landfill Emergency Action Plan Spill Response Sloping and Grading			Emergency Response Review Site Action Plan Spill Response Lift / Platform Safety	Emergency Response Review Site Action Plan	ERP	
April	Confined Space Awareness Mounting and Dismounting Lock-Out / Tag-Out LOTO Periodic Test/Certification Towing Stuck Vehicles			Mounting and Dismounting Lock-Out / Tag-Out Awareness Procedures for Mechanics LOTO Periodic Test/Certification		Confined space training. Lockout tag out	New employee training
May	Heat Stress Personal Protective Equipment Safe Lifting Heavy Equipment and Landfill Vehicle Parking			Heat Stress Personal Protective Equipment Safe Lifting Portable Ladder Safety	Safe Lifting	PPE & proper lifting	Contractor training
June	Cell Phone Policy Accident & Injury Reporting Dust Control			Cell Phone Policy Accident & Injury Reporting	Accident & Injury Reporting		I-9 retention sheets
July	Landfill Bird Control Program Landfill Communications Offloading Trucks at Landfills			Safe Backing Backing Observation Certificate Smith System			OSHA Log updates
August	Stress Management Workplace Violence Heavy Equipment Blocking/Cribbing			Stress Management Workplace Violence Tipping Floor Vehicle	Stress Management Workplace		
September	Equipment Inspection Maintenance and Cleaning of Equipment			Equipment Inspection Maintenance and Cleaning of Equipment			
October	Cold Stress Pedestrian Safety Awareness Landfill Walking Safety Pinch Point			Cold Stress Pedestrian Safety Awareness Power			
November	Hazard Communication Slips, Trips, and Falls Hydrogen Sulfide (H2S) Safety Gas Extraction / HDPE Fusing /			Hazard Communication Slips, Trips, and Falls Flammable Liquids	Slips, Trips, and Falls		
December	Blood Borne Pathogens Wheel Berms and Stops Excavation and Trenching			Blood Borne Pathogens Hearing Conservation Fall Protection			

CASELLA WASTE SYSTEMS 2025 ANNUAL TRAINING SCHEDULE

Safety / Compliance

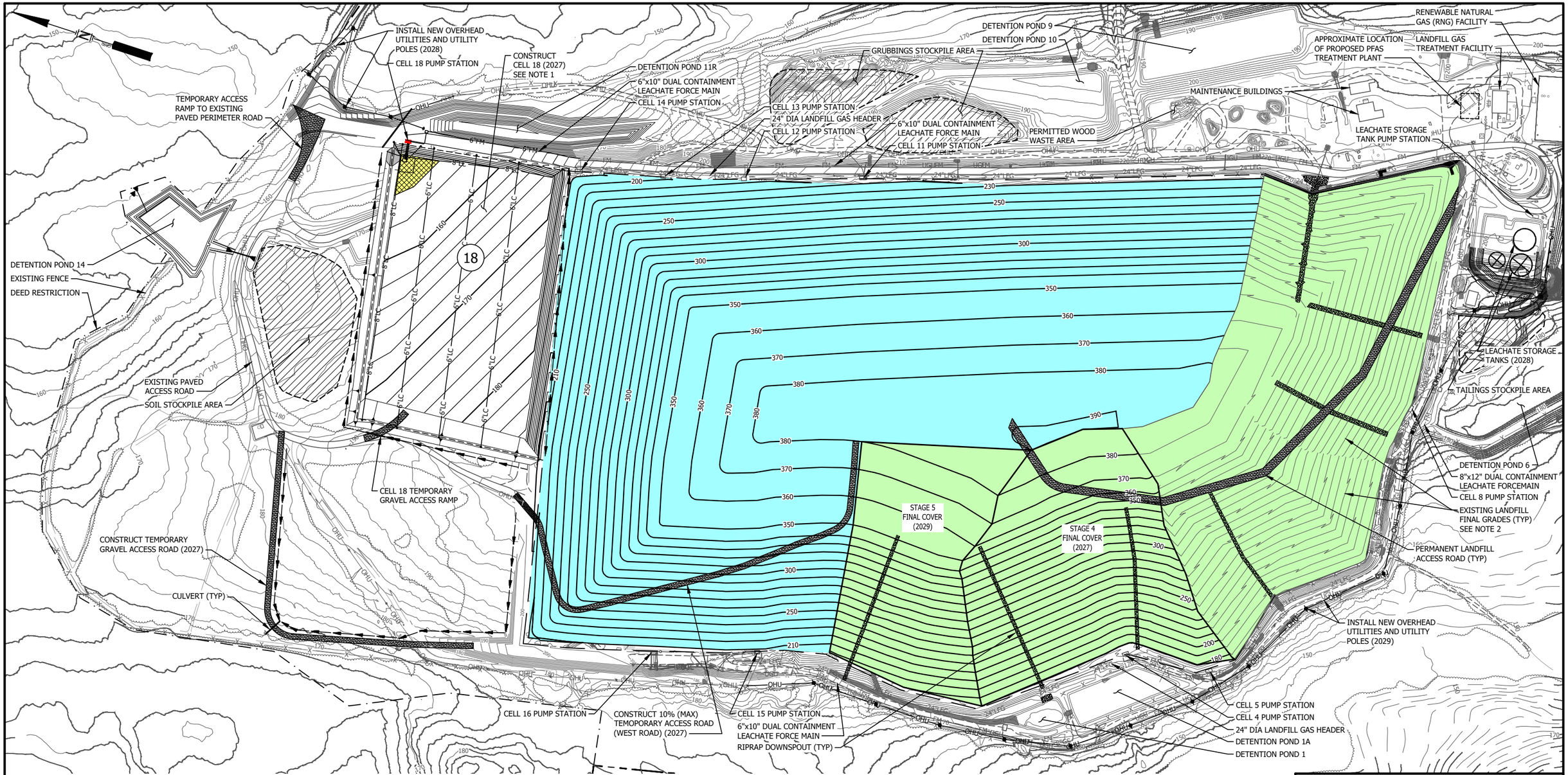
The following schedule is provided as a guideline for completion of all required annual review and updates.

	Landfill / GTE	MRF / Transfer Station		Mechanics	Administrative
January	Respirator Clearance & Audiograms Are Due (Where Appropriate) / **Complete & Post 300A**	Respirator Clearance & Audiograms Are Due (Where Appropriate) / **Complete & Post 300A by Feb. 1st**		Respirator Clearance & Audiograms Are Due (Where Appropriate) / **Complete & Post 300A by Feb. 1st**	Respirator Clearance & Audiograms Are Due (Where Appropriate) / **Complete & Post 300A by**
February	**Post 300A by Feb. 1st/*ONLINE REPORTING TO OSHA BY MARCH***	**Post 300A by Feb. 1st/ONLINE REPORTING TO OSHA BY MARCH 2nd**		**Post 300A by Feb. 1st/ONLINE REPORTING TO OSHA BY MARCH 2nd**	**Post 300A by Feb. 1st/ONLINE REPORTING TO OSHA BY MARCH 2nd**
March	Crane, Hoisting & Lifting Equipment Inspections	Hoisting & Lifting Equipment Inspections		Hoisting & Lifting Equipment Inspections	
April	Fire Detection & Suppression Systems Inspection (Contact	Fire Detection & Suppression Systems Inspection (Contact Vendor)		Fire Detection & Suppression Systems Inspection (Contact Vendor)	Fire Detection & Suppression Systems Inspection (Contact Vendor)
May	Remove & File 300A Posting	Remove & File 300A Posting		Remove & File 300A Posting	Remove & File 300A Posting
June	Process MVRs / Weighmaster	Process MVRs / Weighmaster Certificates		Process MVRs	Process MVRs
July	Hydration on Hot Days	Hydration on Hot Days		Hydration on Hot Days	Hydration on Hot Days
August	Back to School / / Hydration on Hot Days	Back to School / / Hydration on Hot Days		Back to School / / Hydration on Hot Days	Back to School / / Hydration on Hot Days
September	Check Tires	Check Tires		Check Tires	Check Tires
October	Purchase Cold Weather PPE & Winterization	Purchase Cold Weather PPE & Winterization Equipment		Purchase Cold Weather PPE & Winterization Equipment	Purchase Cold Weather PPE & Winterization
November	Flu Shots / Deer & Moose Avoidance	Flu Shots / Deer & Moose Avoidance		Flu Shots / Deer & Moose Avoidance	Flu Shots / Deer & Moose Avoidance
December	Process MVRs	Process MVRs		Process MVRs	Process MVRs

APPENDIX D

CELL DEVELOPMENT PLANS

SME
SEVEE & MAHER
ENGINEERS



CAPACITY	2,300,000 CUBIC YARDS
OPEN CELL AREA	15.3 ACRES
OPEN SLOPE AREA	0 ACRES
INTERMEDIATE COVER	74.8 ACRES
FINAL COVER	47.2 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. GRADES SHOWN IN CELL REPRESENT CELL BASE GRADES PRIOR TO WASTE FILLING.
2. FINAL GRADES REPRESENT TOP OF WASTE.

175 0 350

FIGURE 3-1
CELL 18 INITIAL CONDITIONS (2028-2029)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELL-DEV LMN: C18-INITIAL CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

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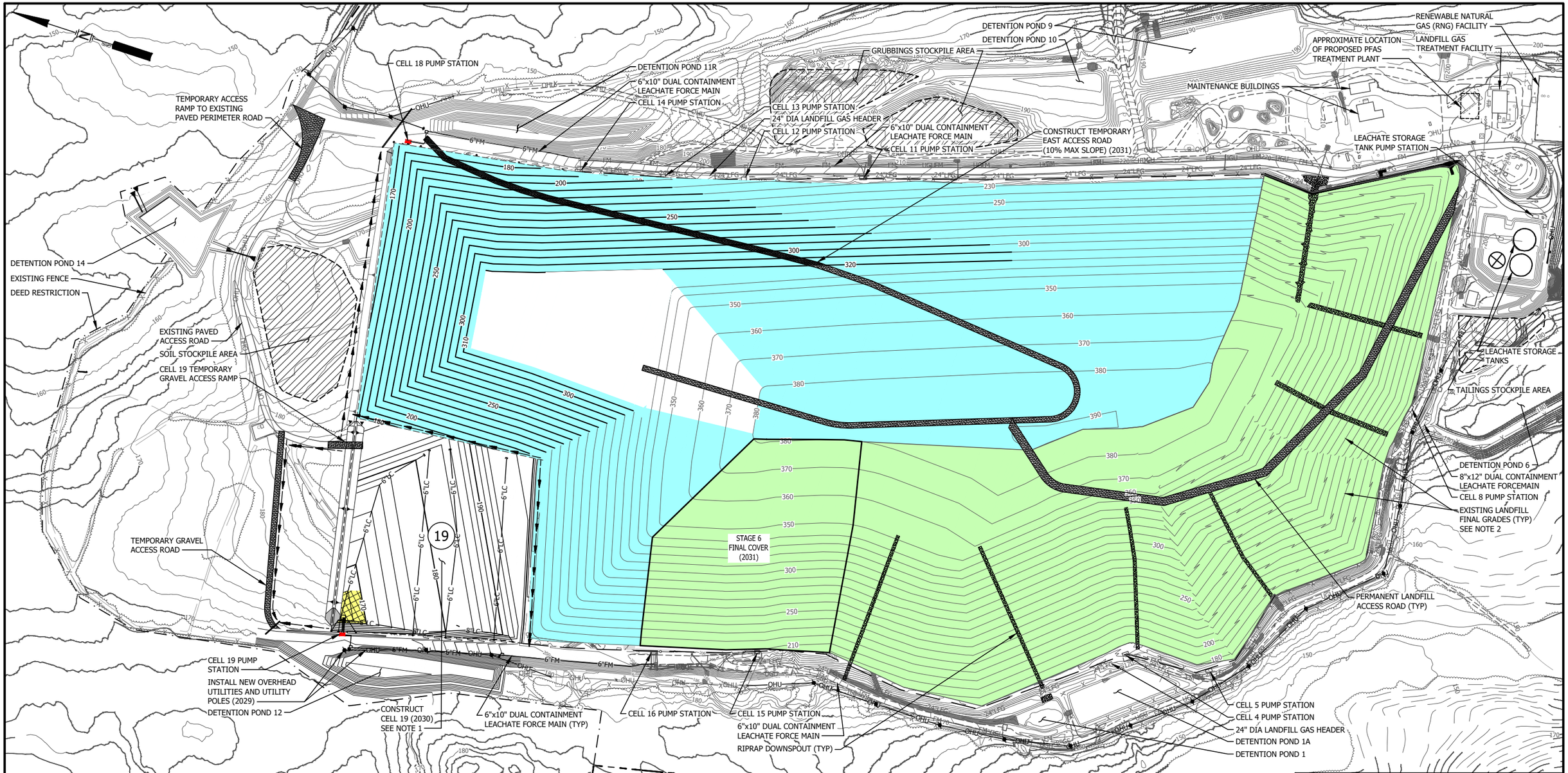

CAPACITY	2,090,000 CUBIC YARDS
OPEN CELL AREA	11.2 ACRES
OPEN SLOPE AREA	8.7 ACRES
INTERMEDIATE COVER	70.5 ACRES
FINAL COVER	58.1 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- (19) CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. GRADES SHOWN IN CELL REPRESENT CELL BASE GRADES PRIOR TO WASTE FILLING.
2. FINAL GRADES REPRESENT TOP OF WASTE.

175 0 350

FIGURE 3-2
CELL 19 INITIAL CONDITIONS/
CELL 18 OPERATIONAL FILLING CONDITIONS
(2030-2031)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELL-DEV LMN: C19-INITIAL-C18-OWG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

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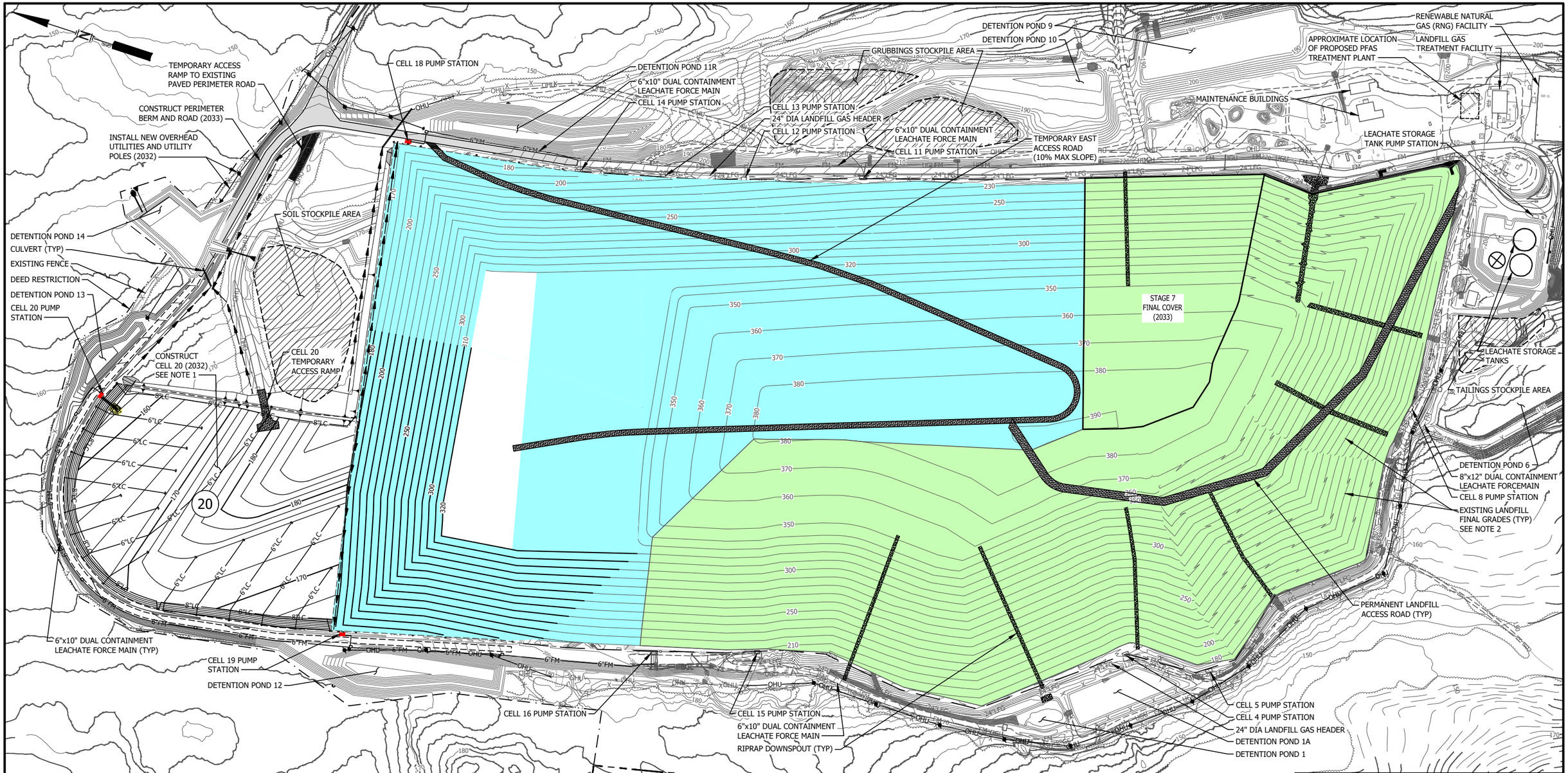

CAPACITY	2,400,000 CUBIC YARDS
OPEN CELL AREA	16.9 ACRES
OPEN SLOPE AREA	5.0 ACRES
INTERMEDIATE COVER	74.5 ACRES
FINAL COVER	69.0 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 20 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. GRADES SHOWN IN CELL REPRESENT CELL BASE GRADES PRIOR TO WASTE FILLING.
2. FINAL GRADES REPRESENT TOP OF WASTE.

175 0 350

FIGURE 3-3
CELL 20 INITIAL CONDITIONS/
CELL 19 OPERATIONAL FILLING CONDITIONS
(2032-2033)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELL-DEV LMN: C20-INITIAL-C19-OWG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

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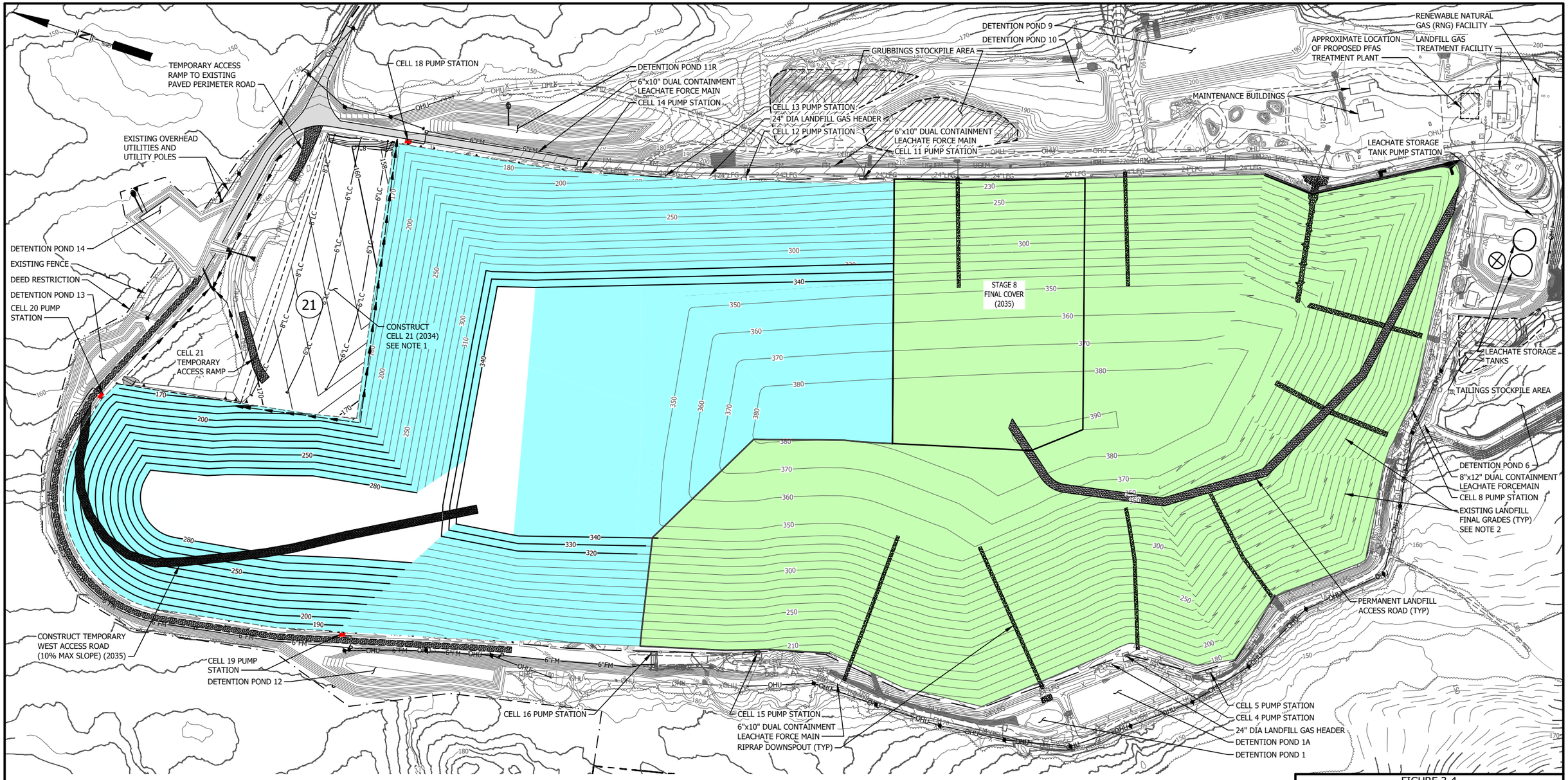


CAPACITY	2,350,000 CUBIC YARDS
OPEN CELL AREA	7.6 ACRES
OPEN SLOPE AREA	10.2 ACRES
INTERMEDIATE COVER	71.2 ACRES
FINAL COVER	84.0 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 21 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. GRADES SHOWN IN CELL REPRESENT CELL BASE GRADES PRIOR TO WASTE FILLING.
2. FINAL GRADES REPRESENT TOP OF WASTE.

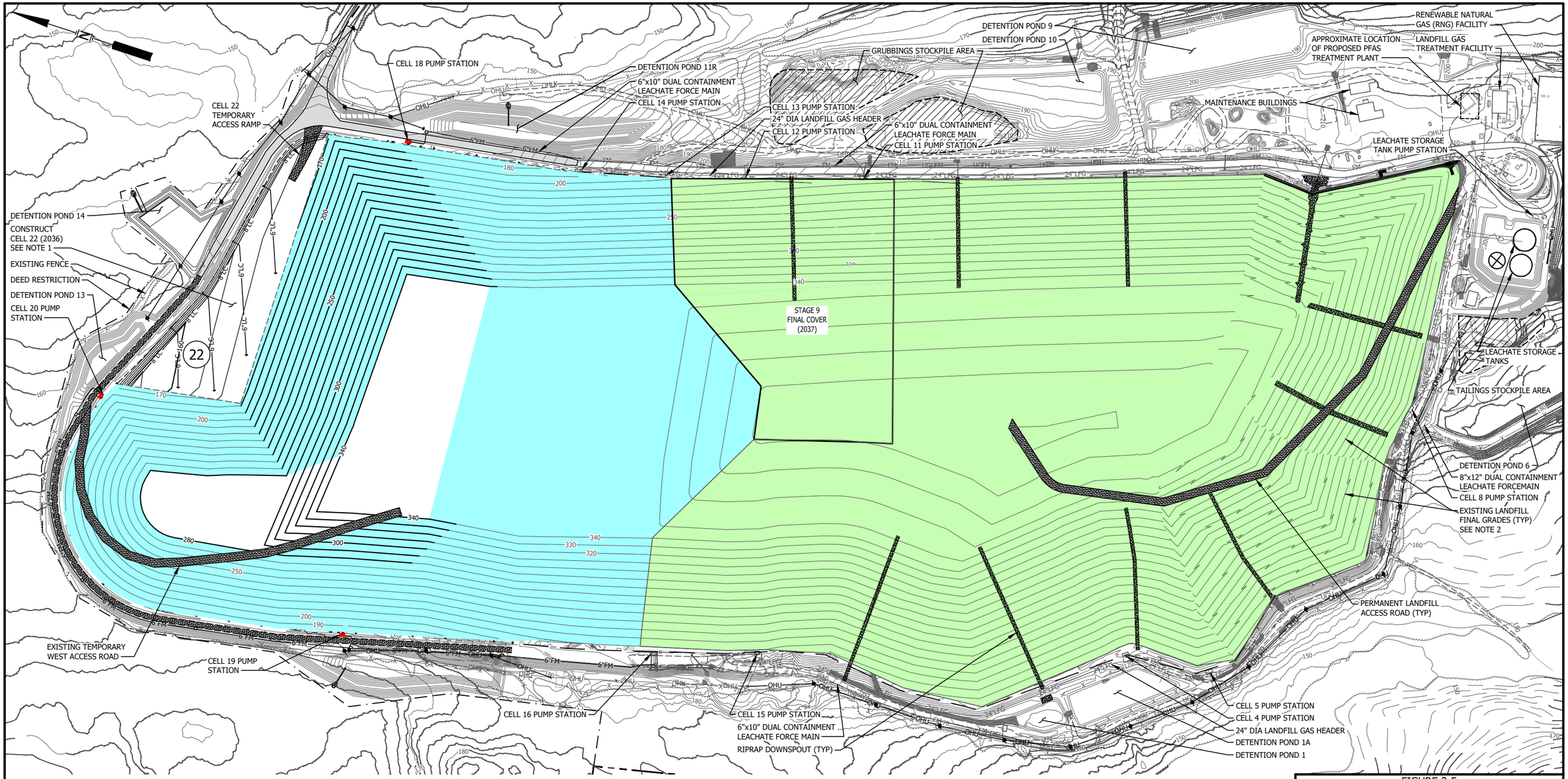
175 0 350

FIGURE 3-4
CELL 21 INITIAL CONDITIONS/
CELL 20 OPERATIONAL FILLING CONDITIONS
(2034-2035)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELL-DEV LMN: C21-INITIAL-C20-OWG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

\\Nserver\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad Figures\CELL-DEV.dwg, B_FIG 3-4, 11/6/2025 12:58:56 PM, sjm



CAPACITY	1,760,000 CUBIC YARDS
OPEN CELL AREA	5.6 ACRES
OPEN SLOPE AREA	11.2 ACRES
INTERMEDIATE COVER	63.4 ACRES
FINAL COVER	98.4 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 22 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. GRADES SHOWN IN CELL REPRESENT CELL BASE GRADES PRIOR TO WASTE FILLING.
2. FINAL GRADES REPRESENT TOP OF WASTE.

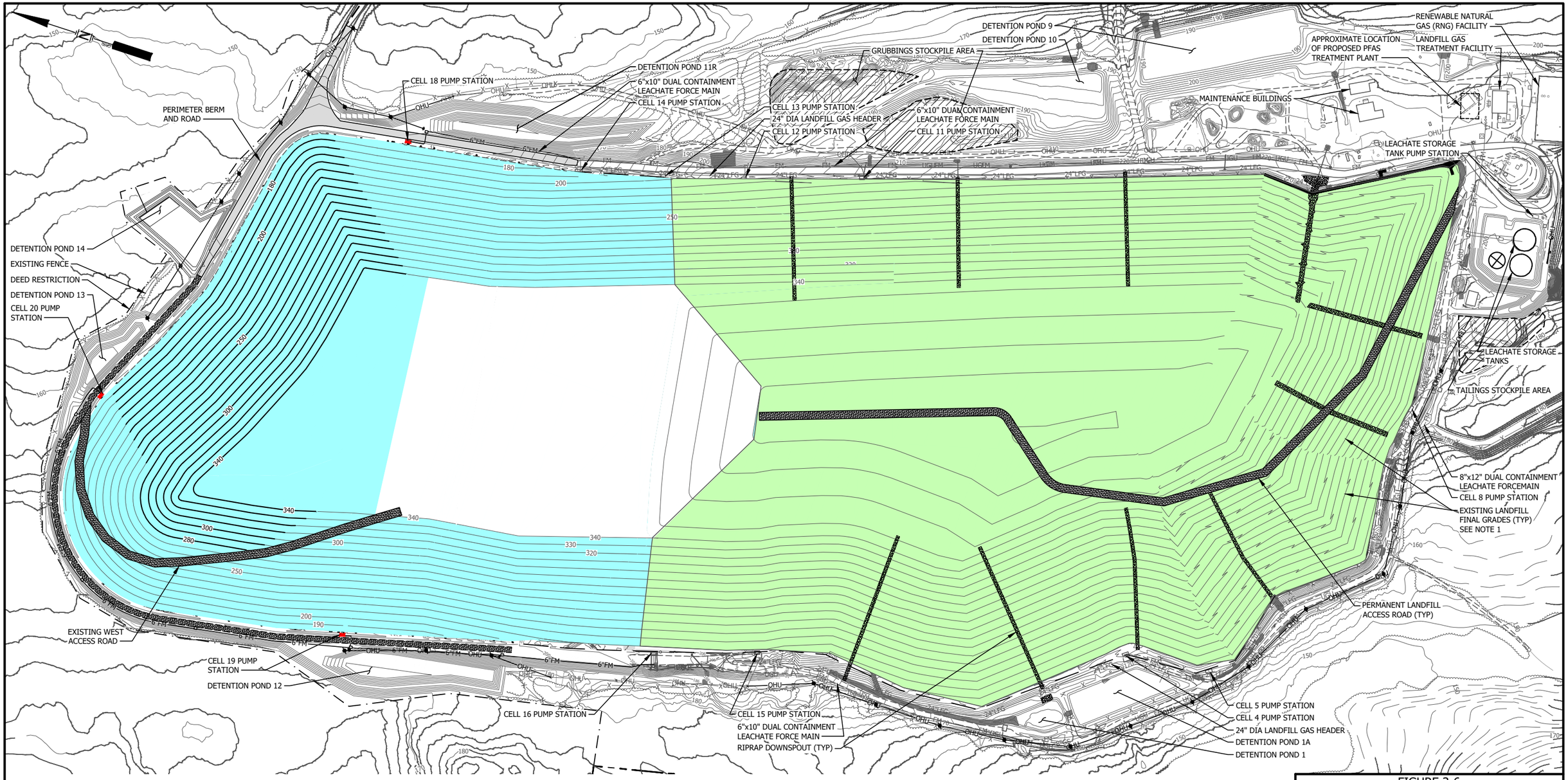
175 0 350

DWG: CELL-DEV LMN: C22-INITIAL-C21-OWG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/7/2025

FIGURE 3-5
CELL 22 INITIAL CONDITIONS/
CELL 21 OPERATIONAL FILLING CONDITIONS
(2036-2037)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

\\Nserver\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad Figures\CELL-DEV.dwg, B_FIG 3-5, 11/7/2025 11:20:11 AM, sjm



CAPACITY	1,000,000 CUBIC YARDS
OPEN CELL AREA	23.3 ACRES
INTERMEDIATE COVER	56.9 ACRES
FINAL COVER	98.4 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. FINAL GRADES REPRESENT TOP OF WASTE.

175 0 350

FIGURE 3-6
CELL 22 OPERATIONAL FILLING CONDITIONS
(2038-2039)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELL-DEV LMN: C22-OWG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

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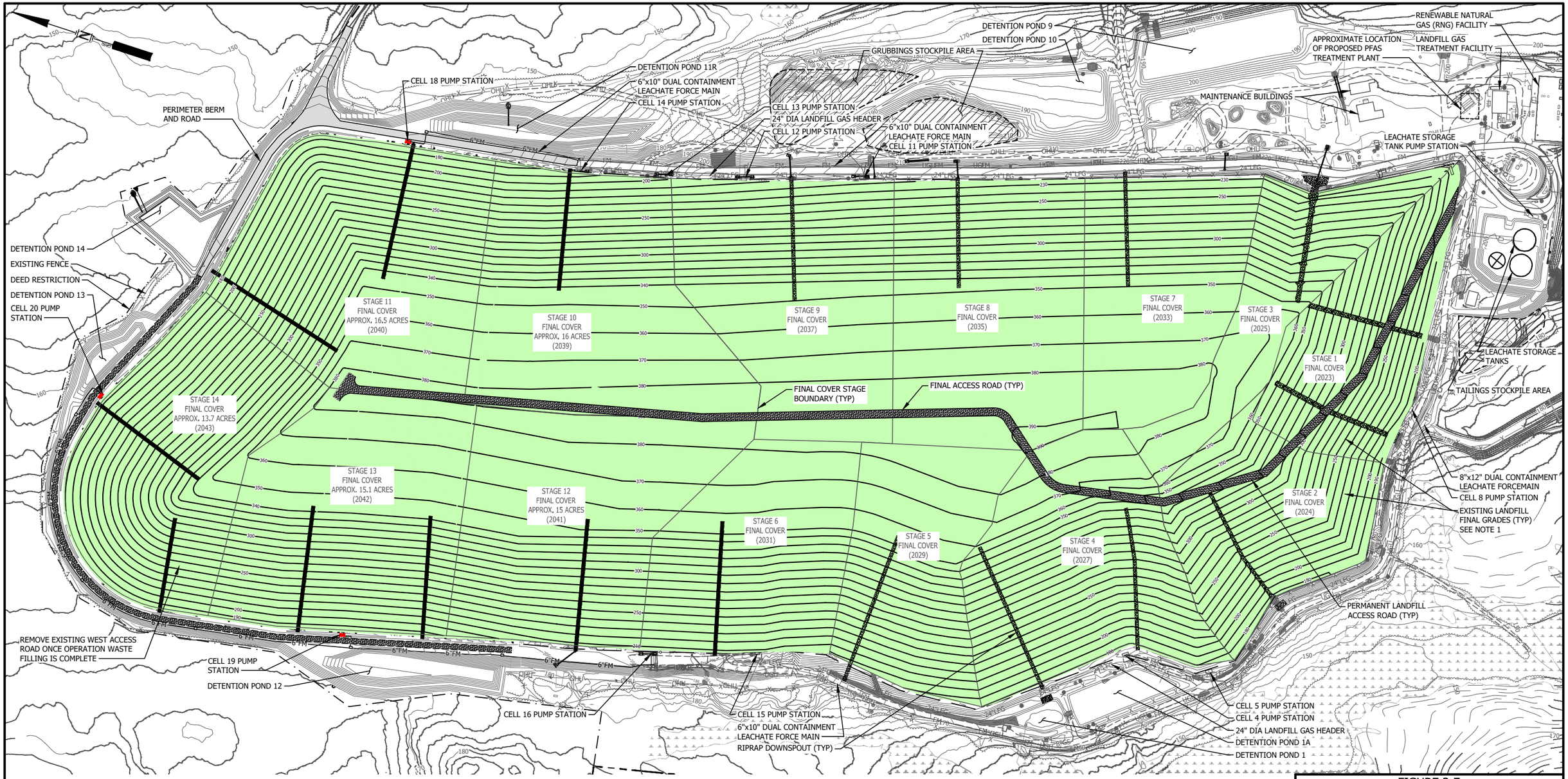


TOTAL EXPANSION CAPACITY	11,900,000 CUBIC YARDS
OPEN AREA	0 ACRES

NOTE: ALL AREAS ARE PLAN AREAS.

LEGEND

- AREAS OF FINAL COVER
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. FINAL GRADES REPRESENT TOP OF WASTE.

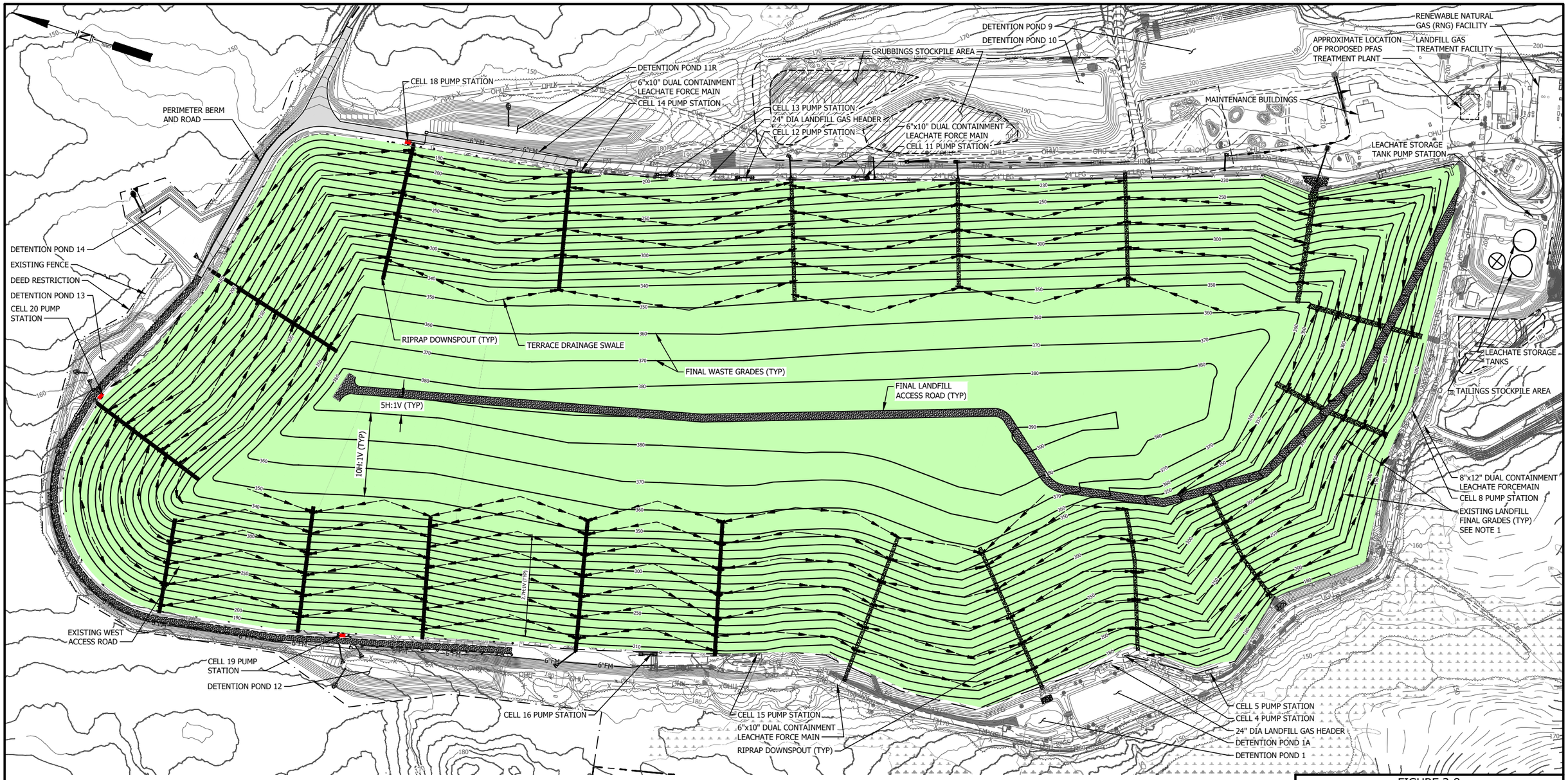
175 0 350

DWG: CELL-DEV LMN: C18 TO C22-FINAL CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

FIGURE 3-7
CELLS 18 TO 22 OPERATIONAL WASTE GRADES
FINAL DEVELOPMENT CONDITIONS (2040-2043)
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

\\Server\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad Figures\CELL-DEV dwg, B_FIG 3-7, 11/6/2025 1:11:12 PM, sjm



LEGEND

- AREAS OF FINAL COVER
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

NOTES

1. FINAL GRADES REPRESENT TOP OF WASTE.

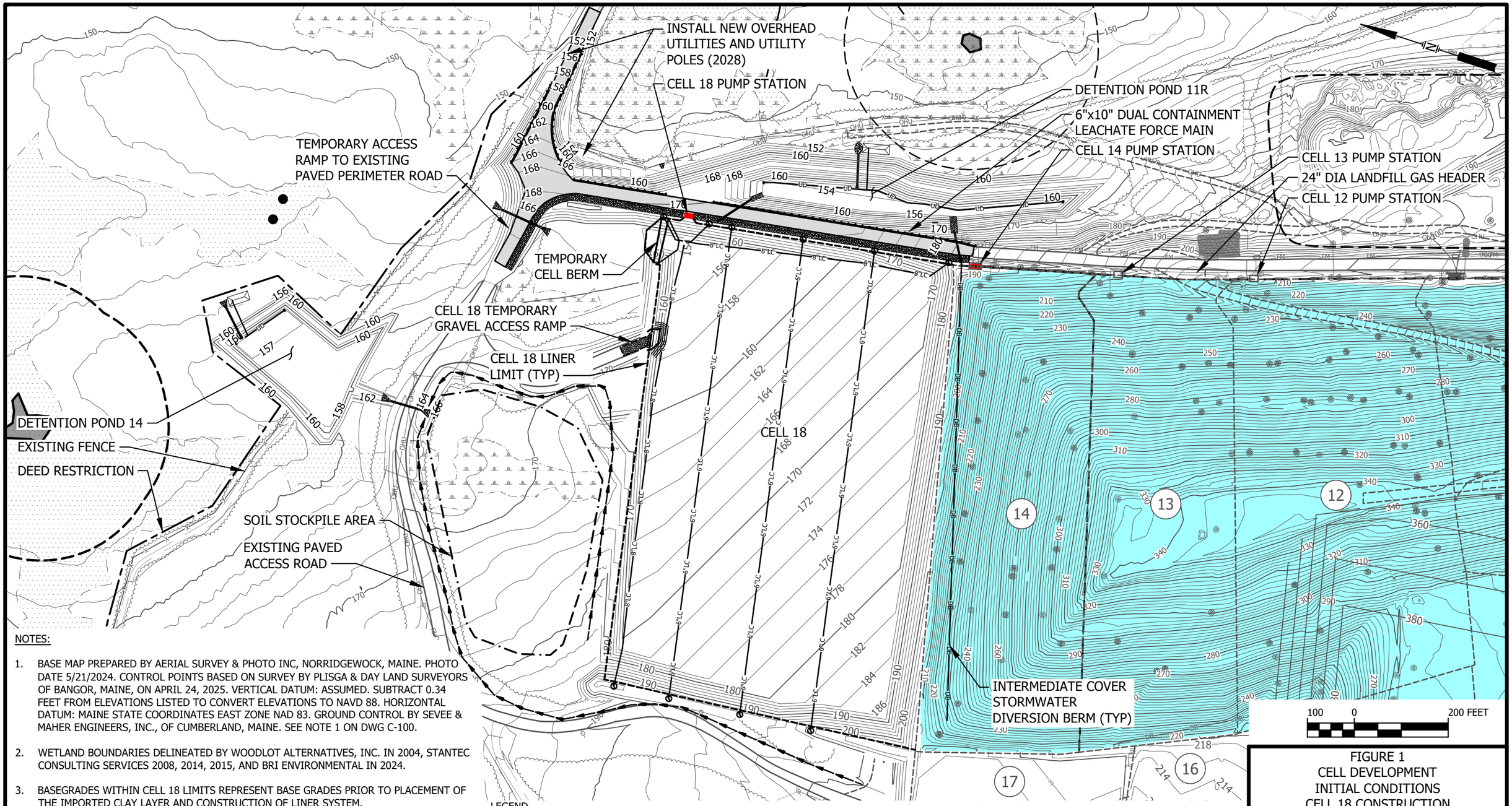
175 0 350

DWG: CELL-DEV LMN: FINAL-DEV CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

FIGURE 3-8
PHASE II EXPANSION CELLS
FINAL DEVELOPMENT CONDITIONS
CELL DEVELOPMENT
PHASE II EXPANSION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

\\Nserver\cfs\Casella\OldTown\Landfill\Expansion\Phase II Expansion\Acad\Figures\CELL-DEV.dwg, B_FIG 3-8, 11/6/2025 1:13:23 PM, sjm



NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASEGRADES WITHIN CELL 18 LIMITS REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY LAYER AND CONSTRUCTION OF LINER SYSTEM.
4. JUNIPER RIDGE LANDFILL IS AN ACTIVE LANDFILL FACILITY AND TOPOGRAPHY WITHIN ACTIVE LIMITS OF CELL ARE SUBJECT TO CHANGE.
5. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
6. ALL SITE AND CONSTRUCTION ACTIVITIES SHALL BE IN COMPLIANCE WITH MEDEP BEST MANAGEMENT PRACTICES AND EXISTING FEDERAL, STATE, AND LOCAL PERMITS AND PERMITTING REQUIREMENTS FOR THE SITE.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

FIGURE 1
CELL DEVELOPMENT
INITIAL CONDITIONS
CELL 18 CONSTRUCTION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELLDEV LMN: INITIAL CTB: SME-STD.CTB JOB#: 250278.00 REV: 11/19/2025

\\Server\rds\Casella\OldTown Landfill\Cell18\Acad\Figures\CELLDEV.dwg, B_FIG 1, 11/19/2025 11:05:16 AM, bwb

INSTALL NEW OVERHEAD UTILITIES AND UTILITY POLES (2028)

CELL 18 PUMP STATION

STAGE 1 ACCESS (TYP)

DETENTION POND 11R

6"x10" DUAL CONTAINMENT LEACHATE FORCE MAIN

CELL 14 PUMP STATION

CELL 13 PUMP STATION

24" DIA LANDFILL GAS HEADER

CELL 12 PUMP STATION

TEMPORARY ACCESS RAMP TO EXISTING PAVED PERIMETER ROAD

CELL 18 TEMPORARY GRAVEL ACCESS RAMP

CELL 18 LINER LIMIT

DETENTION POND 14

EXISTING FENCE

DEED RESTRICTION

SOIL STOCKPILE AREA

EXISTING PAVED ACCESS ROAD

CELL 18

STAGE 1 OPERATIONAL GRADES (TYP)

INTERMEDIATE COVER STORMWATER DIVERSION BERM (TYP)

100 0 200 FEET

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASEGRADES WITHIN CELL 18 LIMITS REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY LAYER AND CONSTRUCTION OF LINER SYSTEM.
4. JUNIPER RIDGE LANDFILL IS AN ACTIVE LANDFILL FACILITY AND TOPOGRAPHY WITHIN ACTIVE LIMITS OF CELL ARE SUBJECT TO CHANGE.
5. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
6. ALL SITE AND CONSTRUCTION ACTIVITIES SHALL BE IN COMPLIANCE WITH MEDEP BEST MANAGEMENT PRACTICES AND EXISTING FEDERAL, STATE, AND LOCAL PERMITS AND PERMITTING REQUIREMENTS FOR THE SITE.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN

DWG: CELLDEV LMN: STG1 CTB: SME-STD.CTB JOB#: 250278.00 REV: 11/19/2025

FIGURE 2
CELL DEVELOPMENT
STAGE 1
CELL 18 CONSTRUCTION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

\\Server\cfs\Casella\OldTownLandfill\Cell18\Acad\Figures\CELLDEV.dwg, B_FIG 2, 11/19/2025 2:05:46 PM, bwb

INSTALL NEW OVERHEAD UTILITIES AND UTILITY POLES (2028)

CELL 18 PUMP STATION

STAGE 2 ACCESS (TYP)

DETENTION POND 11R

6"x10" DUAL CONTAINMENT LEACHATE FORCE MAIN

CELL 14 PUMP STATION

CELL 13 PUMP STATION

24" DIA LANDFILL GAS HEADER

CELL 12 PUMP STATION

TEMPORARY ACCESS RAMP TO EXISTING PAVED PERIMETER ROAD

CELL 18 TEMPORARY GRAVEL ACCESS RAMP

CELL 18 LINER LIMIT

DETENTION POND 14

EXISTING FENCE

DEED RESTRICTION

SOIL STOCKPILE AREA

EXISTING PAVED ACCESS ROAD

CELL 18

STAGE 2 OPERATIONAL GRADES (TYP)

INTERMEDIATE COVER STORMWATER DIVERSION BERM (TYP)

100 0 200 FEET

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASEGRADES WITHIN CELL 18 LIMITS REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY LAYER AND CONSTRUCTION OF LINER SYSTEM.
4. JUNIPER RIDGE LANDFILL IS AN ACTIVE LANDFILL FACILITY AND TOPOGRAPHY WITHIN ACTIVE LIMITS OF CELL ARE SUBJECT TO CHANGE.
5. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
6. ALL SITE AND CONSTRUCTION ACTIVITIES SHALL BE IN COMPLIANCE WITH MEDEP BEST MANAGEMENT PRACTICES AND EXISTING FEDERAL, STATE, AND LOCAL PERMITS AND PERMITTING REQUIREMENTS FOR THE SITE.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN
- ACCESS ROUTE
- LEACHATE SURFACE FLOW

DWG: CELLDEV LMN: STG2 CTB: SME-STD.CTB JOB#: 250278.00 REV: 11/19/2025

FIGURE 3
CELL DEVELOPMENT
STAGE 2
CELL 18 CONSTRUCTION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

\\Server\rds\Casella\OldTownLandfill\Cell18\Acad\Figures\CELLDEV.dwg, B_FIG 3, 11/19/2025 1:26:36 PM, bwb

INSTALL NEW OVERHEAD UTILITIES AND UTILITY POLES (2028)

CELL 18 PUMP STATION

DETENTION POND 11R

6"x10" DUAL CONTAINMENT LEACHATE FORCE MAIN

CELL 14 PUMP STATION

STAGE 3 ACCESS (TYP)

CELL 13 PUMP STATION

24" DIA LANDFILL GAS HEADER

CELL 12 PUMP STATION

TEMPORARY ACCESS RAMP TO EXISTING PAVED PERIMETER ROAD

CELL 18 TEMPORARY GRAVEL ACCESS RAMP

CELL 18 LINER LIMIT

DETENTION POND 14

EXISTING FENCE

DEED RESTRICTION

SOIL STOCKPILE AREA

EXISTING PAVED ACCESS ROAD

CELL 18

STAGE 3 OPERATIONAL GRADES (TYP)

3%

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASEGRADES WITHIN CELL 18 LIMITS REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY LAYER AND CONSTRUCTION OF LINER SYSTEM.
4. JUNIPER RIDGE LANDFILL IS AN ACTIVE LANDFILL FACILITY AND TOPOGRAPHY WITHIN ACTIVE LIMITS OF CELL ARE SUBJECT TO CHANGE.
5. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
6. ALL SITE AND CONSTRUCTION ACTIVITIES SHALL BE IN COMPLIANCE WITH MEDEP BEST MANAGEMENT PRACTICES AND EXISTING FEDERAL, STATE, AND LOCAL PERMITS AND PERMITTING REQUIREMENTS FOR THE SITE.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN
- ACCESS ROUTE

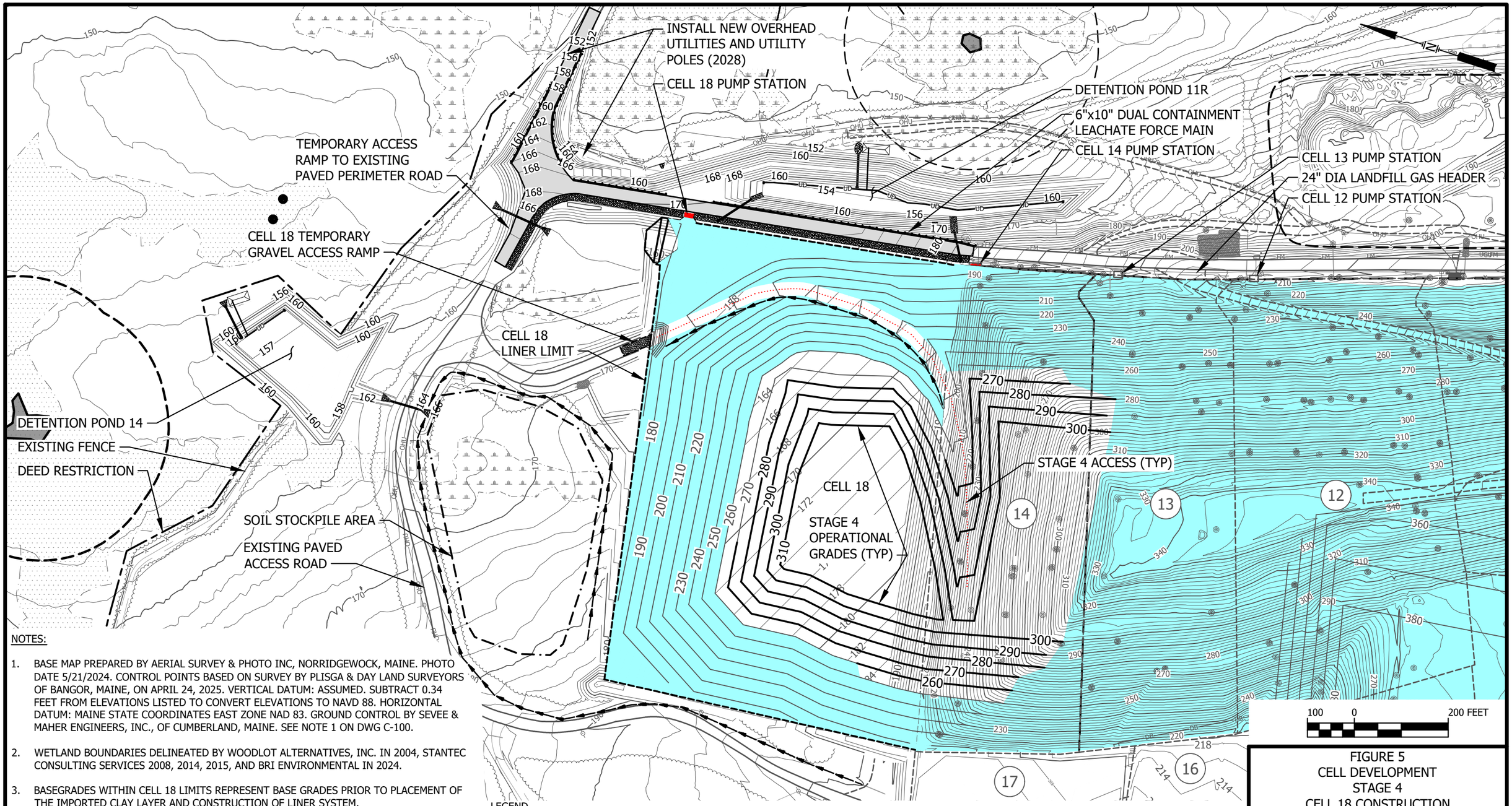
100 0 200 FEET

FIGURE 4
CELL DEVELOPMENT
STAGE 3
CELL 18 CONSTRUCTION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: CELLDEV LMN: STG3 CTB: SME-STD.CTB JOB#: 250278.00 REV: 11/19/2025

\\Server\cds\Caselal\OldTownLandfill\Cell18\Acad\Figures\CELLDEV.dwg, B_FIG 4, 11/19/2025 2:09:57 PM, bwb



NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASEGRADES WITHIN CELL 18 LIMITS REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY LAYER AND CONSTRUCTION OF LINER SYSTEM.
4. JUNIPER RIDGE LANDFILL IS AN ACTIVE LANDFILL FACILITY AND TOPOGRAPHY WITHIN ACTIVE LIMITS OF CELL ARE SUBJECT TO CHANGE.
5. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
6. ALL SITE AND CONSTRUCTION ACTIVITIES SHALL BE IN COMPLIANCE WITH MEDEP BEST MANAGEMENT PRACTICES AND EXISTING FEDERAL, STATE, AND LOCAL PERMITS AND PERMITTING REQUIREMENTS FOR THE SITE.

LEGEND

- AREAS OF FINAL COVER
- AREAS OF INTERMEDIATE COVER
- 18 — CELL DESIGNATION
- CLEAN STORMWATER DITCH
- CLEAN STORMWATER CATCH BASIN
- PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATIONS
- COLLECTION SUMP
- FORCEMAIN VAULT
- LC — LEACHATE COLLECTION PIPING
- FM — LEACHATE TRANSPORT FORCEMAIN
- ACCESS ROUTE

DWG: CELLDEV LMN: STG4 CTB: SME-STD.CTB JOB#: 250278.00 REV: 11/19/2025

FIGURE 5
CELL DEVELOPMENT
STAGE 4
CELL 18 CONSTRUCTION
NEWSME LANDFILL OPERATIONS LLC
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

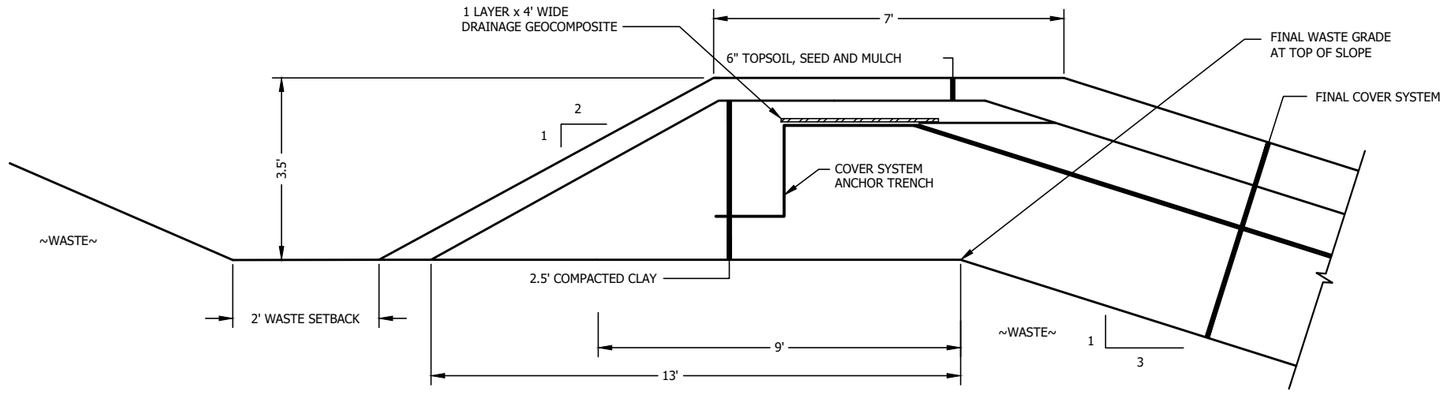
SME
SEVEE & MAHER ENGINEERS

\\Server\cfs\Casella\OldTown Landfill\Cell18\Acad\Figures\CELLDEV.dwg, B_FIG 5, 11/19/2025 2:10:34 PM, bwb

APPENDIX E

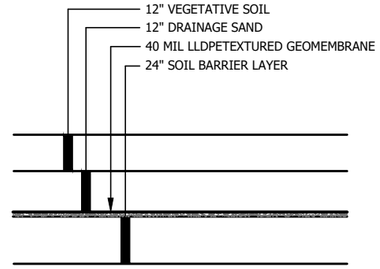
TYPICAL OPERATIONAL DEVELOPMENT DETAILS

SME
SEVEE & MAHER
ENGINEERS



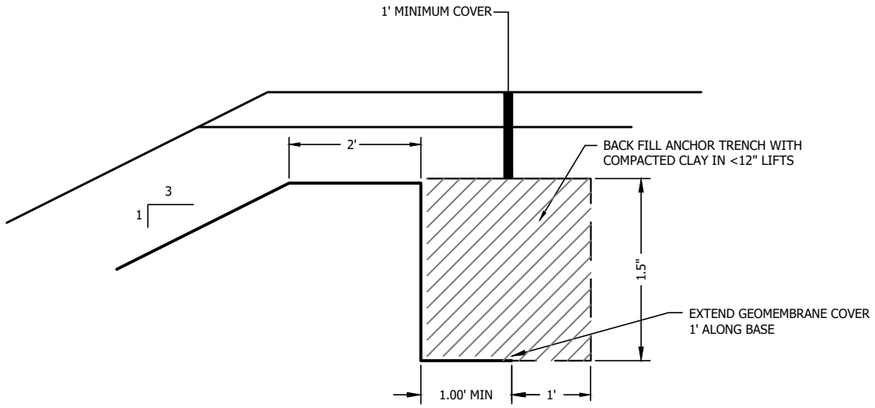
FINAL COVER TERMINATION AT TOP OF SLOPES (TYP)

NTS



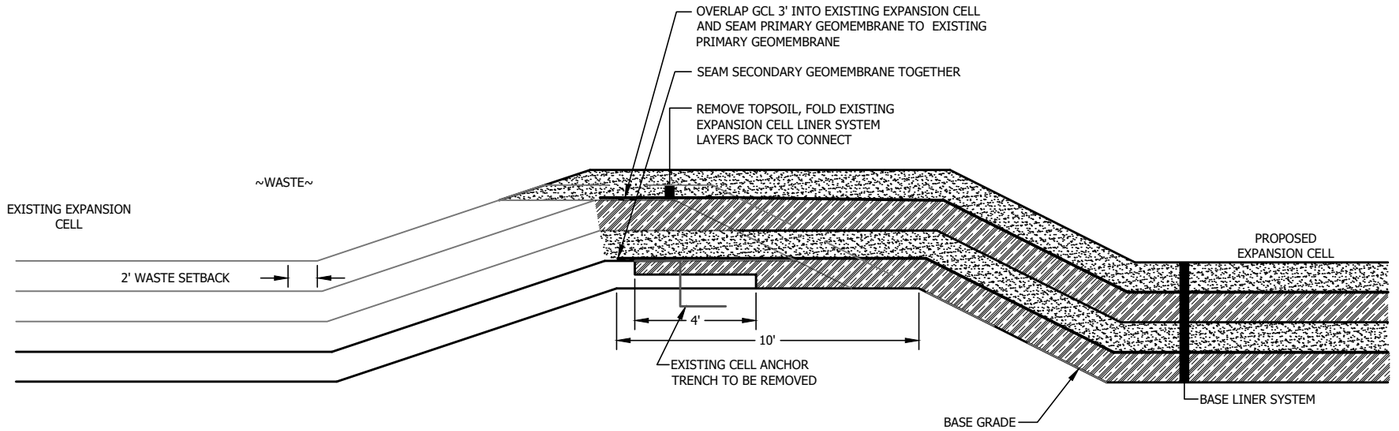
FINAL COVER SYSTEM

NTS



COVER SYSTEM ANCHOR TRENCH AT TOP OF SLOPES AND SIDESLOPE PERIMETER BERMS (TYP)

NTS



INTERMEDIATE BERM BASE LINER CONNECTION

NTS

FIGURE 1
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: C16-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 6/21/2024

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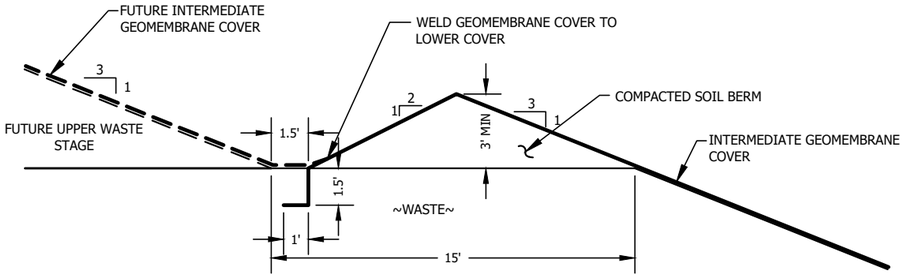
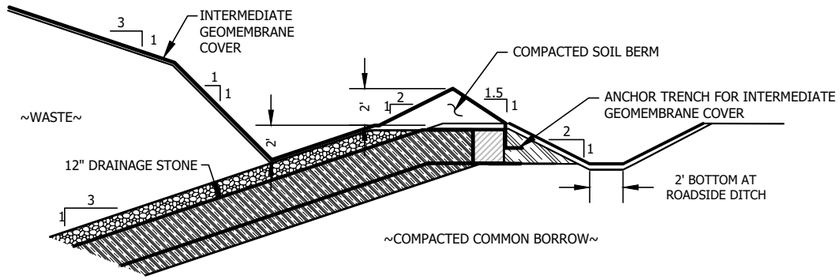


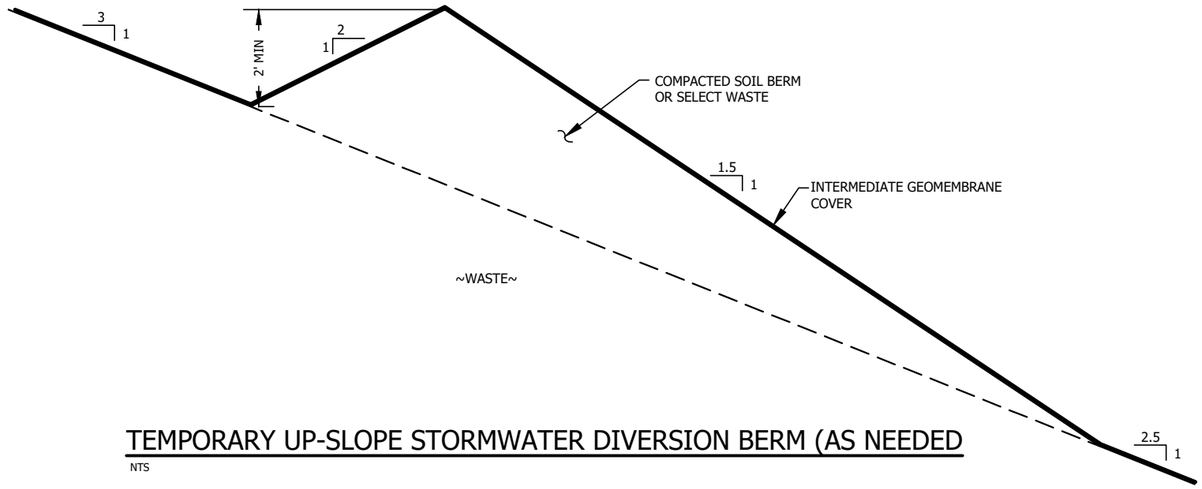
TEMPORARY MID-SLOPE INTERMEDIATE BERM (AS NEEDED)

NTS



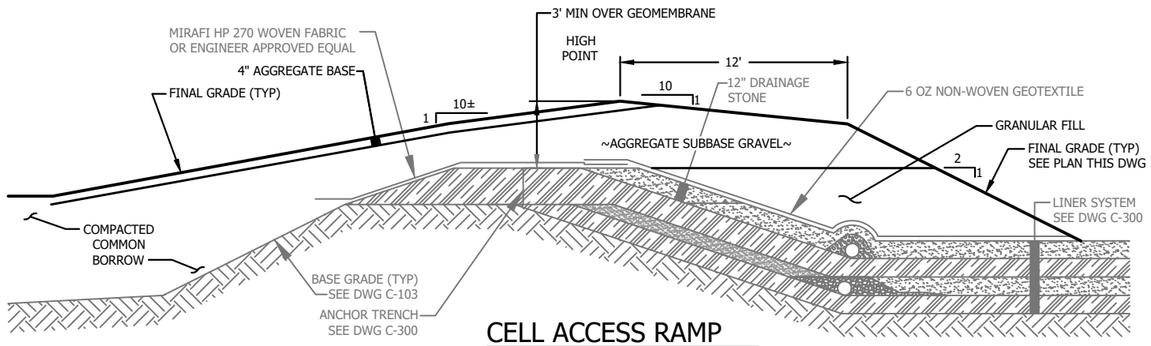
PERIMETER BERM INTERMEDIATE GEOMEMBRANE COVER DETAIL

NTS



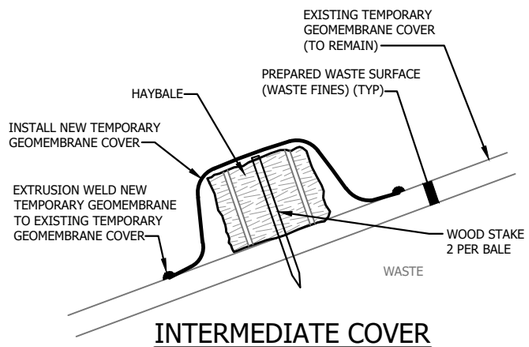
TEMPORARY UP-SLOPE STORMWATER DIVERSION BERM (AS NEEDED

NTS



CELL ACCESS RAMP

NTS



INTERMEDIATE COVER STORMWATER DIVERSION BERM

NTS

FIGURE 2
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: C16-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 6/21/2024

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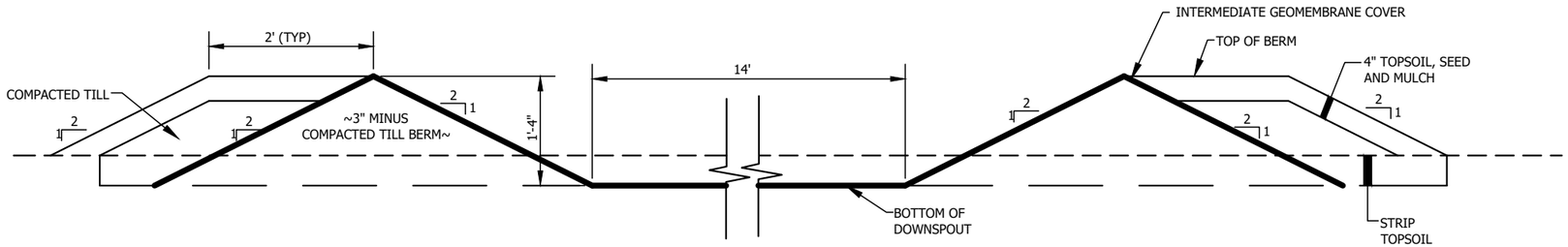
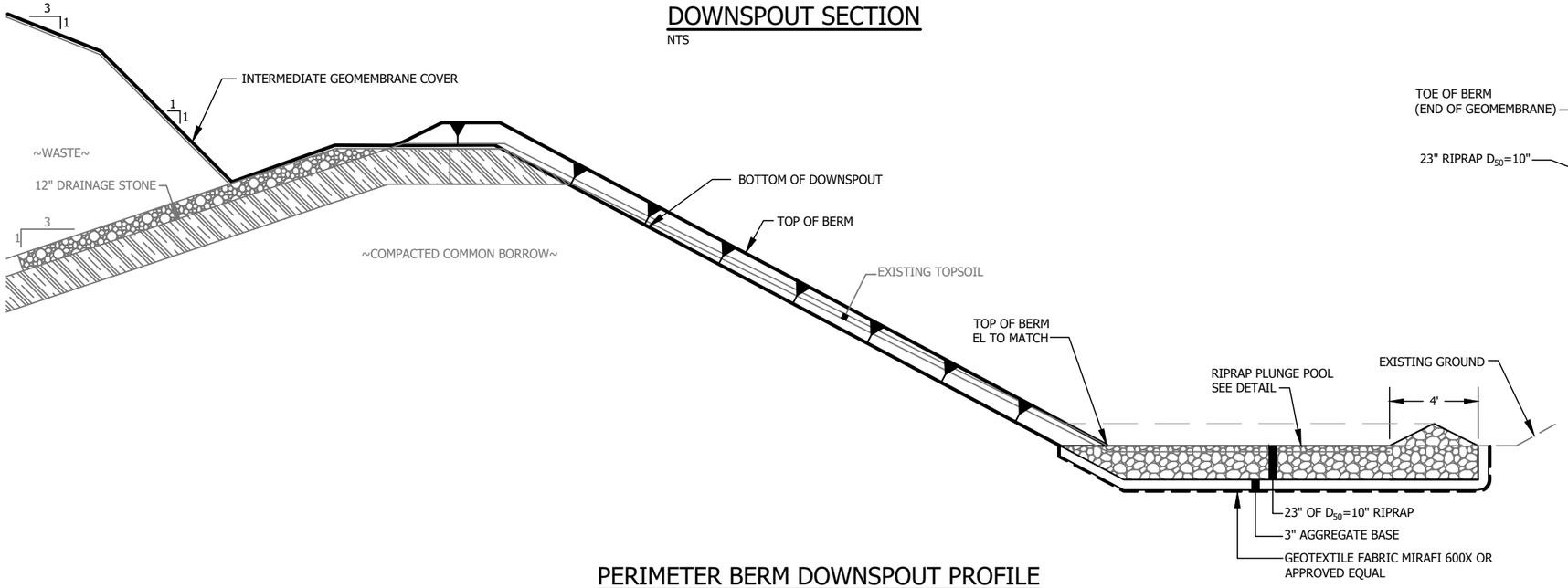


DOWNSPOUT SECTION
NTS



PERIMETER BERM DOWNSPOUT PROFILE
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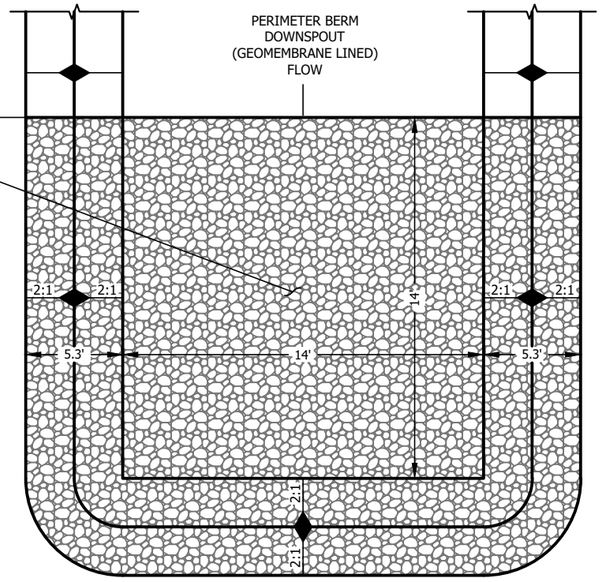
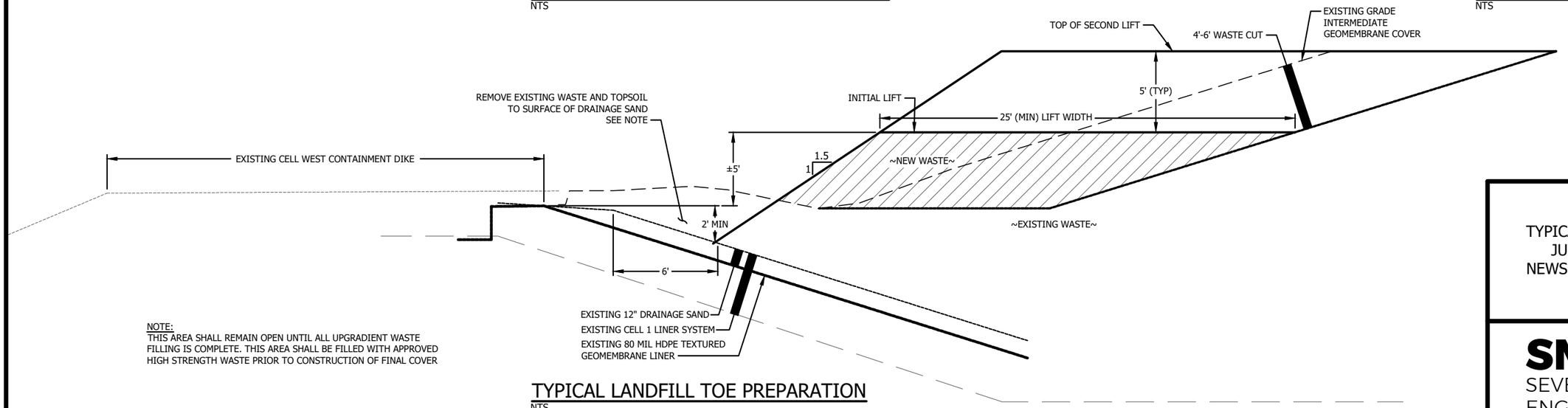


PLUNGE POOL
NTS



NOTE:
THIS AREA SHALL REMAIN OPEN UNTIL ALL UPGRADIENT WASTE FILLING IS COMPLETE. THIS AREA SHALL BE FILLED WITH APPROVED HIGH STRENGTH WASTE PRIOR TO CONSTRUCTION OF FINAL COVER

TYPICAL LANDFILL TOE PREPARATION
NTS

FIGURE 3
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: C16-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 6/21/2024

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APPENDIX F

STORMWATER POLLUTION PREVENTION PLAN

(Current Version but Updated Annually)

SME
SEVEE & MAHER
ENGINEERS

STORMWATER POLLUTION PREVENTION PLAN

Maine Department of Environmental Protection

Multi-Sector General Permit
Stormwater Discharges
Associated with Industrial Activity

Facility:
Juniper Ridge Landfill
2828 Bennoch Road
Alton, Maine

Prepared for:
NEWSME Landfill Operations, LLC
207 Larrabee Road, Suite 1
Westbrook, Maine

Prepared by:
St.Germain
846 Main Street
Westbrook, Maine

April 2025

St.Germain File No.: 2137-0009

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Appendix D: 2016 MEDEP MSGP Sector-Specific Requirements
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Appendix F: Initial Evaluation of Non-Stormwater Discharges
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Appendix L: Corrective Action Report

SITE INFORMATION	
Site Name	Juniper Ridge Landfill
Street Address	2828 Bennoch Road
City/Town	Alton
County	Penobscot
Site Operator	NEWSME Landfill Operations, LLC
Site Contact	Jeffrey Pelletier
Telephone	(207) 249-8025
Permit Owner	NEWSME Landfill Operations, LLC
Permit Owner Address	207 Larrabee Road, Suite 1, Westbrook, Maine
Hours of Operation	6:00am to 5:00pm Monday-Friday, 7:00am to 12:00pm Saturday
Type of Site	Landfill
New Sub-Sector/Activity Code	L1/LF
Applicable Industrial Sector	L - Landfills and Land Application Sites
Multi-Sector General Permit Number	MER05B477
Permit Issued/Effective Date	December 8, 2016/March 8, 2017
Permit Expiration	March 8, 2022*

*The Maine Department of Environmental Protection has not introduced an updated MSGP beyond the one that expired on March 8, 2022; therefore Juniper Ridge Landfill continues to operate under the current permit.

EMERGENCY CONTACT INFORMATION	
Fire Department	911
Medical Emergency	911
MEDEP Oil Spill Response Hotline	1-800-482-0777

PLAN REVISION LOG		
REVISION #	**DATE**	**REVISION DETAIL**
1	October 2018	Revised to reflect comments received from a MEDEP inspection at another facility.
2	April 2021	Updated based on site expansion which included additional outfalls.
3	April 2023	Updated based on site expansion and construction of RNG facility.
4	April 2024	Updated based on completed construction of the RNG facility.
5	April 2025	Updated based on site expansion, additions of sand/salt storage, the RNG stormwater pond, and the foam production system for daily cover.

1.0 INTRODUCTION AND PURPOSE

NEWSME Landfill Operations, LLC (NEWSME) operates the Juniper Ridge Landfill located at 2828 Bennoch Road, in Alton, Maine (see **Figure 1, Site Location Map).** The landfill is owned by the Maine Bureau of General Services (BGS) but operated under an operating services agreement which began in 2004. Industrial activities and point source discharges of stormwater to waters of the State of Maine occur at this site, therefore, a Multi-Sector General Permit (MSGP) is required by the Maine Department of Environmental Protection (MEDEP). The site must develop a Stormwater Pollution Prevention Plan (SWPPP) under the MSGP. The purpose of the SWPPP is to identify potential pollutant sources (PPSs) that may contaminate stormwater as well as non-structural and structural control measures needed to reduce pollutants in stormwater.

NEWSME submitted a Notice of Intent (NOI) for coverage under the MSGP. Copies of the NOI submitted by NEWSME, the MEDEP NOI Approval Letter, and the MSGP are provided in **Appendices A, B**, and **C**, respectively.

2.0 POLLUTION PREVENTION TEAM

The Stormwater Pollution Prevention Team is responsible for the following:

- Coordinating and implementing all stages of SWPPP development;
- Coordinating employee training programs;
- Keeping all records and ensuring that reports are submitted;
- Reviewing changes to site operations and updating the SWPPP, as necessary;
- Implementing the control measures and preventive maintenance program;
- Overseeing good housekeeping activities; and
- Conducting monitoring and inspections.

Table 1 – Juniper Ridge Landfill – Alton, ME	
Pollution Prevention Team	
Name	**Responsibilities**
Wayne Boyd/ Jeffrey Pelletier	Coordinating and implementing all stages of SWPPP development.
Jeffrey Pelletier	Coordinating employee training programs, keeping all records, and ensuring that reports are submitted.
Jeffrey Pelletier	Reviewing changes to site operations and updating the SWPPP when necessary.
Steve Emerson Jeffrey Pelletier Kurtis Brown Mike Abbotte Lou Pizzuti	Implementing the control measures and preventive maintenance program, overseeing good housekeeping activities, and conducting monitoring and inspections.

3.0 SITE DESCRIPTION AND EVALUATION

3.1 Site Description

NEWSME operates a solid waste landfill located south of Route 16 in Alton, Maine, immediately west of Interstate 95. The facility comprises a scale house and two scales, vehicle/equipment parking area, a maintenance building with an attached office/operators breakroom, a landfill gas (LFG) treatment facility, a Renewable Natural Gas (RNG) facility (owned and operated by Archaea Energy, Inc.), a foam production system for daily cover, a wood waste transfer station (grinding operated by a third party), a leachate storage tank, a leachate hauler truck loading station, the Rubb Building, several soil stockpile areas, sand and salt storage, groundwater and surface water monitoring locations, a landfill perimeter access road and security fencing. Operations at the facility include:

- Landfilling of solid waste;
- Leachate and methane gas collection;
- LFG treatment;
- RNG processing;
- Foam production system for daily cover;
- Wood waste grinding;
- Limited equipment repair and maintenance; and
- Administration.

Figure 2 and 3, Site Plan, and **Outfall Drainage Boundaries** shows the following details as applicable:

- Boundaries of the property and the size of the property in acres (see **Figure 3**);
- Location and extent of significant structures and impervious surfaces;
- Directions of stormwater flows;
- Locations of all stormwater control measures;
- Locations of all receiving waters, including wetlands, in the immediate vicinity of the site;
- Locations of all stormwater conveyances including catch basins, ditches, pipes, and swales;
- Locations of potential pollutant sources;
- The location of all wastewater or process water containment tanks;
- Locations where significant spills or leaks identified have occurred within the past three years (areas of frequent spills with >3 spills/year or areas with large spills of > 10 gallons);
- Locations of all stormwater monitoring points;
- Locations of stormwater inlets and outfalls (with a unique identification code for each) and an approximate outline of the areas draining to each outfall: and

- Locations of the following activities where such activities are exposed to precipitation:
  - fueling stations;
  - vehicle and equipment maintenance and/or cleaning areas;
  - loading/unloading areas;
  - locations used for the treatment, storage, or disposal of wastes;
  - liquid storage tanks;
  - processing and storage areas;
  - immediate access roads used or traveled by carriers of raw materials;
  - transfer areas for substances in bulk;
  - machinery;
  - active and closed landfill cells or trenches;
  - active and closed land application areas;
  - locations where open dumping is occurring or has occurred;
  - locations of leachate springs or areas where uncontrolled leachate may commingle with runoff; and
  - leachate collection and handling systems.

3.2 Sector-Specific Requirements

NEWSME is subject to additional requirements set forth in Appendix L of the MSGP for Industry Sector L - Landfills and Land Application Sites (see **Appendix D MSGP Sector Specific Requirements**). A list of the specific requirements for this sector is provided below. Each is addressed in the appropriate sections of this plan.

- Covered Stormwater Discharges
- Industrial Activities Covered by Sector L
- Limitations on Coverage
- Definitions
- Additional Technology-Based Effluent Limits
- Additional SWPPP Requirements
- Additional Inspection Requirements
- Additional Post-Authorization Documentation Requirements
- Sector-Specific Benchmarks
- Effluent Limitations Based on Effluent Limitations Guidelines

This MSGP authorizes stormwater discharges from landfills that receive or have received industrial waste including sites subject to Subtitle D of the Resource Conservation Recovery Act (RCRA).

The following sites and discharges are not authorized under this permit:

- Landfills that receive only municipal wastes;

- Any leachate, gas collection condensate, drained free liquids, contaminated groundwater, laboratory wastewater, and contact wash water from washing truck and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill; and
- Discharges from open dumps as defined under RCRA.

3.3 Direction of Stormwater Runoff and Receiving Waters

There are nine point source discharges of stormwater identified at the site (Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 9) all of which discharge from onsite drainage features to an unnamed tributary of Pushaw Stream.

On the west side of the facility, the majority of runoff is directed to detention ponds allowing for sediment to settle prior to controlled discharge to offsite receiving waters. On the east side of the facility, runoff is either directed through a detention pond, east of the maintenance building area, or through a series of drainage ditches and culverts, then discharged to offsite receiving waters. On the northern side of the facility, runoff is directed through a series of check damns and through a detention pond prior to flowing through an outlet structure and discharging to offsite receiving waters. Precipitation falling onto the active landfill cell is collected in the leachate collection system.

Detention Pond 1 outlet is designated as Outfall No. 1. Detention Pond 2 outlet is designated as Outfall No. 2. Outfall No. 3 has been made active again and is described below. Stormwater falling in the area of the former outlet now sheetflows offsite. Detention Pond 6 outlet is designated as Outfall No. 4. Stormwater from these ponds ultimately flows to an unnamed tributary of Pushaw Stream.

Stormwater that falls in the area of the maintenance building, the gravel laydown areas, the permitted wood waste handling area, the landfill gas treatment area and the drainage ditch that runs along the access road northeast of Cell 11 Stage 2 of the landfill flow to Detention Pond 9, which has an outlet designated as Outfall No. 5. Stormwater falling in the area of the RNG facility flows into the RNG facility stormwater pond, which drains into Detention Pond 9, discharging through Outfall No. 5.

Stormwater that falls north of Cell 11 Stage 2 of the landfill flows into Detention Pond 10, which has an outfall designated as Outfall No. 6.

Stormwater that falls in the northwest portion of the facility flows through a series of check dams to Detention Pond 11, which discharges through an outfall designated as Outfall No. 7.

Stormwater from portions of the landfill cover systems flow to a geomembrane-lined storage pond, which is adjacent to Detention Pond 1. This storage pond was used for storage of landfill leachate before the construction of the leachate storage tank. Stormwater collected within the geomembrane-lined storage pond is pumped via forced main to a clean water

loading rack adjacent to Detention Pond 1. Water trucks used for site dust control are filled at this loading rack.

Stormwater falling between the Cell 4 pump station and Cell 5 pump station and a portion of lower landfill Cell 4 is directed to a culvert, designated as Outfall No. 8. Outfall No. 8 also receives flow from the access road.

Stormwater falling on the outside edge of Cell 16 is directed to a perimeter ditch which contains a catch basin. This catch basin discharges to a culvert designated as Outfall No. 9.

Stormwater falling to the west of Cell 16 and along the temporary maintenance road is directed to a culvert which discharges to a riprap level spreader, designated as Outfall No. 3. Outfall No. 3 was previously designated as the outlet to Detention Pond 5, which was removed for the construction of Cell 16.

Stormwater falling within the leachate storage tank containment berm is contained, then discharged (as appropriate) to a riprap apron southwest of the leachate storage tank area. This stormwater eventually flows to Detention Pond 6 and discharges out of Outfall No. 4.

A summary description of stormwater runoff by industrial area or activity is provided in Section 4.1.

3.4 Representative Outfalls

The site does not have any representative outfalls. Representative outfalls are defined as two or more outfalls within a single drainage area that receive a discharge from a substantially similar industrial activity.

4.0 POTENTIAL POLLUTANT SOURCES

4.1 Potential Pollutant Sources by Industrial Area/Activity

A description of industrial areas/activities that have the potential to be exposed to stormwater are described in the table below and depicted on **Figure 2, Site Plan**.

Table 2 – Juniper Ridge Landfill – Alton, ME			
Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Scale House and Scale	Trucks coming in and leaving the facility are weighed on the scale.	Diesel, Gasoline, Antifreeze, Sediment and Suspended Solids	Stormwater runoff in this area sheetflows to the east and west into wooded areas.
Soil Stockpile Areas	This area is where soil that will be used through the facility either as cover for the landfill, or for erosion control purposes, is stored prior to use.	Sediment and Suspended Solids	Stormwater runoff in this area sheetflows to the northeast toward a natural drainage channel located to the northeast.
Borrow Pit	This is a permitted area where material (soil, gravel or sand) is excavated for use at other locations.	Sediment and Suspended Solids	Stormwater runoff in this area sheetflows to the northeast toward a natural drainage channel located to the northeast.
Wood Waste Handling Area	Wood waste is stored in this permitted area prior to being used as cover material for the active landfill cells, road-base, or being shipped offsite.	Particulate Matter, Sediment and Suspended Solids	Stormwater runoff in this area is directed to Detention Pond 9 and discharges out of Outfall No. 5.

Table 2 – Juniper Ridge Landfill – Alton, ME			
Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Maintenance Building with attached office/operator's breakroom	Limited equipment repair and maintenance is done within the maintenance building. Parts and tires are stored in the building. There is a parts washer within the building as well. Various chemicals are stored in the maintenance building: truck batteries, oxygen cylinders, one 500-gallon hydraulic oil AST, one 500-gallon motor oil AST, one 275-gallon used oil tote, five to ten 55-gallon drums, five to ten 5-gallon buckets with various oils, lubricants, windshield wash fluid, and antifreeze/coolants. There is also one flammable cabinet with various paints, parts cleaners and varnishes. There are floor drains within the maintenance building that flow to a 2,000-gallon underground storage tank (UST).	Gasoline, Hydraulic Oil, Transmission Oil, Grease, Solvents, Metals, Acid, Maintenance Chemicals and Antifreeze	Stormwater runoff in this area is directed to Detention Pond 9 and discharges out of Outfall No. 5.

Table 2 – Juniper Ridge Landfill – Alton, ME			
Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Rubb Building	The Rubb Building is located next to the maintenance building and is used to store parts and tires. It is also used to convert pre-manufactured plastic piping to landfill gas transport piping. Various chemicals are stored in the Rubb building. Truck batteries, one 275-gallon tote of odor control liquid, five to ten 55-gallon drums with various oils, lubricants, windshield wash fluid, and antifreeze/coolants. There are also two flammable cabinets with various paints, parts cleaners and varnishes.	Batteries, Oil, Grease, Solvents, Metals, Odor Control Liquid, Maintenance Chemicals and Antifreeze	Stormwater runoff in this area is directed to Detention Pond 9 and discharges out of Outfall No. 5.
LFG Treatment Facility	The LFG treatment facility takes the LFG that is captured via extraction wells throughout the landfill, cleans it, and then sends LFG to the RNG facility. When the RNG facility is down, LFG is burned through the flare.	Caustic, Anti-Foam, Odor Control Spray, Solvents, Oil and Grease	

Table 2 – Juniper Ridge Landfill – Alton, ME			
Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
RNG Facility	This site is owned and operated by Archaea Energy, Inc. This site is approximately 2-acres and was constructed within the existing boundaries of the landfill. The facility consists of equipment skids used to process landfill gas into RNG. There are two vegetable oil-filled transformers, a diesel fuel AST to fuel onsite generators, and other ancillary equipment located at the facility on concrete pads. There is a 550-gallon oil/water separator onsite.	Sediment and Suspended Solids, Vegetable Oil, Dielectric Fluid, Compressor Oil, Used Oil, and Diesel Fuel	Stormwater runoff in this area flows to the RNG Facility Stormwater Pond, which flows into Detention Pond 9 and discharges out of Outfall No. 5. Archaea Energy, Inc. has the ability to close off the outlets from the RNG Facility Stormwater Pond in the event of a significant release.
Leachate Storage Tank	Leachate that is collected from the landfill is stored in a 900,000-gallon tank.	Leachate	Stormwater falling within the leachate storage tank containment berm is contained, then discharged (as appropriate) to a riprap apron southwest of the leachate storage tank area. This stormwater eventually flows to Detention Pond 6, and discharges out of Outfall No. 4.

Table 2 – Juniper Ridge Landfill – Alton, ME			
Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Leachate Loading Rack	Leachate is pumped from the leachate storage tank to tanker trucks at the leachate loading rack for offsite disposal. Overflow or spillage of leachate at the loading rack flows by gravity to a catch basin, and then through piping to a pump station that pumps leachate back to the leachate storage tank.	Leachate, Diesel, Antifreeze, Sediment and Suspended Solids	Stormwater falling in this area would flow into the containment berm for the leachate storage tank, which discharges to a riprap apron southwest of the leachate storage tank area. This stormwater eventually flows to Detention Pond 6 and discharges out of Outfall No. 4.
Leachate Collection System	Leachate collected within the landfill's leachate collection system is conveyed by gravity to pumping areas (sumps) within the landfill. The leachate is pumped from the sumps through force mains to the leachate-storage tank.	Leachate	Stormwater collected within the completely enclosed leachate collection system is pumped into the 900,000-gallon leachate storage tank.
Access Roads	Access roads run throughout the site.	Diesel, Gasoline, Antifreeze, Litter, Sediment and Suspended Solids	Runoff flows into various drainage channels discharging at all outfalls.
Gravel Laydown Area	Facility equipment is parked in this area when not in use.	Diesel, Gasoline, Antifreeze, Sediment and Suspended Solids	Stormwater runoff in this area is directed to Detention Pond 9 and discharges out of Outfall No. 5.

Table 2 – Juniper Ridge Landfill – Alton, ME			
Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Employee Parking Area	Multiple employee vehicles are parked in this area during operating hours.	Diesel, Gasoline, Antifreeze, Sediment and Suspended Solids	Stormwater runoff in this area sheetflows to the northeast toward a natural drainage channel located to the northeast.
1,500-Gallon Gasoline Tank	This tank may be used to fuel onsite vehicles.	Gasoline	Stormwater runoff in this area is directed to Detention Pond 9 and discharges out of Outfall No. 5.
2,500-Gallon Diesel Delivery Truck	This truck is used to fuel onsite equipment and is parked to the south of the Maintenance Building when not in use. The fuel storage tank on the truck is filled onsite by an oil delivery company.	Diesel	Stormwater in this area goes to the leachate collection system which is pumped into the 900,000-gallon leachate storage tank.
Salt and Sand Storage Area	Salt and sand storage beneath a tarp next to the landfill scales, utilized for road treatment in the winter season.	Salt, Sediment, and Suspended Solids	Stormwater falling in this area would flow to the southwest to the wetland located between the scales and the landfill.

Table 3 – Juniper Ridge Landfill – Alton, ME Sector-Specific Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Fertilizer, Herbicide, and Pesticide Application Areas	None applied	Not applicable	Not applicable
Earth and Soil Moving Areas	There are multiple soil stockpile areas used for landfill cover and erosion control, a permitted borrow pit where material (soil, gravel, or sand) is excavated for use at other locations.	Sediment and Suspended Solids	Stormwater runoff in this area sheetflows to the northeast toward a natural drainage channel located to the northeast.
Waste Hauling and Loading/Unloading Areas	Waste brought into the facility is directed to active portions of the landfill. Salt used during winter conditions is also stored in this area.	Leachate, Sediment, Suspended Solids and Salt	Stormwater in this area goes to the leachate collection system which is pumped into the 900,000-gallon leachate-storage tank.
Outdoor Storage of Significant Materials (Includes daily, interim, and final cover material stockpiles as well as temporary waste storage areas.)	There are multiple soil stockpile areas used for landfill cover and erosion control, a permitted borrow pit where material (soil, gravel, or sand) has been excavated for use at other locations, and a wood-waste handling area, all located on the northeast side of the facility.	Sediment and Suspended Solids	Stormwater runoff in this area sheetflows to the northeast toward a natural drainage channel located to the northeast.

Table 3 – Juniper Ridge Landfill – Alton, ME Sector-Specific Potential Pollutant Sources			
Industrial Area/Activity	**Description**	**Pollutants**	**Direction of Stormwater Runoff**
Exposure of Active and Inactive Landfill and Land Application Areas	There are portions of the landfill where final cover has been applied and is inactive, while there are other portions that are active.	Leachate, Sediment and Suspended Solids	Stormwater in this area goes to the leachate collection system which is pumped into the 900,000-gallon leachate storage tank.
Uncontrolled Leachate Flows	Uncontrolled leachate flows are unlikely, due to the design of the site's leachate collection system, the secondary containment provided at the leachate loading rack, and leachate-storage tank.	Leachate	
Failure or Leaks from Leachate Collection and Treatment Systems	Leachate collected within the landfill's leachate collection system is conveyed by gravity to pumping areas (sumps) within the landfill. The leachate is pumped from the sumps through force mains to the leachate-storage tank. A failure of the system is unlikely.	Leachate	
Foam Utilized for Daily Cover	An Atmos Bulk Storage and Dilution System located north of the landfill produces Atmos Alternative Daily Cover foam which is applied by a pneumatic foam unit.	Surfactants	Stormwater in this area sheet flows north to a wooded area and eventually to the adjacent wetlands.

Note: Includes significant materials handled, treated, stored, and exposed in prior three years.

4.2 Wastewater/Process Water Containment

The following wastewater and/or process water storage tanks are present at the site.

Table 4 – Juniper Ridge Landfill – Alton, ME		
Wastewater/Process Water Containment Tanks		
Tank	**Description**	**Pollutants**
900,000-Gallon Leachate Tank	This tank is used for the storage of leachate collected from the landfill and to supply tank trucks for offsite disposal of leachate. The tank is equipped with a level transducer that constantly monitors the level in the tank.	Leachate
2,000-Gallon Underground Holding Tank	The maintenance building has floor drains that flow to a 2,000-gallon holding tank.	Gasoline, Hydraulic Oil, Transmission Oil, Grease, Solvents, Metals, Acid, Maintenance Chemicals and Antifreeze

The 900,000-gallon leachate tank is equipped with a level sensor and alarm to signal an overflow or leak.

4.3 Spills and Leaks

In April 2025, approximately 2 gallons of diesel fuel dripped along the east side paved access road to the scales. The spill was caused by a ruptured fuel line.

In June 2024, approximately 4 gallons of hydraulic oil was spilled due to a hydraulic hose burst on a skid steer in front of the wood waste handling area.

Later in June 2024, approximately 5 gallons of hydraulic oil was dripped/spilled on the east side paved access road from the JRL shop to the east/west access road intersection. The spill was caused by a ruptured hydraulic line.

In May 2024, approximately 20 gallons of diesel fuel was spilled while Archaea was refueling onsite generators. The spill was located on a gravel pad in the Archaea RNG Area.

In April 2024, approximately 1 gallon of antifreeze was spilled by a third-party hauling truck. This spill occurred on the access road in front of Detention Pond 11.

Also in April 2024, approximately 20 gallons of oily water misted out of the top of the Archaea LFG flare during the plant commissioning process. The oil source was blowby from

a leaking seal in process equipment. The spill was located on a gravel pad near the Archaea RNG Flare.

In November 2023, approximately 4 gallons of hydraulic oil was spilled along the Cell 15 access road due to a ball valve release by a third party hauling truck.

In September 2023, approximately 5 gallons of diesel was spilled into Cell 15 due to a fuel tank release by a third-party hauling truck.

In May 2023, approximately 3 gallons of hydraulic oil was spilled by the scale due to a hydraulic line break in a third-party hauling truck.

In October 2022, heavy precipitation (3.8 inches in two days) caused roughly 500 gallons of leachate to trickle into a stormwater ditch along the west road. The spill was caused when a stormwater culvert plugged, overwhelming the area with water.

In each instance, the spill was promptly cleaned up and the Maine DEP was notified within 2 hours of the spill occurring.

All spills or leaks are documented using the **Spill Reporting Form** in **Appendix E**. These records will be kept onsite with the SWPPP. Locations where significant spills and leaks have occurred are also shown on **Figure 2, Site Plan**. Spill prevention and response procedures are discussed further in Section 5.5.

4.4 Non-Stormwater Discharges

The site has been evaluated for unauthorized non-stormwater discharges. The site must conduct an initial inspection for new non-stormwater discharges. Documentation for this inspection is provided in **Appendix F Initial Evaluation of Non-Stormwater Discharges**, which includes:

- The date of the evaluation;
- A description of the evaluation criteria used;
- A list of the outfalls or onsite drainage points that were directly observed during the evaluation; and
- The action(s) taken, or list of control measures used to eliminate unauthorized discharge(s), or documentation that a separate MEPDES permit was obtained.

A list of potential and authorized non-stormwater discharges at the site is provided in the table below.

Table 5 – Juniper Ridge Landfill – Alton, ME		
Non-Stormwater Discharges		
Allowable/Potential Non-Stormwater Discharges	**Status**	**Best Management Practices**
Firefighting activities	Not Applicable	Not Applicable
*Fire hydrant flushings	Not Applicable	Not Applicable
*Potable water, including water line flushings	Not Applicable	Not Applicable
Uncontaminated condensate from air conditioners, coolers, other compressors, and outside storage of refrigerated gases or liquids	Not Applicable	Not Applicable
Irrigation drainage	Not Applicable	Not Applicable
**Landscape watering	Not Applicable	Not Applicable
Routine external building wash-down/power wash water not contaminated with detergents or hazardous cleaning products	Not Applicable	Not Applicable
Uncontaminated groundwater and springs	Not Applicable	Not Applicable
Uncontaminated utility vault dewatering	Not Applicable	Not Applicable
Water from building foundations or footings not contaminated by contact with process materials	Not Applicable	Not Applicable
Incidental mist from cooling towers that collects on roofs or adjacent portions of the site	Not Applicable	Not Applicable
Incidental water that does not contain detergents from onsite rinse stations	Not Applicable	Not Applicable
Incidental condensed steam that does not contribute to violations of water quality standards	Not Applicable	Not Applicable
Wash water from cleaning roads, parking lots, sidewalks or other paved surfaces that does not contain detergents, hazardous cleaning products, oil & grease, or toxic pollutants	Not Applicable	Not Applicable

Table 5 – Juniper Ridge Landfill – Alton, ME		
Non-Stormwater Discharges		
Allowable/Potential Non-Stormwater Discharges	**Status**	**Best Management Practices**
***Wash water from vehicles and equipment cleaning	Not Applicable	Not Applicable
Non-stormwater discharges explicitly authorized in Sectors A through AD	Not Applicable	Not Applicable

*Must not contribute to a violation of MEDEP water quality standards and be documented in the SWPPP.
**provided any pesticides, herbicides, and fertilizers have been applied in accordance with MEDEP regulations.
***Wash water from the cleaning of engines, undercarriages, and transmissions is prohibited. All wash water from the interior of truck trailers or other large commodity carrying containers must be collected and discharged to the POTW.

5.0 STORMWATER CONTROL MEASURES

This section describes stormwater controls that are in place or that will be implemented to control pollutants having the potential to impact stormwater quality. In accordance with Section L of the MSGP, the following criteria were taken into consideration in the selection of Best Management Practices intended for compliance with applicable Non-Numeric and Numeric Technology-Based Effluent Limitations.

5.1 Best Management Practices (BMPs)

When selecting and designing BMPs for the site, the following parameters must be considered:

1. Preventing stormwater from coming into contact with significant materials;
2. Using control measures in combination to minimize pollutants in stormwater discharges;
3. The quantity and nature of potential pollutant sources, and potential to impact the water quality of the receiving waters;
4. Opportunities to offset stormwater and temperature impacts from impervious areas on dry weather flows and low flow situations to streams;
5. Minimizing impervious areas at the site and infiltrating runoff onsite;
6. Conserving and/or restoring riparian buffers;
7. Attenuating flow using open vegetated swales and natural depressions; and
8. Use of treatment interceptors (e.g., swirl separators and sand filters) to minimize the discharge of pollutants.

5.2 Non-Structural BMPs

Descriptions of non-structural control measures are provided in the table below.

Table 6 – Juniper Ridge Landfill – Alton, ME	
Non-Structural Best Management Practices	
Non-Structural BMPs	**Description**
Minimizing Exposure There are operations in place to minimize the exposure of industrial activities and materials at the site to stormwater.	• Grading, berming, and/or curbing is used to prevent runoff of contaminated flows and divert run-on away from these areas; • Materials, equipment, and activities are located such that potential leaks and spills are contained or able to be contained or diverted before discharge; • Spills or leaks are cleaned up promptly upon discovery using dry methods (e.g., absorbents) and disposed of properly; • In the event of leaky vehicles or equipment, indoor storage may be provided, or drip pans and absorbents are used; • Fluids must be drained from vehicles and equipment that are to be decommissioned, and quarterly inspections are performed on any that will remain unused for extended periods of time; and • Industrial materials and activities are performed inside or are protected with storm-resistant coverings, if feasible. • An Atmos Bulk Storage and Dilution System located north of the landfill produces Atmos Alternative Daily Cover foam which is applied by a Morooka-based pneumatic foam unit.

Table 6 – Juniper Ridge Landfill – Alton, ME Non-Structural Best Management Practices	
Non-Structural BMPs	**Description**
Good Housekeeping Good housekeeping measures are performed to avoid or minimize pollutant exposure to stormwater.	• Routine sweeping is performed; • Containers that could be susceptible to spillage or leakage are clearly labeled; • Materials are properly placed, stored, and contained; • Onsite sources of dust are identified and controlled to minimize stormwater contamination with stormwater collected within the geomembrane-lined storage pond adjacent to Detention Pond 1. This stormwater is pumped via forced main to a clean water loading rack adjacent to Detention Pond 1. Water trucks used for site dust control are filled at this loading rack; • Soils are stabilized to prevent erosion; • Dumpsters are covered and kept closed when not in use or for those containers without lids, adequate secondary containment is provided, as practicable; • Snow storage and disposal areas are operated to minimize pollutant runoff; and • Exposed areas are kept free of waste, garbage, and floatable debris to prevent their discharge to receiving waters.
Preventive Maintenance A preventive maintenance program is implemented to maintain all control measures at the site.	• Inspections and maintenance of stormwater management devices are performed in a timely matter; • Proper spill equipment supplies are maintained near where spills could occur; and • Site equipment and systems are inspected, tested, maintained, and repaired to avoid breakdowns or failure that may result in releases of potential pollutants to surface waters.
Spill Prevention Spill prevention and cleanup procedures have been established and are available to employees who may cause or encounter a spill or leak.	• Containers 55 gallons or greater that are susceptible to leaking or spillage are labelled; • Procedures have been implemented for material storage and handling; • Procedures for quick response to stop leaks, spills, and other releases have been implemented; • Training for employees for detecting and responding to a spill is provided; • Notification procedures for emergency response and regulatory agencies are in place; and • Documentation is included in the SWPPP files.

Table 6 – Juniper Ridge Landfill – Alton, ME	
Non-Structural Best Management Practices	
Non-Structural BMPs	**Description**
Employee Training Annual employee training is provided for employees who work in areas where industrial materials or activities are exposed to stormwater and those responsible for implementing activities identified in the SWPPP.	• An overview of the SWPPP contents; • Spill response procedures, good housekeeping, maintenance requirements, and material management practices; • The location of all controls required by the MSGP, and how they are maintained; • Proper procedures to meet pollution prevention requirements; and • When and how to conduct inspections, record findings, and take corrective actions.
Sector-Specific Requirements	
The requirements in Sector L apply to stormwater discharges associated with industrial activity from Landfills, Land Application Sites, and Open Dump facilities as identified by the SIC/NAICS Codes specified in Attachment A of the MSGP. Technology-based effluent limits for this Sector are addressed below when applicable.	
Preventative Maintenance Program Sector-specific requirements are included in the preventative maintenance program.	• All elements of leachate collection and treatment systems to prevent the commingling of leachate with stormwater; and • The integrity and effectiveness of any intermediate or final cover, including any repairs, to minimize the effects of settlement, sinking, and erosion.

5.3 Structural BMPs

Descriptions of structural control measures are provided in the table below. See **Figure 2**, **Site Plan** for locations of structural BMPs.

Table 7 – Juniper Ridge Landfill – Alton, ME	
Structural Best Management Practices	
Structural BMPs	**Description**
Sediment and Erosion Control For areas at the site having a potential for significant or persistent soil erosion, dust generation or vehicle tracking (if applicable).	Structural BMPs include: • Hay bales • Silt fence • Rip rap • Swales • Buffers • Bark mulch sediment berms • Stone
Stormwater Structural Devices Permanent structural BMPs other than those which control the generation or source(s) of pollutant(s.)	Structural BMPs include: • Drainage channels/check dams • Rip-rap and level spreaders • Bark mulch sediment berms • Silt fence • Hay bales • Sedimentation/detention ponds • Litter fencing • Intermediate or final cover • Liner and leachate collection system
Sector-Specific Requirements	
Structural BMPs	**Description**
Sediment and Erosion Control Minimize erosion from the site by utilizing temporary stabilization practices*.	Structural BMPs include: • Seeding • Mulching • Geotextiles • Stone

*Ensure that sediment and erosion control are utilized in the following areas:

1. Materials stockpiled for daily, intermediate, and final cover;
2. Inactive areas of the landfill or open dump;
3. Landfills or open dump areas that have final covers but where vegetation has yet to be established; and
4. Land application sites where waste application has been completed, but final vegetation has not been established.

Employees are trained on the following when hired, and annually thereafter:

1. An overview of the SWPPP;
2. Spill response procedures, maintenance requirements, and material management practices;
3. The location of all controls on the site required by the MSGP, and how they are to be maintained;
4. The proper procedures to follow with respect to the MSGP's pollution prevention requirements;
5. When and how to conduct inspections, record applicable findings, and take corrective actions;
6. Used and spent oil solvent management;
7. Fueling procedures;
8. General good housekeeping practices; and
9. Used battery management.

Training is documented on the SWPPP Training Log, copies of which are kept in the SWPPP files. A copy of a blank **SWPPP Training Log** is provided in **Appendix G**.

5.4 Spill Prevention and Response

Spills or leaks are recorded on the **Spill Reporting Form** (**Appendix E**); copies of which are kept in the SWPPP files. Materials used to address spills such as absorbent pads are shown on **Figure 2, Site Plan**. When a petroleum or hazardous substance spill event takes place, the following actions should be taken in the sequence indicated:

When a spill event takes place, the following actions should be taken in the sequence indicated:

1. For a <u>minor spill</u> that can be immediately contained by site personnel using onsite spill control equipment and materials, the following spill containment and countermeasure procedures should be implemented:

    a. Immediately upon observing an oil spill, find the source and take any corrective action required to stop the flow, including, as necessary, shutting down any operations that are contributing to the spill or may increase the hazard potential.
    b. Notify nearby employees (if any) of the spill and the possible hazards.
    c. Contain the spill using containment devices such as absorbent booms or remove the discharge via use of absorbent pads and/or granular absorbent material.
    d. Notify the Pollution Prevention Team, who will notify local, state and federal agency representatives as appropriate.
    e. Proceed quickly with recovery and clean-up measures using absorbent pads and/or granular absorbent material. Take measures to prevent the spill from entering the drainage system.

f. Use the **Spill Reporting Information Form** in **Appendix E** to record the spill information.

2. For a major spill that cannot be immediately contained by site personnel using onsite spill control equipment and materials:

   a. Follow the steps a through c and e above to the extent that these actions can be performed safely.
   b. Immediately notify the Pollution Prevention Team or facility emergency contact who will notify the offsite response contractor, and the appropriate local, state and federal agency representatives.
   c. Containment and clean-up activities must continue until the facility emergency contact, and the local, federal and/or state agency representatives agree that such activities may be discontinued.

Contaminated cleanup materials must be handled and disposed of in accordance with applicable state and federal requirements. Petroleum impacted pads or booms containing free liquids must be disposed of by a licensed response contractor. The management of cleanup materials contaminated by hazardous substances other than petroleum-impacted materials depends on the type of hazardous substance.

6.0 MONITORING REQUIREMENTS

6.1 Monitoring

Stormwater samples must be collected during a "Qualifying Storm Event" as defined in the MSGP as precipitation or ice/snow melt waters that produce a measurable discharge of 0.1 inch or more within a 24-hour period at an outfall at least 72 hours from a previous qualifying storm event.

In the event that a Qualifying Storm Event does not occur during an entire calendar quarter, it must be documented that there was no discharge to sample.

6.2 Summary of Monitoring Data from Previous Permit Term

Available Quarterly Visual Monitoring Reports from the previous MSGP permit term (2011-2016) were reviewed and results indicate normal stormwater quality at the site. Sediment was occasionally observed in samples collected from Outfall Nos. 1-2 and 4-5 which prompted periodic cleanup of the facility swales throughout the permit period.

Visual monitoring must be performed once per calendar quarter.

Samples must be collected as follows:

- During a storm event that produces a discharge at the outfall, or in the case of snowmelt, during a period with a measurable discharge from the outfall;
- Sample(s) must be taken within the first 60 minutes, and no more than 2.25 hours following the beginning of the discharge. If a sample cannot be collected within the first 60 minutes, the reason must be documented;
- Samples must be representative of the discharge;
- Samples must be collected in a clean, colorless glass or plastic container and examined in a well-lit area;
- Samples must be collected during normal business hours; and
- The samples must be visually inspected for:
    - Color;
    - Odor;
    - Clarity;
    - Floating solids;
    - Settled solids;
    - Suspended solids;
    - Foam;
    - Oil sheen; and
    - Other obvious indicators of stormwater pollution.

Visual assessments must be performed and documented in accordance with standard operating procedures outlined in MEDEP document **DEPLW0768, Visual Monitoring of Stormwater Discharges Associated with Industrial Activity**, provided in **Appendix H**, copies of which are kept in the SWPPP files.

The visual monitoring is documented on a blank **Quarterly Visual Monitoring Form** provided in **Appendix I**. The Quarterly Visual Monitoring Form will be signed and certified by a "Responsible Corporate Officer." A copy of each completed form will be maintained with the SWPPP files.

If no qualifying stormwater discharge event occurs during a calendar quarter, then the site must document that there was no discharge to sample. The record must be maintained with the SWPPP.

6.3 Sector-Specific Benchmark Monitoring

Benchmark monitoring is required for certain industry sectors. The site is not regulated under these sectors, therefore benchmark monitoring is not required.

6.4 Numeric Technology-Based Effluent Limitation Monitoring

Numeric effluent limitation monitoring is required for Sections A, C, D, E, H, J, K, L, O and S (MSGP Section I). The site is regulated under sector L, however per 40 CFR 455 Subpart B there are no contaminated stormwater discharges, therefore numeric effluent limitation monitoring is not required at this site.

6.5 Impaired Waters Monitoring

The MEDEP will determine whether a facility discharges to an impaired water based on receiving water information provided by the applicant on the NOI form. If the receiving water is determined to be impaired, the MEDEP may require additional monitoring to ensure stormwater discharges comply with applicable water quality laws and this MSGP.

6.6 Routine Site Inspections

Routine inspections must be performed on a quarterly basis with at least one inspection per year completed during a period when a stormwater discharge is occurring. The inspections cover:

- Areas where industrial materials or activities are exposed to stormwater;
- Areas identified in the SWPPP and those that are PPSs;
- Areas where spills and leaks have occurred in the past three years;
- Discharge points; and
- Control measures used to comply with the requirements of the MSGP.

The results of the inspection are documented in a report that includes the date and time of inspection, the name and signature of the inspector(s), weather information (precipitation in the previous 72-hour time period), observations, assessment of structural control measures, corrective actions taken, and any incidents of noncompliance. A blank **Routine Inspection Form** is provided in **Appendix J**.

If any deficiencies are noted during the routine inspection or a visual assessment shows evidence of stormwater pollution, all reasonable steps must be taken during that same day to minimize any adverse effects.

If additional actions are necessary, the corrective actions must be completed prior to the next storm event if possible, and within 14 calendar days from the time of discovery of the corrective action condition. If this is not feasible, the reason for the delay must be documented and the improvement completed within 45 days of discovery. The MEDEP must be notified if completion will exceed the 45-day timeframe. The rationale for an extension and completion date must be included in the notification. If changes in the SWPPP are required, the plan must be modified with 14 calendar days of completing corrective action work.

6.7 Additional Sector-Specific Inspections

Sector L requires inspections to be conducted at the site at least once every seven days. These inspections should focus on the following areas, ensuring that sediment and erosion control measures are functioning properly:

- Areas of landfill that have not yet been finally stabilized;
- Land application and storage of material and wastes areas that are exposed to precipitation, stabilization, and structural control measures; and
- Locations where equipment and waste trucks enter and exit the site.

For stabilized sites and areas where land application has been completed, this inspection must be completed at least once every month (see **Appendix K, Weekly/Monthly Inspection Form**).

7.0 SWPPP REVIEW AND CORRECTIVE ACTIONS

7.1 SWPPP Review

The SWPPP must be reviewed and revised as necessary under any of the following conditions:

- An unauthorized release or discharge occurs;
- Control measures are not stringent enough for the discharge to meet applicable water quality standards or the non-numeric effluent limits (i.e., BMPs) in this permit;
- A required control measure was never installed, was installed incorrectly, or is not being properly operated or maintained;
- Whenever a visual assessment shows evidence of stormwater pollution;
- Monitoring, inspections, or investigations by local, state, or federal officials determine that the SWPPP in ineffective or that there is a discharge that could contribute to violation of a water quality standard; or
- There is a change in site design or construction or maintenance that significantly changes the nature or quantity of pollutants discharged.

All other amendments to the SWPPP must be completed within 30 days of discovery of the condition.

7.2 Corrective Actions

If any of the conditions in Section 7.1 are identified, then the following procedures must be implemented:

1. Immediate Actions**:** Immediately (on the same day), all reasonable steps necessary should be taken to minimize or prevent the discharge of pollutants until a permanent

solution is installed and made operational. If a problem is identified too late in the workday to initiate a corrective action, then the action must be initiated no later than the following workday.

2. Subsequent Actions: If it is determined that additional actions are necessary then they must be completed prior to the next storm event if possible, and within 14 calendar days from the time of discovery. If this is not feasible, the reason for the delay must be documented and the improvement completed within 45 days of discovery. The MEDEP must be notified if completion will exceed the 45-day timeframe. The rationale for an extension and completion date must be included in the notification.

If changes in the SWPPP are required, the plan must be modified with 14 calendar days of completing corrective action work.

7.3 Corrective Action Report (CAR)

A Corrective Action Report (CAR) must be a signed, certified report to document actions taken in response to triggering the need for corrective action review due to an exceedance of a water quality-based limitation, ambient water quality criterion, or a deficiency identified in a MEDEP inspection report.

The CAR must include the following information:

1. The existence of any of the conditions listed in Section 7.1 and a description of the condition triggering the need for corrective action review;
2. A description of any incident causing a spill or leak including: the material, date/time, amount, location, and reason that it resulted in a discharge of pollutants to waters of the state through stormwater or otherwise;
3. The date the condition was identified;
4. Description of immediate actions completed and measures to prevent recurrence;
5. A description of corrective actions to be taken as a result of the identified conditions;
6. The dates when each corrective action was initiated and completed, or expected to be completed; and
7. If the event occurred at a "substantially identical outfall" (e.g. representative) documentation that the need for corrective actions at the others was assessed must be included.

A blank **CAR** is provided in **Appendix L**. The CAR must be signed and certified. Maintain the CAR with the SWPPP. RECORDS AND RETENTION

The following documents must be kept onsite in accordance with Section M of the MSGP.

- A copy of the NOI submitted to the MEDEP (**Appendix A**);
- A copy of the NOI Approval issued by the MEDEP (**Appendix B**);

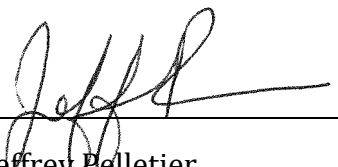
- A paper copy of the MSGP and any Sectors applicable to the site (**Appendix C & D**);
- Documentation of maintenance and repairs of control measures;
- All inspection reports and monitoring data required by the MSGP;
- Documentation of monitoring exceedances and response;
- A description of any deviations from the schedule for or timing of sampling and visual assessments and/or monitoring;
- Dates and descriptions of all spills and leaks;
- CARs and summary of completed actions;
- Impaired waters documentation of any determination that pollutants of concern are not expected to be above natural background levels;
- Documentation to support any determination that pollutants of concern are not expected to be present above natural background levels if discharging directly to Impaired Waters, and that these pollutants were not detected in the discharge or were solely attributable to natural background sources;
- Employee training records;
- Types of wastes disposed of in each cell or trench of a landfill or open dump; and
- For land application sites, records on a log of the types and quantities of wastes applied to specific areas.

Copies of the SWPPP, all reports, certifications and monitoring results, and records of all data used to complete the NOI must be retained from the beginning date of MSGP coverage through the date of renewed coverage under a subsequent permit or until a Notice of Termination is submitted to the MEDEP. These records will be made available to state or federal inspectors upon request.

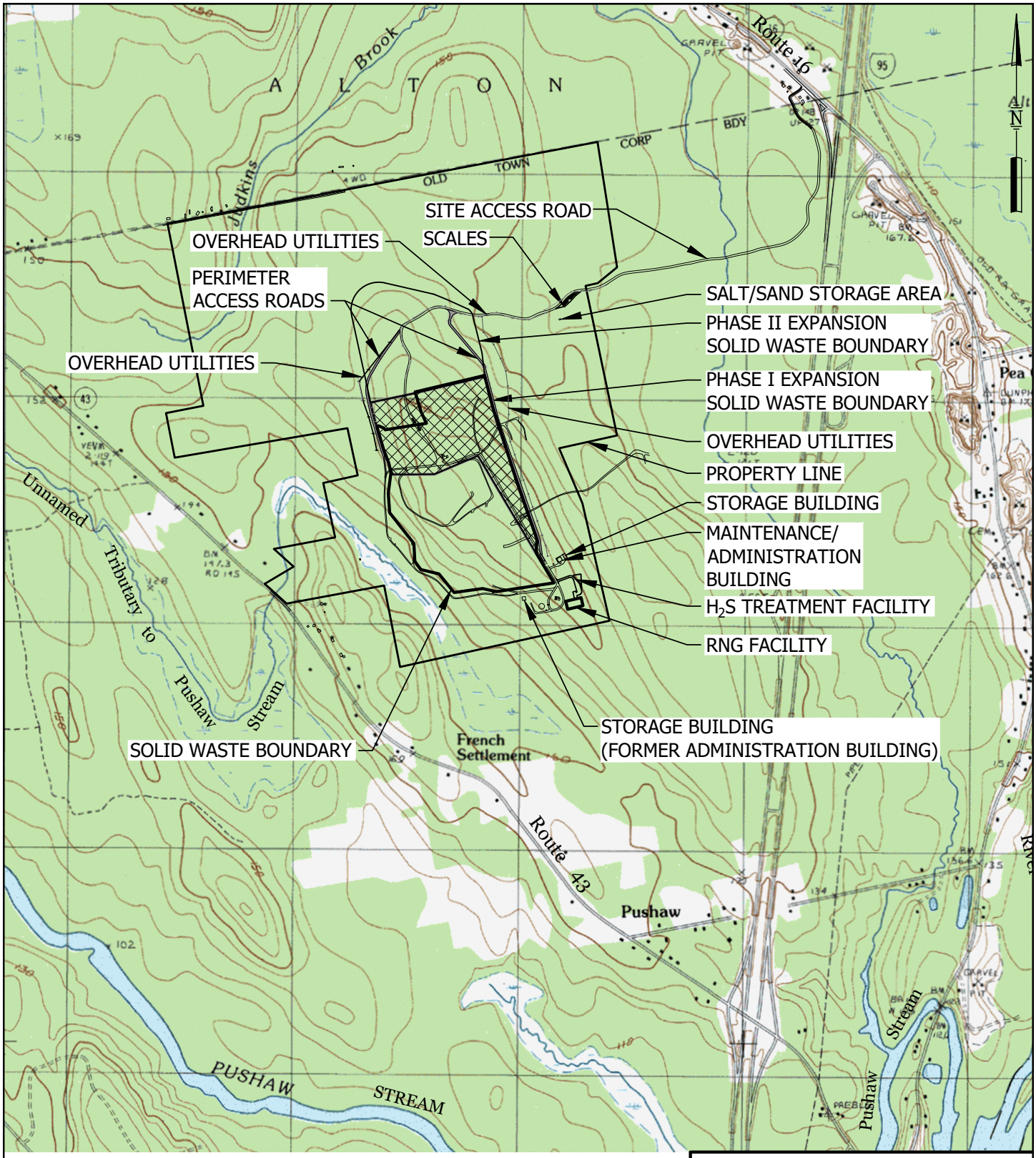
8.0 CERTIFICATION

It is the intention of NEWSME to conduct operations at the Juniper Ridge Landfill, 2828 Bennoch Road in Alton, Maine, in an environmentally safe and responsible manner. The goal of this SWPPP is to minimize the potential for pollution from stormwater discharges from entering waters of the State by minimizing the pollutants contained in stormwater discharges.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature:	
Name:	Jeffrey Pelletier
Title:	Environmental Manager
Date:	4/18/2025

FIGURES



NOTE:

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

1000 0 2000 4000 FEET

DWG: SITELOC LMN: SITELOC CTB: SME-STD REV: 2/11/2025

SITE LOCATION MAP
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

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MAY 2023 HYDRAULIC OIL SPILL
LANDFILL SCALES
SALT/SAND STORAGE AREA
APRIL 2025 DIESEL FUEL SPILL
2000 GALLON UNDERGROUND STORAGE TANK FOR FLOOR DRAINS
55 GALLON DRUMS ON SPILL PALLETS
PROPANE TANK
RUBB BUILDING
MAINTENANCE BUILDING 500 GALLON MOTOR OIL, 500 GALLON HYDRAULIC OIL, 275 GALLON WASTE OIL TANK, 55 GALLON DRUMS AND 5 GALLON PAILS ON SPILL PALLET
OUTFALL NO.5 (SEE FIGURE 3) (MONITORING LOCATION)
LEVEL LIP SPREADER OUTFALL NO. 6 (MONITORING LOCATION)
PERMITTED BORROW PIT
RNG FACILITY STORMWATER POND
270 GALLON MINERAL OIL TANK
PROCESS WATER SUPPLY WELL
RNG FACILITY SEE NOTE 8
MAY 2024 DIESEL FUEL SPILL
MAINTENANCE BLDG SEPTIC SYSTEM AND LEACHFIELD
GRAVEL LAYDOWN AREA
LFG TREATMENT FACILITY
CONDENSATE SETTLEMENT BASIN
CONDENSATE PUMP STATION
TEMPORARY LOCATION OF DIESEL FUEL TANK SEE NOTE 7
APRIL 2024 OILY WATER SPILL
EXISTING GAS FLARE
DIESEL GENERATOR (366 GALLON DIESEL TANK)
LEACHATE LOADING RACK
SPILL KIT
LEACHATE STORAGE TANK AND CONTAINMENT AREA
CATCH BASIN
VALVE
RIPRAP OUTLET
DUAL 24-INCH CULVERTS (TYP)
OUTFALL NO. 7 (MONITORING LOCATION)
CELL 14 PUMP STATION
APPROXIMATE LANDFILL WASTE LIMIT
LEVEL LIP SPREADER
BORROW PIT ACCESS ROAD
VEGETATIVE SOIL STOCKPILE
WOOD WASTE HANDLING AREA
APRIL 2024 ANTIFREEZE SPILL
2ND JUNE 2024 HYDRAULIC OIL SPILL
1ST JUNE 2024 HYDRAULIC OIL SPILL
ENERGY DISSIPATER
FUEL TRUCK
SPILL KIT
MAINTENANCE BLDG WELL
IN-PLACE GEOMEMBRANE COVER
ACTIVE CELL ACCESS ROAD
IN-PLACE SOIL COVER
STAGE 1 FINAL COVER
500 GALLON DIESEL TANK
275 GALLON HYDRAULIC OIL TANK
2500 GALLON DIESEL TANK (TRUCK)
NOVEMBER 2023 HYDRAULIC OIL SPILL
SEPTEMBER 2023 DIESEL SPILL
MAROOKA WELL LIQUID STORAGE FOR FOAM PRODUCTION
SPILL KIT
CELL 8 PUMP STATION
DETENTION POND 6 OUTLET STRUCTURE
OUTFALL NO.4 (MONITORING LOCATION)
CHAIN LINK FENCE
LEACHATE FORCEMAIN
WETLAND LIMIT (TYP)
STAGE 2 FINAL COVER
TEMPORARY MAINTENANCE ROAD
LITTER FENCE INSTALLED AS PART OF CELL 15 CONSTRUCTION
TEMPORARY CULVERT
ACTIVE DISPOSAL AREA (SUMMER 2025)
OUTFALL NO. 3
NEW OUTFALL NO. 9 (MONITORING LOCATION)
CELL 15 PUMP STATION
CELL 16 PUMP STATION
LANDFILL WASTE LIMIT (APPROXIMATE)
OCTOBER 2022 WATER/ LEACHATE SPILL
LEACHATE LOADING RACK
DETENTION POND 1 OUTFALL NO.1 (MONITORING LOCATION)
OUTFALL NO.2 (MONITORING LOCATION) DETENTION POND 2
CELL 5 PUMP STATION
NEW OUTFALL NO. 8 (MONITORING LOCATION)
CELL 4 PUMP STATION
GEOMEMBRANE LINED STORAGE POND
GEOMEMBRANE LINED STORAGE POND PUMP STATION

LEGEND

EXISTING CONTOUR
WETLAND DELINEATED

SITE ACREAGE 780

100 0 200 400 FEET

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. VERTICAL DATUM: BRASS PLUG AT PUMP STATION AT THE ADMINISTRATION BUILDING. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. DRAWINGS ARE FOR SITE OPERATIONS USE ONLY. DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION.
4. LOCATION OF ALL UTILITIES, POWER & COMMUNICATIONS, WATER, SEWER ETC NOT SHOWN ON THIS PLAN.
5. PLAN UPDATED ON FEBRUARY 2025, BASED ON INFORMATION SUPPLIED BY CASELLA WASTE SYSTEMS, INC.
6. DRAINAGE BOUNDARIES AND STORMWATER CONTROL FLOW PATTERNS SHOWN ON THIS FIGURE REPRESENT ANTICIPATED CONDITIONS AT THE COMPLETION OF CELL 16 STAGE 1 CELL DEVELOPMENT.
7. GRADES SHOWN IN CELL 15 REPRESENT FINISH WASTE GRADES PRIOR TO INSTALLATION OF INTERMEDIATE COVER. GRADES SHOWN IN THE CELL 16 AREA REPRESENT WASTE GRADES AT THE COMPLETION OF STAGE 1 CELL DEVELOPMENT.
8. THE RNG FACILITY INCLUDES SEVERAL LIQUID STORAGE DEVICES. REFER TO ACHAEA ENERGY PREPAREDNESS, PREVENTION, CONTINGENCY (PPC) PLAN, EMERGENCY ACTION PLAN (EAP) AND SPILL PREVENTION, CONTROL, AND COUNTERMEASURES (SPCC) PLAN DATED JANUARY 31, 2024.

FIGURE 2
SITE PLAN
JUNIPER RIDGE LANDFILL
SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

UPDATED FEBRUARY 2025

SME
SEVEE & MAHER ENGINEERS
ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE
4 Blanchard Road, PO Box 85A, Cumberland, Maine 04021
Phone 207.829.5016 • Fax 207.829.5692 • smemaine.com

DWG: SITEPLAN-2024 LMN: SITE PLAN CTB: SME-STD.CTB REV: 2/12/2025

\\Server\d\Casella\Old Town Land\2024\PPP\Acad\Figures\TEST\FIG-2025.dwg, FIG-2, 2/12/2025 2:40:58 PM, sm

LANDFILL SCALES

SALT/SAND STORAGE AREA

OUTFALL NO. 6 (MONITORING LOCATION)

LEVEL LIP SPREADER

OUTFALL NO.5 (MONITORING LOCATION)

RNG FACILITY STORMWATER POND

DETENTION POND 9

DETENTION POND 10

LEVEL LIP SPREADER

RNG FACILITY SEE NOTE 8

ENERGY DISSIPATER

OUTFALL NO. 7 (MONITORING LOCATION)

DETENTION POND 11

4 AND 5

STAGE 1 FINAL COVER

DETENTION POND 6

OKA WELL

CELL 16 ACTIVE DISPOSAL AREA (SUMMER 2025)

STAGE 2 FINAL COVER

OUTFALL NO.4 (MONITORING LOCATION)

DETENTION POND 6 OUTLET STRUCTURE

TEMPORARY MAINTENANCE ACCESS ROAD

OUTFALL NO.2 (MONITORING LOCATION)

DETENTION POND 2

OUTFALL NO. 3

NEW OUTFALL NO. 9 (MONITORING LOCATION)

CELL 16 PUMP STATION

CELL 15 PUMP STATION

NEW CULVERT OUTFALL NO. 8

CLEAN WATER LOADING RACK

DETENTION POND 1

OUTFALL NO.1 (MONITORING LOCATION)

GEOMEMBRANE LINED STORAGE POND (DETENTION POND 1A)

PROPERTY LINE (APPROXIMATE)

N

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. VERTICAL DATUM: BRASS PLUG AT PUMP STATION AT THE ADMINISTRATION BUILDING. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
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LEGEND

- EXISTING CONTOUR
- WETLAND DELINEATED
- DRAINAGE SUBCATCHMENT BOUNDARY
- OUTFALL THAT SUBCATCHMENT DRAINS TO

100 0 200 400 FEET

FIGURE 3
OUTFALL DRAINAGE BOUNDARIES
JUNIPER RIDGE LANDFILL
STORMWATER POLLUTION PREVENTION PLAN

SME
SEVEE & MAHER ENGINEERS
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4 Blanchard Road, PO Box 85A, Cumberland, Maine 04021
Phone 207.829.5016 • Fax 207.829.5692 • smemaine.com

DWG: SITEPLAN-2024 LMN: DRAINAGE PLAN CTB: SME-STD.CTB REV: 2/12/2025

UPDATED FEBRUARY 2025

\\Narwhal\Civil\Casella\2025\Twin Lane\BSW\PPP\Autof\Figures\SITEPLAN-2025.dwg, FIG-3, 2/12/2025 2:40:52 PM, sjm

APPENDIX A

NOTICE OF INTENT

NOTICE OF INTENT TO COMPLY WITH THE MAINE MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Notice of Intent (NOI) submission constitutes the express intent of the entity in Section A (of this form) to discharge stormwater associated with an industrial activity to waters of the State (excluding groundwater), from the facility/site identified in Section C (of this form), under Maine's Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP). Submission of this NOI also certifies that the responsible official understands and meets the eligibility conditions of Special Condition C, *Applicability And Eligibility*, of the MSGP, agrees to comply with all applicable terms and conditions of the MSGP, and understands that continued authorization under the MSGP is contingent on maintaining eligibility for coverage. Please send the completed form to the Maine Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017. A check for the appropriate permit fee made payable to: Treasurer, State of Maine may need to be submitted with the NOI. Please read the instructions on the back prior to completing the NOI form.

A. Applicant Information – Legal Name & Mailing Address					
MSGP Permit :	MER05 B477				
Maine State Charter Number (if applicable):	20040538DC				
Legal Name of Applicant	NEWSME Landfill Operations, LLC				
Mailing Address					
City/Town	Saco	State		Zip Code:	04072
Daytime Phone: (with area code)	(207) 653-4421				
E-mail	toni.king@casella.com				

B. Contact Person for this NOI					
Permit Contact Person	Toni King				
Title	Region Engineer				
Contact Address	110 Main St., Suite 1308				
City/Town	Saco	State		Zip Code	04072
Daytime Phone:	(207) 653-4421				
Email:	toni.king@casella.com				

C. Facility/Site Physical Location					
Physical Address	2828 Bennoch Road				
City/Town	Alton	State		Zip Code	04468

NOTICE OF INTENT TO COMPLY WITH THE MAINE MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Daytime Phone:	(207) 394-4372
Basis for Applicant's Title, Right, or Interest:	□ Deed □ Lease ■ Operating Agreement □ Other Attach a copy of the documentation demonstrating Title, Right or Interest

D. Receiving Water Information

Name of the receiving water(s):	Pushaw Stream
Does the facility discharge stormwater to a municipal separate stormwater sewer system (MS4)?	□ Yes ■ No
If yes, name of the MS4:	

E. Industrial Activity Information

The 4-digit Standard Industrial Classification (SIC) Code(s) or the 2 or 3 alpha-numeric Sub-Sector Code that best represents the industrial activity at the facility or any multiple sector-specific industrial activities.

SIC# or Sub-Sector Code	L1	Additional SIC# or Sub-Sector Code	

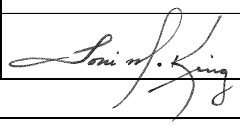
Applicable Sector(s) of industrial activity, as designated in Attachment A of the MSGP, that include associated discharges that you seek to have covered under this permit (check all that apply):

□ Sector A	□ Sector B	□ Sector C	□ Sector D	□ Sector E	□ Sector F	□ Sector G	□ Sector H
□ Sector I	□ Sector J	□ Sector K	■ Sector L	□ Sector M	□ Sector N	□ Sector O	□ Sector P
□ Sector Q	□ Sector R	□ Sector S	□ Sector T	□ Sector U	□ Sector V	□ Sector W	□ Sector X
□ Sector Y	□ Sector Z	□ Sector AA	□ Sector AB	□ Sector AC	□ Sector AD		

Does the facility have a complete and up-to-date Stormwater Pollution Prevention Plan (SWPPP)?	□ Yes □ No
What date was the SWPPP last revised to bring it up-to-date?	January 2017

F. Certification of Responsible Official

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 there are significant civil and criminal penalties for submitting false information, including the possibility of fine and imprisonment. By my signature as a responsible official for the entity or individual identified in Section A of this NOI, I certify under penalty of law that that I am the operator of the facility, and have Title, Right or Interest, as indicated in Section C of this form.

Printed Name:	Toni King		
Title:			
Signature:		**Date:**	

DEP OFFICE USE ONLY

Permit ID		

NOTICE OF INTENT TO COMPLY WITH THE MAINE MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Instructions for Completing the NOI Form

Type or print, in the appropriate white areas only. Answer all applicable questions, keep a copy for your records, and mail the original, signed, completed form. If you were previously licensed under a MSGP and you have not yet paid your Fall 2016 invoice include a check for $317. If this is the first time you are requesting coverage under the MSGP, include a check for $340. Make checks payable to "Treasurer, State of Maine". Send this form, attachments and any payment to: **Gregg Wood**, **Maine Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017 or e-mail the form and attachments to gregg.wood@maine.gov.**

Section A: Applicant Information – Legal Name & Mailing Address

1. If you were permitted under the previous MSGP, enter the MSGP permit number assigned to the facility. The number will start as follows: MER05____. It can be found in a letter sent to you in calendar year 2011 formally notifying you were granted coverage under the previous MSGP.

2. Enter the business' Maine State Charter Number. The number can be obtained from the State of Maine's Department of the Secretary of State, Bureau of Corporations, Elections and Commissions website. The hyperlink is https://icrs.informe.org/nei-sos-icrs/ICRS?MainPage=x.

3. Enter the applicant's full legal name. The applicant must be the person, partnership, co-partnership, firm, company, corporation, association, trust, estate, governmental entity or other legal entity that owns or operates the facility or site. Legal entities registered to conduct business in Maine or other state, whether for profit or not for profit, typically have a Charter Number issued by the respective state of incorporation or organization. The Charter Number, along with a *Certificate of Good Standing*, obtained from the Maine Secretary of State, Bureau of Corporations, Elections and Commisions, must be submitted with the NOI. If an individual is conducting a business under an unregistered assumed name, the NOI must be filed in the name of the individual.

4. The mailing address of the identified facility or operator will be the street address or P.O. Box, city/town, state, and zip code to which annual bills and other correspodnece will be sent. All correspondence regarding the permit will be sent to this address, not the facility address in Section B of the NOI form.

5. The telephone number listed for the facility operator must be a number at which calls are regularly received during normal business hours (8:00 AM to 5:00 PM).

Section B: Contact Person for this NOI

Enter the name of the **Contact Person** for this facility/site, their title, mailing address (street or P.O. Box, city, state, zip code), telephone number with the area code, and an e-mail address. If this contact is your consultant please supply an e-mail address as well. If your contact for this permit uses the same address as the company, parent company or facility/site, please enter "same as company", etc.

NOTICE OF INTENT TO COMPLY WITH THE MAINE MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Section C. Facility/Site Physical Location

1. Enter the **physical address** or location of the site (city/town, state and zip code). Include telephone number associated with the physical loation, including area code. If the physical name and address of the site is the same as the Applicant Information, write “same as applicant" in the Facility/Site section. Submit a map showing the location of the facility.

2. The applicant in **Section A** must provide evidence (submitted with the NOI) of “**Title, Right or Interest”** (TRI) in the facility conducting the industrial activity covered by this NOI. TRI means the applicant has a legal right to conduct the regulated activity at the facility or site. Title, Right, or Interest is typically established by way of ownership through a deed, or by way of a lease or operating agreement. Please submit a copy of the documentation demonstrating Title, Right or Interest as an attachment to the NOI at the time of submission.

E. Industrial Activity Information

1. Enter your company’s Standard Industrial Classification (SIC) Code(s) which best describes the industrial activity conducted or products/services provided. See Attachment A of the MSGP for a list of SIC Codes.

2. Check all of the boxes that apply to the sectors of industrial activity that you seek to have covered by this permit. See Attachment A of the MSGP for a list of sectors.

F. Certification Statement

Legibly print the name and title of the responsible official. Have the official sign and date the application.

A **Responsible Official** must be one of the following:

- ✓ For a corporation: a responsible corporate officer
- ✓ For sole proprietorship or a partnership: the proprietor or general partner
- ✓ For a municipal, State, Federal, or other public facility: either a principal executive or ranking elected official.

Before submitting the NOI form, please ensure you have;

a. Answered all the questions on the form
b. Signed the form.
c. Attached documentation demonstrating proof of Title, Right or Interest.
d. For corporations, attach a Certification of Good Standing or a statement signed by a corporate officer affirming that the corporation is in good standing.
e. Attached a location map and or coordinates showing the physical location of the facility.
f. Enclosed a check for any required fees.

If you have questions concerning this form, please contact your regional stormwater inspector.

Portland: Alison Moody 207-615-8936, Laura Crossley 207-615-6711.

Augusta: David Ladd 207-215-7168 Bangor: Jana Wood 207-215-7869.

OPERATING SERVICES AGREEMENT

This OPERATING SERVICES AGREEMENT (this "Agreement") is made as of this 5th day of February, 2004, by and between CASELLA WASTE SYSTEMS, INC., a Delaware corporation with a place of business at 25 Greens Hill Lane, Rutland, Vermont 05702 ("Casella"), and the STATE OF MAINE, acting by and through its Executive Department, State Planning Office (the "State").

WITNESSETH:

WHEREAS, the State has contemporaneously with the execution and delivery hereof and payment of the amounts due hereunder acquired the solid waste landfill located in Old Town, Maine and more fully described below, previously owned by Fort James Operating Company, a Delaware corporation ("FJ"); and

WHEREAS, the State desires that Casella operate and develop the Landfill pursuant to the terms and conditions contained herein;

NOW, THEREFORE, in consideration of the mutual promises and agreements hereinafter contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Casella and the State agree as follows:

SECTION 1 DEFINITIONS

Capitalized words and phrases used but not otherwise defined herein shall have the following meanings:

1.1 "Affiliates" shall mean any corporation or other business entity controlling, controlled by, or under common control with the subject corporation, business enterprise or person.

1.2 "Acceptable Waste" shall mean such material as may from time to time be legally

accepted at the Landfill in accordance with applicable MDEP permits and other applicable laws and regulations, excluding, however, all Excluded Waste.

1.3 "Biomass Ash" shall mean the ash resulting from the operation of the Biomass Generating Facility to the extent the same is disposable at the Landfill under the Existing Permit and meets the definition of "special waste" as defined under Maine Environmental Law.

1.4 "Biomass Generating Facility" shall mean the electric generating facility fueled principally with biomass fuel, to be installed at the Old Town Mill.

1.5 "Capacity Credit" is defined in Section 2.8(d).

1.6 "Cash Application" is defined in Section 2.8(d).

1.7 "CERCLA" means the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9602 et seq.

1.8 "Closure" shall mean those acts and activities required by applicable law and regulations which result in a permanent cessation of use of a solid waste landfill or portion thereof, as those requirements and regulations may be amended or modified from time to time, and which result in a stabilized solid waste Landfill which is not in active use, excluding those acts and activities which are required for Post-Closure Care.

1.9 "Damages" shall mean liability, loss, costs and expenses of every nature and type and howsoever arising that a Person may incur (including, without limitation, costs of investigation and defense and reasonable attorneys', paralegals and other professionals' fees and expenses).

1.10 "Disposal Application" is defined in Section 2.8(d).

1.11 "Effective Date" shall mean the date hereof.

1.12 "Environmental Law" shall mean any federal, state or local law, statute, rule,

order, directive, judgment, Governmental Approval or regulation or the common law relating to the environment (including the ambient air, surface water, groundwater, land surface or subsurface strata), or exposure of persons or property to Materials of Environmental Concern, including any statute, regulation, administrative decision or order pertaining to: (i) the presence of or the treatment, storage, disposal, generation, transportation, handling, distribution, manufacture, processing, use, or recycling, of Materials of Environmental Concern or documentation related to the foregoing; (ii) air, water and noise pollution; (iii) groundwater and soil contamination; (iv) the release, threatened release, or accidental release into the environment, or other areas of Materials of Environmental Concern, including emissions, discharges, injections, spills, escapes or dumping of Materials of Environmental Concern; (v) transfer of interests in or control of real property; (vi) land use, subdivision and zoning; (vii) community or worker right-to-know disclosures with respect to Materials of Environmental Concern; (viii) the protection of wild life, aquatic and marine life and wetlands, and endangered and threatened species; and (ix) storage tanks, vessels, containers, abandoned or discarded barrels and other open or closed receptacles. As used above, the term "release" shall have the meaning set forth in CERCLA, and to the extent it is more extensive or comprehensive, as defined in Maine Environmental Law. Without limiting the foregoing, the term "Environmental Law" shall include the Maine Forest Practices Act, 12 M.R.S.A. §§8867-A et seq.

1.13 "Environmental Matters" shall mean any liability or obligation arising under Environmental Law, whether arising under theories of contract, tort, negligence, successor or enterprise liability, strict liability or other legal or equitable theory, including (i) any failure to comply with an applicable Environmental Law and (ii) any liability or obligation arising from the presence of, release or threatened release of, or exposure of persons or property to, Materials

of Environmental Concern at the Premises or associated with the Premises. As used above, the term "release" shall have the meaning set forth in CERCLA, and to the extent it is more extensive or comprehensive, as defined in Maine Environmental Law.

1.14 "Escrow Agent" means Lawyers Title Insurance Corporation, appointed as escrow agent to hold and administer the Improvement Fund under Section 2.2(b) of the Acquisition Agreement pursuant to a separate Escrow Agreement between FJ and the State.

1.15 "Existing Permit" means Maine Department of Environmental Protection Permit # S 020700 7A-A-N, issued July 28, 1993, as amended or revised.

1.16 "Expansion Permit" shall mean any and all federal, state, local and other governmental permits, permit modifications, operation plan modifications, other modifications, statutory amendments and legislation, licenses, approvals, authorizations or amendments necessary for the expansion of the Landfill beyond the licensed footprint as of the date hereof.

1.17 "Excluded Waste" shall mean (a) any Acceptable Waste or any other waste of any nature generated outside of the State of Maine, (b) any waste as of the date of Casella's response to the RFP under contract for delivery to another disposal facility or processing facility unless agreed to in writing by such facility's waste generator or responsible party, and (c) any other waste or material excluded from disposal in the Landfill by applicable laws or regulations, or excluded by any of the terms and conditions of any permits, licenses, authorizations or approvals obtained with respect to the construction or operation of the Landfill, provided that Excluded Waste shall not include any waste that would otherwise constitute Excluded Waste hereunder if such category of waste is accepted at another disposal facility in the State of Maine owned or operated by the State, subject in all instances to the prior receipt of any and all required licenses or permits for such category of waste. Notwithstanding the foregoing, the parties acknowledge

and agree that, subject to applicable laws and regulations and such certifications as the State may reasonably require, Casella may bring construction and demolition waste generated outside the State of Maine for processing within the State of Maine solely for purposes of allowing Casella to generate biomass fuel required in connection with the provision of biomass fuel to FJ or its successor or assigns under the C&D Fuel Agreement in the form attached hereto as Exhibit B. Casella agrees to use its best efforts to ensure that any such construction and demolition waste generated outside the State of Maine and processed in the State of Maine is free of putrescible waste. This term shall also include such other wastes and materials as Casella determines, in the reasonable exercise of its commercial judgment, pose a risk or danger to the operation or safety of the Landfill or to the human or natural environment or are otherwise reasonably unacceptable to Casella provided, however, that in no event may FJ Waste be excluded or otherwise deemed Excluded Waste unless such exclusion is required by applicable law, regulation, permit, license, authorization or approval.

1.18 Intentionally omitted.

1.19 Intentionally omitted.

1.20 "FJ Waste" is defined in Section 2.8(a).

1.21 "Force Majeure" shall mean any act, event or condition affecting the Landfill or to the extent that it materially and adversely affects the ability of either party to perform or comply with any obligation, duty or agreement required of the party under this Agreement, provided such act, event or condition is beyond the reasonable control of the party or its agents relying thereon and is not the result of the willful or negligent act or omission of the party relying thereon. Force Majeure includes, without limitation but by way of illustrating the actions, events and conditions constituting a Force Majeure hereunder: (a) an act of God, epidemic, landslide,

lightning, earthquake, fire, explosion, storm, flood or similar occurrence; (b) an act of the public enemy, war, blockage, insurrection, riot, general arrest or restraint of government and people, civil disturbance or disobedience, sabotage or similar occurrence; or (c) a strike, work slowdown, or similar industrial or labor action.

1.22 "Governmental Approval" means any and all approvals, licenses, permits, authorizations (or the transfer thereof) required by any Governmental Authority for the design, construction, improvement, alteration, ownership or operation of the Landfill and all related projects, improvements or land use or the transfer thereof.

1.23 "Governmental Authority" means any federal, state or local governmental subdivision, board, body or regulatory authority.

1.24 "Hazardous Waste" shall mean any pollutant, contaminant, chemical, industrial, toxic or other waste or material that constitutes hazardous waste or material as defined pursuant to the Resource Conservation and Recovery Act, 42 U.S.C. §9601, et seq., or similar Maine laws, or the regulations adopted thereunder, or any successor laws regulating the same or similar substances, and Materials of Environmental Concern.

1.25 "Landfill" shall mean the solid waste landfill located in Old Town, Maine, that the State proposes to acquire from FJ pursuant to the Acquisition Agreement and all of the assets and properties acquired by the State from FJ in connection with said landfill, including any expansion of the solid waste landfill located at the Premises, whether such expansion is effected under the Existing Permit or under a new, amended or additional Governmental Approval, and any associated land, buildings, appurtenances, equipment and fixtures, the full benefit of all utility arrangements, licenses, approvals and permits to the extent transferable, including rights of assignment to the extent any such licenses and permits are assignable (but subject to any third

party consents, when required).

1.26 "Letter of Credit" means an irrevocable, unconditional, direct pay letter of credit in the form of Exhibit E attached to the Acquisition Agreement issued by a financial institution acceptable to FJ, in its discretion, (i) issued to FJ in the face amount of $12,500,000 under Section 2.2(a)(ii) of the Acquisition Agreement, and (ii) issued to the Escrow Agent in the face amount of $1,000,000 under Section 2.2(a)(iii) of the Acquisition Agreement.

1.27 "License Amendment" shall mean any and all federal, state, local and other governmental permits, permit modifications, operation plan modifications, other modifications, statutory amendments and legislation, licenses, approvals, authorizations or amendments necessary for the development of the Landfill within the currently permitted footprint for an additional 7 million cubic yards.

1.28 "License Application" shall mean the application for License Amendment submitted to the MDEP on October 30, 2003.

1.29 "Lincoln" shall mean Lincoln Pulp & Paper Co., Inc.

1.30 "Lincoln Agreement" means the Biomass Ash Disposal Agreement between FJ and Lincoln Pulp and Paper, Co., Inc. dated September 30, 2003.

1.31 "Lincoln's Biomass Ash" means the ash resulting from the operation of the Lincoln biomass boiler located in Lincoln, Maine.

1.32 "Leachate" shall mean the liquid or semi-solid residue from waste deposited at the Landfill and either collected within a liner system to be installed at the Landfill, or otherwise collected for disposal.

1.33 "Materials of Environmental Concern" shall mean any: pollutants, contaminants or hazardous substances (as such terms are defined under CERCLA, the Maine Protection and

Improvement of Waters Act, 38 M.R.S.A. § 361-A, or the Maine Uncontrolled Hazardous Substances Sites Law, 38 M.R.S.A. § 1362.1), pesticides (as such term is defined under the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. §§ 136 et seq.), solid wastes and hazardous wastes (as such terms are defined under the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq., and Maine's Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. §§ 1301 et seq.), chemicals, other hazardous, radioactive or toxic materials, oil, petroleum and petroleum products (and fractions thereof), asbestos and asbestos-containing materials, polychlorinated biphenyls ("PCBs") or PCB-containing materials, or any other material (or article containing such material) listed or subject to regulation under any law, statute, rule, regulation, order, Governmental Approval, or directive due to its potential, directly or indirectly, to harm the environment or the health of humans or other living beings.

1.34 "MDEP" shall mean the Maine Department of Environmental Protection, and any successor agency or department of the State of Maine.

1.35 "Mill Waste" shall mean waste from the Old Town Mill of a composition consistent with the waste FJ (or its successors or assigns) is permitted to dispose of at the Landfill under the Existing Permit, provided it meets the definition of "special waste" as currently defined by Maine Environmental Law.

1.36 "Old Town Mill" shall mean the pulp and paper mill owned and operated by FJ located in Old Town, Maine, and all related facilities and improvements.

1.37 "Post-Closure Care" shall include those acts and activities which are required under applicable laws, regulations and permits for post-closure care of a solid waste landfill or portion thereof, including monitoring, reporting and maintenance for the time set forth in the relevant laws, regulations and permits.

1.38 "Premises" means the real estate, together with all buildings and improvements thereon, situated in Alton and Old Town, Maine and more particularly described in Exhibit A attached hereto and incorporated herein by reference, including the Landfill.

1.39 "Prime Rate" means the fluctuating interest rate per annum equal to the rate of interest published in The Wall Street Journal as the Prime Rate or the base rate on corporate loans posted by at least 75% of the nation's thirty (30) largest banks, as it may vary. In the event The Wall Street Journal ceases to publish the Prime Rate, the parties shall select a comparable substitute interest rate index.

1.40 "RFP" means the 'Request For Proposals: Contract for Landfill Operations', as issued on June 13, 2003, by the Maine State Planning Office, Waste Management & Recycling Program.

1.41 "Special Waste" shall mean any discarded waste and solid material, other than those which are typically found in household, commercial or municipal refuse, including, without limitation, materials such as industrial waste (but not including Mill Waste or Biomass Ash), institutional waste, animal manure, petroleum contaminated soil of a nonhazardous nature, ash, residue from incineration, waste treatment plant sludge, food processing wastes, dredging wastes, asbestos, or waste which requires special or exceptional handling or approval from MDEP, but only to the extent the foregoing is permitted for disposal in the Landfill under applicable MDEP permits, and shall not include any Excluded Waste, any solid waste generated by sources other than household and typical commercial establishments that exists in such an unusual quantity or in such a chemical or physical state, or any combination thereof, that may disrupt or impair effective waste management or threaten the public health, human safety or the environment and requires special handling, transportation and disposal procedures. Special

Waste includes, but is not limited to: (a) ash; (b) industrial and industrial process waste; (c) sludge and dewatered septage; (d) debris from nonhazardous chemical spills and cleanup of those spills; (e) contaminated soils and dredge materials; (f) asbestos and asbestos-containing waste; (g) sand blast grit and non-liquid paint waste; (h) high and low pH waste; (i) spent filter media residue; and (j) shredder residue.

1.42 "Shut-Down Period" is defined in Section 2.8(d).

1.43 "SPO" means the State Planning Office, an Executive Department of the State.

1.44 "State/FJ Agreement" or the "Acquisition Agreement" means the Agreement Regarding Solid Waste Disposal Facility Acquisition and Operation between the State and FJ pursuant to which the State has acquired the Landfill.

1.45 "Term" shall mean that period of time commencing on the Effective Date and ending on the earlier to occur of (i) thirty (30) years after the Effective Date, or (ii) the date this Agreement is terminated by one or more of the parties as provided for herein.

1.46 "Tipping Fees" shall mean the aggregate of all fees, charges, levies and assessments charged by Casella for the disposal of waste at the Landfill, including any contractors, subcontractors or other service providers employed by Casella, excluding any transportation costs associated with delivery of waste to the Landfill.

SECTION 2 LANDFILL OPERATION AND MANAGEMENT

2.1 Operation, Management and Exclusive Use—General. The State grants to Casella during the Term and subject to the terms and conditions hereof and all applicable laws, regulations and permits, the exclusive right, license and privilege to occupy, operate, maintain, repair, design, redesign, construct and utilize the Landfill, including, without limitation, the right to take possession of, occupy and have the exclusive use of the Landfill, subject to the terms and conditions of this Agreement. Without limiting the generality of the foregoing and subject in all

instances to the terms and conditions hereof, these rights include the following:

2.1.1 The right to take possession of and use all of the Landfill. Casella shall prominently post the hours of operation and other limitations and conditions of access at the entrance to the Landfill. Casella shall have the right to post additional signage at the Landfill indicating its operation of the Landfill and any other information it deems necessary or desirable, subject in all instances to applicable laws and regulations.

2.1.2 The exclusive right to operate and dispose of Acceptable Waste at the Landfill and, subject to the terms hereof, to create and implement rules and policies pertaining to disposal at, and operation of, the Landfill, provided that in no event shall such rules and policies cause a default by the State of its obligations under the State/FJ Agreement or otherwise violate or restrict Casella's obligations under Section 2.8.

2.1.3 To the extent permitted by applicable law, the right to use the permits, licenses, approvals and authorizations issued in the State's name and the right, with the consent of the State (which consent will not be unreasonably withheld), to seek any modifications, transfers or renewals of the same, consistent with this Agreement.

2.1.4 The right to take and use any landfill gas generated at the Landfill, all in accordance with applicable laws and regulations.

2.2 Construction.

(a) Subject to the terms of all applicable laws, regulations and permits, Casella shall have the right to design, locate, permit, construct and remove at the Landfill such buildings and fixed resources as it deems necessary for the operation of the Landfill, including, without limitation, garages, office

buildings, recycling facilities and other structures, fixtures, appurtenances, and improvements, provided that Casella's actions shall in no event impair or limit Casella's obligation to satisfy the capacity commitment to FJ under Section 2.8. The use of the Landfill shall be restricted to development and operation of a solid waste landfill, or other facilities providing for the disposal or recycling of solid waste or other management of solid waste or, with the prior written consent of the State which may be granted or withheld in the State's sole discretion, other uses that do not prohibit or impair the operation of a solid waste landfill of sufficient size, nature, scope and limitation as is required to satisfy Casella's capacity commitment to FJ under Section 2.8 during the term hereof. Casella shall be prohibited from constructing any facility or improvement at the Landfill that would prohibit or impair the construction and operation of a solid waste landfill of sufficient size, nature, scope and location as is required to satisfy Casella's capacity commitment to FJ under Section 2.8. Any capital improvements to or at the Landfill shall be and remain the property of the State upon termination of this Agreement without any compensation to Casella.

(b) Subject to the issuance of all necessary State and local licenses permits and approvals, Casella shall construct a new sewer line to convey leachate to the Old Town Waste Water Treatment Plant on or before five years from the Effective Date.

2.3 Operation.

2.3.1 Casella shall have full control, both physical and managerial, of the

Landfill, subject in all instances to the terms and conditions of this Agreement.

2.3.2 Subject in all instances to the terms and conditions hereof and all applicable laws, regulations, licenses and permits, Casella shall be responsible for, and shall have sole authority over, the day-to-day operation of the Landfill, including weighing of waste pursuant to Section 2.4, testing of waste, preparation of waste for disposal, Landfill construction as provided in Section 2.2, establishment of Tipping Fees pursuant to Section 2.11, acceptance and disposal of Acceptable Waste, preparation and application of daily interim and final cover, construction of temporary roads and other temporary access, and installation and monitoring of groundwater wells. Notwithstanding the foregoing or anything to the contrary herein, Casella agrees to operate the Landfill gate and scale house in such manner, and on such terms so as to provide no price or entry discrimination or benefit (consistent with Section 2.11) in favor of its affiliated haulers or otherwise as to disadvantage haulers that are not Affiliates or who do not have business relations with Casella or its Affiliates.

2.3.3 Subject in all instances to the terms and provisions hereof and all applicable laws, regulations, licenses and permits, Casella shall be responsible for providing at its own cost and expense and shall have sole authority regarding:

(a) all engineering and other services necessary for the design, permitting, construction and operation of the Landfill (with the exception of those construction services for those portions of the Landfill which have already been constructed); and

(b) the employment of all personnel needed to operate the Landfill; and

(c) all services incidental to the business of the Landfill, including security,

accounting, legal, fire prevention and pollution control.

2.3.4 Without limiting the foregoing, Casella shall have the right to detain and inspect the contents of all vehicles delivering waste to the Landfill. Casella shall have the right to refuse or reject any Excluded Waste in its sole discretion or, if not detected prior to entering the Landfill, and Casella becomes aware that Excluded Waste has been disposed of at the Landfill, Casella shall immediately notify MDEP and manage the treatment of such Excluded Waste as MDEP may require. In addition, Casella may proceed against the hauler and/or generator for removal and proper disposal costs and other costs incurred by Casella. Subject in all instances to its obligations under Section 2.8 and Subsection 2.3.2, Casella shall have the right to ban haulers from disposing at the Landfill until such time as the expenses for reimbursement for the removal of any such Excluded Waste are paid to Casella. Subject in all instances to its obligations under Section 2.8 and Subsection 2.3.2, Casella shall have the right to ban any and all haulers which violate any of the rules and policies it establishes for the Landfill. Casella shall not allow members of the general public access to the Landfill for the discharge of solid waste.

2.3.5 Casella shall have the right to operate the Landfill during hours of its selection in accordance with any relevant permits, approvals, licenses, orders or agreements, and shall not discriminate against haulers who do not have business relations with Casella or its Affiliates.

2.3.6 Casella shall not accept any Excluded Waste at the Landfill.

2.4 Weighing. In connection with Casella's operation of the Landfill hereunder, Casella shall weigh all vehicles containing waste to be delivered to the Landfill pursuant to this

Agreement. Casella shall utilize scales approved by the State to weigh all waste delivered to the Landfill. The State or its authorized representative shall have the right at the State's expense to test the accuracy of scales used by Casella in the performance of its obligations hereunder, provided that such tests are conducted at reasonable times and do not unreasonably interfere with Casella's operation of the scales or the Landfill.

2.5 Revenues. Subject in all instances to payment of all governmental taxes, fees and charges and without limiting its payment obligations hereunder, all revenue, income and other financial benefits generated by, at, or related to operation of, the Landfill during the Term, shall be collected by Casella and shall be the property of Casella.

2.6 Inspection. The State shall have the right to inspect the Landfill during reasonable business hours to confirm compliance with the provisions of this Agreement, that policies are in place to provide that only Acceptable Waste will be received at the Landfill, and that the Landfill is being operated in conformity with state and federal environmental laws and regulations and other applicable laws.

2.7 Maintenance Responsibilities. Casella shall be responsible for, and shall have the sole authority regarding, all necessary maintenance of the Landfill.

2.8 FJ Waste Disposal Capacity. Casella agrees to provide FJ with the following waste disposal capacity at the Landfill during the Term:

(a) Casella will provide disposal capacity at the Landfill to FJ for all Mill Waste and all Biomass Ash (excluding for purposes of clarification and the avoidance of doubt, Lincoln's Biomass Ash) (collectively "FJ Waste"). Casella further hereby assumes FJ's and/or the State's responsibilities to provide for the disposal of Lincoln's Biomass Ash at the Facility under and in

accordance with the terms and provisions of the Lincoln Agreement.

(b) The Tipping Fees charged to FJ for disposal of FJ Waste will be fixed at the following levels:

(i) For the first 50,000 tons per year of FJ Waste, Tipping Fees will be fixed at a maximum of $10 per ton for the first five (5) years of the Term. On the sixth anniversary of this Agreement, and thereafter on each anniversary of this Agreement throughout the Term, Tipping Fees shall be adjusted upward or downward annually by a percentage equal to the percentage change in the Consumer Price Index (U.S.-national) ("CPI") from the date of the immediately preceding anniversary of this Agreement through the then current anniversary of this Agreement. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year.

(ii) For FJ Waste in excess of 50,000 tons per year, but less than 75,000 tons per year, Tipping Fees shall be fixed at a maximum of $40.00 per ton for the first 5 years of the Term. On the sixth anniversary of this Agreement, and thereafter on each anniversary of the Agreement throughout the Term, the Tipping Fees shall be adjusted upward or downward annually by a percentage equal to the percentage change in the CPI from the immediately preceding anniversary of this Agreement through the then current anniversary of this Agreement. In no event shall the CPI adjustment be less than one percent (1%) per year or in excess of five percent (5%) per year.

(iii) Tipping Fees for FJ Waste in excess of 75,000 tons per year will be assessed at the then prevailing market rate.

For purposes of this Section 2.8, reference to a year means the period of twelve (12) months extending from the Effective Date to the first anniversary thereof, or from one anniversary of the Effective Date of this Agreement to another, as applicable.

(c) Casella shall provide for the disposal of up to six thousand (6,000) tons per year of Lincoln's Biomass Ash at the Landfill for four (4) years from the Effective Date at no cost, and thereafter shall provide for the disposal at the Landfill of Lincoln's Biomass Ash at the same pricing and on the same terms as for FJ Waste.

(d) Casella shall provide FJ with a "Capacity Credit" for unused disposal capacity during the Term in the event FJ Waste disposed of at the Landfill is less than 50,000 tons in any year during which the Mill has operated its commercial pulping facility. The Capacity Credit will be at the rate of one (1) ton of future disposal at the Tipping Fee in effect for the first 50,000 tons of FJ Waste for the year in which the Capacity Credit is utilized by FJ. This Capacity Credit will be provided to FJ by allowing FJ to choose, at its option, one of the following alternatives:

(i) During any year when FJ disposes of more than 50,000 tons of FJ Waste, apply any Capacity Credit accumulated during the preceding three (3) years to FJ Waste in excess of the first 50,000 tons disposed of that year ("Disposal Application"); or

(ii) Payment in cash by Casella to FJ of an amount equal to the

monetary value of the Capacity Credit accumulated over the previous three (3) years and not applied to actual disposal under subsection (i) above. In determining the monetary value of the Capacity Credit, each ton of Capacity Credit shall be valued at the Tipping Fee per ton applicable during the year in which the Capacity Credit is cashed out (the "Cash Application"). Cash Application amounts shall be paid to FJ in cash within thirty (30) days following the date of exercise of the Cash Application option.

FJ may exercise its option to apply Capacity Credits through Disposal Application at any time during a year when the volume of FJ Waste disposal exceeds 50,000 tons. FJ may exercise its option to apply Capacity Credits through Cash Application at any time following the end of the year in which the Capacity Credit has been generated. FJ shall exercise its option by written notice to Casella with a copy to the State. In the event FJ has not provided written notice of its choice of option by the end of the third year following the year in which a Capacity Credit is earned, then FJ shall be deemed to have exercised its option to receive the Capacity Credit through Cash Application as of the last day of such year.

For purposes of calculation of the Capacity Credit, the 50,000 ton per year threshold shall be adjusted downward to account for any period in which the Old Town Mill is not operated for a period of fifty-three (53) or more days during any calendar year (a "Shut-Down Period"). The adjustment shall be a reduction in the 50,000 ton threshold by a per diem of 135 tons per day for each day the Old Town Mill is not operated in excess of the initial fifty-three (53) days in a calendar year.

(e) Notwithstanding anything to the contrary herein, if, despite the best efforts of

Casella in preparing, amending, submitting, resubmitting and prosecuting the same, the Expansion Permit does not issue as a direct result of a material change in law, made after the date hereof, that is generally applicable to landfills in the State of Maine and that by its terms prohibits the expansion and/or permitting of landfills for a period of more than two consecutive years, and if as a result thereof disposal capacity at the Landfill is thereby limited to the 10,000,000 cubic yards available under the Existing Permit and, when issued, the License Amendment (a "Capacity Limiting Event"), then (i) Casella's obligation to provide disposal capacity for FJ Waste under subsections (a), (b) and (d) above shall be limited to a period of fifteen (15) years unless and until such law is repealed (in which case, if Casella or any of its Affiliates is still the operator at the Landfill, its disposal capacity obligation shall be reinstated for the balance of this Agreement) ("Reduced Capacity Commitment"); and (ii) FJ shall, subject to the provisions of this Subsection 2.8(e), forfeit its disposal capacity (including any claim for Capacity Credits and Cash Application) in excess of the Reduced Capacity Commitment (that is, disposal capacity otherwise available to FJ hereunder on and after the fifteenth (15^{th}) anniversary hereof) to the extent necessary to allow Casella to operate the Landfill at a level of five hundred thousand (500,000) tons of waste disposal per year through the twentieth (20^{th}) anniversary of the Effective Date hereof.

Casella agrees that regardless of the occurrence of a Capacity Limiting Event,

it shall be obligated to accept the FJ Waste at the Landfill, at the price and on the terms specified herein, for a period of at least fifteen (15) years and thereafter until the disposal capacity at the Landfill is exhausted. Upon exhaustion of the disposal capacity at the Landfill as aforesaid, Casella will make available to FJ disposal capacity for FJ Waste for a price and on the terms specified above at any other landfill in the State of Maine owned and/or operated by Casella or any Affiliate that is licensed to accept FJ Waste for up to an additional fifteen (15) years (for a total commitment of thirty (30) years) or such earlier time as disposal capacity at such landfill(s) is exhausted; provided, however, that FJ shall pay any and all costs of transporting FJ Waste to such site.

In the event of a Capacity Limiting Event and if Casella or any Affiliate is not able to satisfy the thirty (30) year commitment to FJ (or its successors or assigns) as aforesaid at the Landfill or any alternative landfills in the State of Maine, the State will make available to FJ disposal capacity for FJ Waste for the price and on the terms specified above at any other landfill in the State of Maine owned and/or operated by the State that is licensed to accept FJ Waste until the first to occur of the thirtieth (30^{th}) anniversary of the date hereof or when disposal capacity at such landfill(s) for FJ Waste has been exhausted; provided, however, that FJ shall pay any and all costs of transporting FJ Waste to such site.

The parties and FJ intend the provisions of this subsection (e) to be construed

narrowly and to apply only to the specific and generally applicable laws enacted after the Effective Date that by their terms prohibit the expansion of landfills and thereby the issuance of the Expansion Permit and leave Casella only with the disposal capacity at the Landfill provided under the Existing Permit and License Amendment . For purposes of clarification and illustration, a moratorium prohibiting the licensing of an expansion of landfills in the State of Maine for in excess of two (2) years represents the type of change in law triggering the application of this subsection (e), while a change in law that modifies operating requirements for landfills, the qualifications or requirements for operators, the expense of operating landfills or other requirements associated with the operation, management or permitting of landfills would not excuse performance of Casella's obligations under this Agreement.

(f) Casella's commitment to provide disposal capacity described in this Section 2.8 shall apply to FJ, its successors and assigns, including without limiting the generality of the foregoing any subsequent owner, lessor or operator of the Old Town Mill.

(g) The foregoing Tipping Fees are exclusive of any fees, charges, levies or assessments ("Waste Disposal Fees") which may be imposed by the State after the date hereof for the disposal of waste at landfills. The parties acknowledge that Section 5.2 of the Acquisition Agreement exempts FJ from Waste Disposal Fees. However, in the event FJ Waste is subjected to Waste Disposal Fees notwithstanding the Section 5.2 exemption, (i) Casella shall not

be obligated to pay any such Waste Disposal Fees, and (ii) FJ shall have exclusive liability for such Waste Disposal Fees.

2.9 Other Tipping Fees on FJ Waste. Other than as specifically provided in Section 2.8 hereof, Casella will not charge or assess any Tipping Fees on FJ Waste, or Lincoln's Biomass Ash, whether related to disposal in existing built Landfill space or space constructed in the future.

2.10 Maintenance of Capacity for FJ Waste. Casella agrees throughout the Term that it will maintain fully permitted/licensed, fully constructed, unused capacity at the Landfill in the amount sufficient to satisfy the obligation of the State to FJ regarding disposal capacity under the Acquisition Agreement and Casella's obligations to FJ and with respect to Lincoln Biomass Ash under Section 2.8 hereof, including without limitation at all times after October 1, 2004 (which date shall be extended to the final resolution of any appeals with respect to the License Amendment) , one million five hundred thousand (1,500,000) tons of fully constructed available capacity at the Landfill dedicated to and reserved for FJ Waste minus fifty thousand (50,000) tons on each anniversary of the Effective Date This capacity shall be reserved by Casella solely to satisfy its obligations under Section 2.8 with respect to FJ Waste and Lincoln Biomass Ash and the corresponding obligation of the State to FJ under the Acquisition Agreement. Upon request from the State, executive officers of Casella shall periodically certify to the State Casella's compliance with this subsection and the State may inspect the Landfill to confirm the same. Casella's agreement to satisfy the State's obligation to FJ as per Subsection 2.8 and the Acquisition Agreement represent a material condition of the State's agreement to enter into this Agreement.

2.11 Tipping Fees on Non-FJ Waste.

(a) Casella shall charge Tipping Fees for disposal of waste that is not FJ Waste or Lincoln's Biomass Ash according to the following schedule:

- Certain Special Wastes, including without limitation bottom ash / fly from municipal solid waste incinerators and sandblast grit. $48.00 / Ton
- Oversized, bulky waste from municipal solid waste incinerators, that are unacceptable at municipal solid waste incinerators. $58.00 / Ton
- Front-end residue from municipal solid waste incinerators. $48.00 / Ton
- Municipal solid waste, including municipal solid waste designated as "by pass" on an infrequent basis. $58.00 / Ton
- Construction and demolition debris, free of putresible waste. $58.00 / Ton

Subject in all instances to Casella's obligations under Section 2.3.2 hereof, the foregoing Tipping Fees are "not to exceed" fees (it being understood that Casella may, in its sole discretion charge lower fees), are exclusive of any Tipping Fees which may be imposed by the State under laws enacted or regulations promulgated after the Effective Date, and shall be subject to annual adjustment in accordance with changes in the CPI and changes in law which materially affect the cost of landfill design, construction, operations or closure. The fee schedule above is inclusive

of all charges, including the Host Community Benefit Package costs referred to in Casella's response to the RFP.

(b) The State reserves the right to direct solid waste to the Landfill, as may be required by changes in State law or in MDEP rules and regulations. The Tipping Fees established by Casella for the waste stream most closely matching these directed wastes shall apply. Prior to redirection of these wastes, the State shall notify Casella as to the reason for the redirection and an estimate of the expected volume/tonnage of wastes. In no event shall the State's exercise of its rights under this subsection restrict or impair the capacity reserved for FJ under Section 2.8.

2.12 Costs. Casella shall bear all costs, expenses, and liabilities associated with the operation and maintenance of the Landfill and the fulfillment of Casella's other responsibilities hereunder during the term of this Agreement including, without limitation, any liabilities for claims of employees performing activities under this Agreement that arise out of any provision of the workers' compensation law or otherwise.

2.13 Waste Management Hierarchy. Casella agrees to use its best efforts to achieve the following goals:

(a) to operate the Landfill following the State's solid waste management hierarchy (reduce, reuse, recycle, compost, incinerate, landfill);

(b) to implement the Public/Private Partnership agreement with the Municipal Review Committee (MRC);

(c) to draw upon Casella's FCR Division to analyze and develop the best collection, processing and marketing options for all MRC member

communities;

(d) to implement Green Mountain Glass's technology for recovery and recycling of all color glass containers;

(e) to work with the MRC to analyze and help develop organics recycling programs that enhance or expand current practices of MRC communities;

(f) to work with the MRC members in developing program to collect, store and process (where applicable) Universal Wastes and mercury containing products;

(g) to work with MRC members in developing programs to identify, collect and properly dispose of household hazardous wastes;

(h) to work with the MRC and appropriate research facilities to assess the viability of using Maine developed ablation technology as a source of air emission control for biomass boilers combusting up to 50% clean C&D wood as a fuel source, such as being proposed by GP;

(i) to expand C&D processing capability of Casella and its Affiliates to achieve an increase in C&D waste volume requiring disposal with a focus on recovering the clean C&D wood waste that would assist in meeting the biomass fuel commitment to FJ. Other recyclable materials would be separated and utilized in other applications, including aggregate and metals.

2.14 Real and Personal Property Taxes. Casella shall be responsible for the payment of all real and personal property taxes with respect to the Landfill during the Term.

SECTION 3 CONTRACTS WITH THIRD PARTIES

3.1

(a) During the Term hereof, but after the issuance of the License Amendment,

Casella shall, subject to the terms and conditions hereof, have the exclusive right and authority to negotiate and enter into various contracts regarding the Landfill. These contracts may include, among others, (i) long-term contracts for the disposal of waste at the Landfill, (ii) a long-term contract for the disposal of Leachate generated at the Landfill, (iii) long-term contracts for the disposal of local municipal solid waste at the Landfill, and (iv) long-term host community agreement with the City of Old Town, all on terms and conditions reasonably acceptable to Casella. Casella shall provide the State with notice of and adequate time to review and comment on such contracts and agreements prior to their execution. These contracts will not bind State without the State's prior written consent, and shall be expressly subject to the Unwind Provisions described in Section 5.3 (a).

(b) Casella agrees to assume the leachate trucking agreement between FJ and Thornton's Construction and the Landfill operations agreement between FJ and J.A. Buchanan, or, if such contracts cannot be assumed without the consent of the other contract party, to use its best efforts to secure such consents. If Casella is unable to secure such consents, Casella shall use its best efforts to negotiate the termination of such agreements with no impact on FJ or the State. Casella shall further be solely responsible for any liabilities associated with assignment or termination of such contracts, including any contract buyout obligations or termination fees or damages arising from the termination or breach thereof, and hereby indemnifies and holds the State and FJ harmless for any liabilities arising from or relating to the assumption or

termination of such contracts.

SECTION 4 PERMITTING MODIFICATIONS AND COOPERATION

4.1 Cooperation. The State agrees (a) to cooperate reasonably with Casella in obtaining and, where applicable, in maintaining in the State's name (i) the Existing Permit and License Amendment, and (ii) all permits, licenses, statutory amendments and legislation, approvals and authorizations reasonably requested by Casella and agreed to by the State for the operation of the Landfill in accordance with the terms hereof, including without limitation the Expansion Permit, but at no cost or expense to the State and (b) to provide reasonable assistance to Casella but at no cost to the State, in dealing with all federal, state and local agencies to obtain the issuance, modification, transfer or amendment of all permits reasonably requested by Casella and agreed to by the State. The parties shall diligently pursue in good faith the acquisition of all such permits, licenses, approvals and authorizations, and any modifications or amendments thereto, for the Landfill as contemplated by and subject to the terms of this Agreement. The parties, however, recognize that the MDEP is an independent permitting authority before which the State must appear as any other person. Therefore, the parties acknowledge that any commitment of the State to cooperate with and seek a governmental approval is not a guaranty of issuance of such approval or the terms of such approval.

4.2 Permit Responsibility.

(a) Casella shall use its best and most diligent efforts to maintain in full force and effect the Existing Permit and, when issued, License Amendment. Casella shall not take any action or suffer any omission that causes, or provides a basis for, the revocation, suspension or restriction of the Existing Permit and, when issued, License Amendment, or limit or restrict Casella's or the State's ability to operate the Landfill.

(b) Casella shall use its best and most diligent efforts to, at its own cost and expense, apply for, seek and maintain in full force and effect (i) the License Amendment, (ii) the Expansion Permit, and (iii) such other federal, state and local permits, licenses and authorizations as otherwise required in connection with Casella's obligations under this Agreement, including, without limitation, any required zoning, subdivision and site plan approval. Without limiting the generality of the foregoing, Casella shall prepare on or before the third anniversary of the Effective Date an application for the Expansion Permit and shall conduct geologic and engineering studies and bear the cost of any consulting services related to all such permit/license and approval efforts. Subject to the foregoing, Casella shall determine the timing of the submission and the content of any such applications to the appropriate regulatory entities. Casella currently contemplates an application for the Expansion Permit for ten million (10,000,000) cubic yards of additional capacity, but, following exhaustion of all appeals of any approval of the Expansion Permit authorizing a lesser disposal capacity, Casella hereby agrees to accept any such approval so issued in connection with any application for the Expansion Permit, provided that, taken together, the initial application so submitted by Casella for the Expansion Permit shall provide that the Existing Permit, the License Amendment and the Expansion Permit will collectively provide sufficient capacity to dispose of at least 500,000 tons of waste per year over twenty (20) years of operation. If issued, Casella shall not take any action or suffer any omission that causes, or provides a basis for the revocation, suspension or

restriction of the Expansion Permit, or limit or restrict Casella's or the State's ability to operate the Landfill.

SECTION 5 PAYMENT AND BONDS; UNWIND PROVISIONS

5.1 Payments to the State. Contemporaneously with the execution of this Agreement, Casella shall pay to the State, and the State directs Casella to pay FJ, a total of Twenty-six Million Dollars ($26,000,000) as follows: (a) $12,500,000 in cash or by certified or bank cashier's check or by wire transfer to an account designated by the State; (b) $12,500,000 by issuance of a Letter of Credit in such amount; and (c) $1,000,000 by issuance of a Letter of Credit in such amount to the Escrow Agent for deposit into the Improvement Fund (as defined in the Acquisition Agreement). The aforesaid Letters of Credit may be fully drawn by FJ and the Escrow Agent, as applicable, in the event that, within five (5) business days following the receipt of the License Amendment that is materially consistent with the License Application, Casella fails to pay the amounts of the Letters of Credit to FJ and the Escrow Agent, respectively, in cash or by certified or bank cashier's check or by wire transfer. In the event that Casella pays the amounts of the Letters of Credit to the respective beneficiaries as aforesaid, the State shall cause the Letters of Credit to be immediately revoked and returned to Casella. There shall be no requirement that any appeal period expire or that any appeal of the issuance of the License Amendment be resolved prior to drawing under the Letters of Credit.

5.2 Bonds.

(a) Casella's obligation to perform its obligations hereunder shall be secured by a Four Million Dollar ($4,000,000) payment and performance bond in the form attached hereto as Exhibit C, which shall be delivered within five (5) business days from the date hereof.

(b) On the Effective Date Casella shall post, and thereafter shall maintain, closing and post-closing bonds in substitution for those provided by FJ in such amounts and on such terms as MDEP and federal law may require. Copies of the proposed closing and post-closing bonds shall be provided to the State within ten (10) business days of the Effective Date.

5.3 (a) Unwind Provisions. In the event that the License Amendment is (i) not received by June 30, 2004, or (ii) received by June 30, 2004 but is materially inconsistent with the License Application, or (iii) received by June 30, 2004 but successfully challenged on appeal such that a final judgment or court order either invalidates the License Amendment or results in the License Amendment being materially inconsistent with the License Application, Casella shall have the right to terminate this Agreement and rescind the transaction, at a simultaneous closing complying with the terms of Section 2.10 of the Acquisition Agreement. The closing shall occur within thirty (30) days of the exercise by Casella of its right to terminate and rescind hereunder, or such later date when the parties obtain MDEP authority to transfer the Existing Permit. At the closing, FJ shall promptly refund the $12,500,000 paid by Casella pursuant to Section 5.1, and FJ shall return or cause to be returned the cash or the Letters of Credit (as the case may be) described in Section 5.1. Appropriate provision shall be made for the closure and post-closure bonds identified in Section 5.2(b) in accordance with applicable law, and Casella shall undertake any remedial action as a result of its activities hereunder required by applicable regulatory authorities. Casella agrees to cooperate with the State and FJ in connection with the reconveyance of the Landfill described in Section 2.10 of the Acquisition Agreement, including filing necessary applications for transfer of all federal, state and local permits and approvals for operation of the Landfill as a generator-owned landfill (provided that FJ shall have the option to

assume the License Amendment, if any, and to the extent allowable under applicable law and so long as Casella and the State are released from any liability for post-assignment activities), and undertaking all other actions required to unwind the transaction described in the Acquisition Agreement and place the parties as nearly as reasonably possible in the same positions they were in prior to said transaction, with the exception that each party shall be responsible for its own out-of-pocket costs associated with said transaction and effecting the foregoing unwind provisions. Casella's right to terminate this Agreement and rescind the transaction hereunder must by exercised within thirty (30) days after the last to occur of the three events described in the first sentence of this Section 5.3(a). Any dispute regarding rights or obligations under this Section 5.3 shall be resolved by binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association, provided that the arbitrators shall be directed to make an arbitration award within ninety (90) days, and that Casella shall continue to operate the Landfill pursuant to the terms hereof until the issuance of a final arbitration award.

(b) The State shall have no liability or obligation to Casella with respect to the repayment of the cash or return of the Letters of Credit as described in Section 5.3(a), and Casella agrees to look solely to FJ for the repayment of such cash and return of the Letters of Credit and hereby waives and releases the State of any liability arising thereunder or relating thereto, howsoever arising.

SECTION 6 EQUIPMENT

Casella shall be responsible for all operating, repair and maintenance costs associated with any equipment used in the operation of the Landfill, and shall maintain and replace such equipment as it deems necessary.

SECTION 7 COMPLIANCE WITH LAW

Except as otherwise provided in this Agreement, and subject to Section 8 hereof, Casella shall be responsible for all costs and expenses related to Landfill regulatory compliance. Notwithstanding the foregoing, Casella shall have the right, at its own cost and expense, to contest or review by legal or administrative proceedings the validity or legality of any law, order, ordinance, rule, regulation, direction or certificate of occupancy, and, to the extent permitted by law, during such contest Casella may refrain from complying therewith, subject, however, to the terms and conditions hereof.

SECTION 8 INDEMNIFICATION

8.1 Indemnification.

(a) Casella will indemnify, defend, and hold the State and FJ, their respective Affiliates and their respective officers, directors, employees, agents and Affiliates harmless from and against any and all Damages that arise from or related to any past, current or future design, construction, improvement, ownership or operation of the Landfill or any other activities associated therewith, or any breach of Casella's obligations under this Agreement, including without limiting the generality of the foregoing, any and all Damages resulting from:

(i) groundwater or surface water contamination caused by the Landfill, whether or not such liability results from operation of the

Landfill by FJ or any third parties;

(ii) on-Premises or off-Premises contamination;

(iii) violation of any Environmental Law at or in connection with the Landfill or Premises;

(iv) any fine, penalty, judgment, award, or settlement of any legal or administrative proceeding relating in any way to Environmental Matters relating to the Landfill or the Premises;

(v) any compliance, corrective or remedial measure required under any Environmental Law or other requirement including any clean-up, removal, containment or other remediation or response actions associated with the Landfill or the Premises; and

(vi) any and all Environmental Matters.

8.2 Limitations. Anything in this Section 8 to the contrary notwithstanding, in the event that this Agreement is terminated pursuant to Section 15 below, Casella's indemnity obligations hereunder shall survive termination hereof and the unwind of the transaction described in Section 5.3 (a) but shall be limited to Environmental Matters and other Damages arising from or relating to breaches, conditions, events, transactions or occurrences which occurred at any time prior to the termination of this Agreement or the unwind of the transaction but regardless of when the same shall be discovered or become manifest. Furthermore, Casella's indemnity obligations hereunder shall not extend to Damages arising from breaches of FJ's representations and warranties under Article 3 of the Acquisition Agreement.

SECTION 9 SUBCONTRACTING

In the performance of its obligations hereunder, Casella shall have the unrestricted right to subcontract those services that it deems appropriate in its sole discretion, including, without

limitation, construction, engineering, design, permitting, operation, maintenance, management and administration; provided, that Casella shall remain fully responsible for the performance of any and all obligations subcontracted hereunder.

SECTION 10 RECORDS, AUDITS AND CONFIDENTIALITY

10.1 Annual Report; Inspection Rights. In addition to other reports that Casella may be required to maintain under applicable law, Casella shall prepare and provide to the State an annual report summarizing in reasonable detail the business and technical operation of the Landfill during the preceding calendar year or portion thereof and such other records and information as the State may reasonably require, including certifications regarding the as built and available disposal capacity reserved for FJ (or its successor or assign). Casella shall maintain accurate records, books and data with respect to the amount of all Acceptable Waste disposed of at the Landfill during any period that Casella is the operator of the Landfill. The State shall have the right at reasonable times and upon not less than three (3) business days prior notice to inspect and examine Casella's books and records related to the operation of the Landfill to confirm Casella's compliance with this Agreement and applicable permits and environmental laws and regulations. The State shall further have the right to visit and enter upon the Landfill to confirm, among other matters, satisfaction by Casella of its obligations under Sections 2.8 and 2.10 hereof. The parties shall cooperate in good faith to develop a list of the books, records and data which shall be available for such inspection and examination by the State. Casella shall maintain any such books, records or other data for so long as Casella's indemnity obligations under Section 8 shall continue in effect. Upon termination of this Agreement, the State shall have the right to review and copy, and shall have a permanent, irrevocable, exclusive license to make use of all of Casella's technical information, data, studies, engineering, operational records and other materials and information of any nature related to the Landfill and/or the design,

construction, licensing or operation of the Landfill, including without limitation, all testing results, design materials, engineering studies and other engineering work, all applications for Governmental Approvals related to the Landfill and any and all such other data and materials as relate in any way to the premises and/or the development of the Landfill.

SECTION 11 NO JOINT VENTURE

Without limiting Casella's obligations hereunder (including the obligation to satisfy the State's obligation to FJ under the Acquisition Agreement), the parties acknowledge and agree that nothing contained in this Agreement is intended to nor shall be construed to create a partnership or joint venture between Casella and the State or make Casella and the State partners or joint venturers, or make either party in any way liable or otherwise responsible for the debts, actions, obligations or losses of the other party.

SECTION 12 SPECIAL PROVISIONS CONCERNING THE STATE

12.1 Appropriations. The State's obligations and liabilities hereunder are subject to available budgetary appropriations and shall not create any obligation of payment on behalf of the State in excess of such appropriations and other funds and assets available to the State for the performance of its obligations. Notwithstanding any other provision of this Agreement, if the State does not receive sufficient funds to fund this Agreement and the State's obligations hereunder and other obligations of the State, if funds are deappropriated, or if the State does not receive legal authority to expend funds from the Maine State Legislature or Maine courts, then the State is not obligated to make any payment otherwise due under this Agreement. The SPO hereby represents that it reasonably believes that funds will be made available through appropriation by the Legislature to make all payments required hereunder and to fund all obligations of performance hereunder by the State. Without limiting the foregoing, the SPO hereby covenants and agrees that it will exercise all reasonable efforts to obtain, maintain and

properly request and pursue appropriation of funds and other revenue sources from which all payments to be made hereunder shall be satisfied, and through which all obligations of performance will be funded, including, without limitation, making provisions for such payments in any and all budgets submitted for the purposes of obtaining appropriations and/or funding, using all reasonable efforts to have such portion of the budget approved. Without limiting the foregoing, it is the State's intent to make all payments required hereunder and perform all of its obligations hereunder if funds are legally available therefor.

12.2 No Waiver of Sovereign Immunity. Casella acknowledges and agrees that the Legislative Resolve authorizing this Agreement specifically provides that nothing in this Agreement, or the execution and delivery of this Agreement, or the agreement by the State to perform its obligations hereunder constitutes or is intended to constitute abrogation of the sovereign immunity of the State with respect to each and every term of this Agreement. In this regard, the State expressly reserves its right of sovereign immunity with respect to its obligations hereunder, and the execution and delivery of this Agreement by the State, and its undertakings herein in no way waive, partially waive, imply a waiver, limit or restrict the State's unconditional right to exercise its right of, or to assert sovereign immunity with respect to any matter, term or issue arising under or relating to this Agreement.

SECTION 13 CERTAIN REPRESENTATIONS, WARRANTIES AND COVENANTS OF CASELLA

Casella represents and warrants to the State as follows:

13.1 Casella is a corporation duly organized and existing under the laws of the State of Delaware with the full legal right, power and authority to enter into and fully and timely perform its obligations under this Agreement.

13.2 Casella has duly authorized, executed and delivered this Agreement, and this

Agreement constitutes a legal, valid and binding obligation, enforceable against Casella in accordance with its terms, subject to bankruptcy, insolvency and other laws affecting creditors' rights generally.

13.3 Neither the execution or delivery by Casella of this Agreement nor the performance by Casella of its obligations in connection with the transactions contemplated hereby or Casella's fulfillment of the terms and conditions hereof conflicts with, violates or results in a breach of any law or governmental regulation applicable to Casella or materially conflicts with, violates or results in a breach of, any term or condition of any order, judgment or decree or any agreement or instrument to which Casella is a party or by which Casella or any of its properties or assets is bound, or otherwise constitutes a default thereunder.

13.4 No approval, authorization, order, consent, declaration, registration or filing with any federal, state or local governmental authority or agency is required for the valid execution and delivery by Casella of this Agreement or the performance by Casella of its obligations hereunder.

13.5 Casella covenants and agrees to operate Landfill and otherwise conduct all aspects of its business at the Landfill in compliance with all applicable laws and regulations and permits. Casella further agrees to maintain, and not to take any action or fail to take any action that would cause denial or revocation of the Existing Permit or the License Amendment, or, if issued, the Expansion Permit or any other license or permit issued during the Term relating to the Landfill. Casella further agrees to assume responsibility for all closure and post-closure aspects of the Landfill arising during the Term and to close those portions of the Landfill which reach final grade in accordance with approved plans and specifications.

13.6 Casella agrees to make all contributions to the State of Maine's Solid Waste

Management Fund (or any successor fund) or other payments required under applicable laws and regulations as if the Landfill were a commercial landfill under applicable law.

13.7 Casella shall maintain in full force and effect throughout the Term and for one year following termination, the $4,000,000 payment and performance bond in the form attached hereto as Exhibit C during the term hereof and the closure and post-closure bonds required hereunder upon closure of the Landfill with financially sound and reputable sureties and/or insurers qualified to issue sureties and bonds in the State, reasonably acceptable to the State. The State acknowledges that Evergreen National Indemnity Company is a financially sound and reputable surety as of the date hereof.

13.8 Casella agrees that all improvements to the Landfill of every nature and type shall be the property of and ownership of the same shall vest in the State on termination of this Agreement.

13.9 Throughout the term hereof, Casella agrees to participate in, and support to the best of its ability, the joint citizen advisory committee, comprised of representatives from the City of Old Town and the Town of Alton, as created by the Legislative Resolve permitting the State Planning Office to purchase the Landfill and cause it to be operated, all at no cost or expense to the State.

13.10 Casella shall perform its obligations under the C&D Fuel Agreement and shall not amend the same without the prior written consent of the State, which consent will not be unreasonably withheld

SECTION 14 SURVIVAL OF REPRESENTATIONS, WARRANTIES AND COVENANTS

All representations and warranties and covenants made herein or in any schedules attached hereto, or in any instruments or documents delivered by or on behalf of either party

pursuant to this Agreement, shall remain in effect during the Term and shall survive termination hereof to the extent specifically contemplated herein. The indemnity commitment described in Section 8 hereof shall continue until the expiration of the longest of the statutes of limitations applicable to Environmental Matters subject to the indemnification thereunder.

SECTION 15 TERMINATION

15.1 Events. This Agreement may be terminated at any time:

(a) By mutual written agreement of the parties;

(b) By either party if, prior to the Effective Date, litigation is filed or threatened, or any governmental authority institutes an action or investigation, intended to prohibit or prevent consummation of any of the transactions contemplated hereby or by the Acquisition Agreement, or any governmental authority does anything by the Effective Date which in a party's reasonable commercial judgment renders such consummation imprudent.

(c) By Casella if:

(i) Casella exercises its right to terminate under Section 5.3, subject to the limitations and qualifications set forth in said Section 5.3.

(ii) an Expansion Permit has not issued as a result of a Capacity Limiting Event and the licensed and permitted capacity of the Landfill (in excess of the capacity reserved for FJ Waste pursuant to Section 2.8) has been exhausted, provided that Casella cannot exercise its right to terminate under this clause (i) until on or after the fifteenth (15^{th}) anniversary hereof.

(iii) An Event of Default by the State occurs as set forth in Section 16, which default remains uncured beyond any applicable period for cure

thereof;

Without in any respect limiting the foregoing or affecting other terms and provisions hereof, and solely for purposes of illustration, Casella shall not have the right to terminate this Agreement in the event:

(A) The application for the Expansion Permit is denied under State law in effect as of the date of this Agreement;

(B) The construction, engineering, design, permitting, licensing, operation, maintenance, management and administration of the Landfill is more expensive under the terms of the Expansion Permit as granted than as anticipated by Casella;

(C) The application for the Expansion Permit is granted but restricted such that the new capacity, when added to the then permitted capacity, is insufficient to allow Casella to dispose of 500,000 tons of waste a year for a period of twenty (20) years;

(D) Casella is unable or fails to comply with the terms and conditions under which the Landfill is permitted and licensed;

(E) There is a change in Federal or State law after the Effective Date of this Agreement that increases the cost of the construction, engineering, design, permitting, licensing, operation, maintenance, management and administration of the Landfill; or

(F) The Expansion Permit is revoked or modified.

(d) By the State if:

(i) an Event of Default by Casella occurs as defined in Section 16.1,

which default remains uncured beyond any applicable period for cure thereof; or

(ii) any of the conditions to closing in the Acquisition Agreement for either the State's or FJ's benefit shall not have been satisfied or waived and such Agreement shall have been terminated in accordance with terms thereof; or

(iii) any representation or warranty made by Casella hereunder is not true, accurate and complete in any material respect when made or becomes untrue, inaccurate or incomplete in any material respect during Term; or

(iv) FJ exercises its right of reverter under Article 10 of the Acquisition Agreement and the underlying breach is not cured within the applicable cure period or Casella breaches its obligations under the C&D Fuel Agreement and the underlying breach is not cured within the applicable cure period; or

(v) if the State reasonably determines that the issuer of the payment and performance bond attached hereto as Exhibit C is not financially sound or reputable, notifies Casella of the same and Casella fails to secure an alternative bond in form and content reasonably satisfactory to the State issued by a financially sound and reputable surety reasonably acceptable to the State and licensed to issue surety bonds and/or insurance policies within ninety (90) days.

15.2 Effects of Termination.

(a) If this Agreement is terminated pursuant to Subsections 15.1(a) or (b), this Agreement shall terminate and neither party shall have any further or continuing obligation hereunder.

(b) If the State terminates this Agreement pursuant to subsection 15.1(d), in addition to whatever other rights or remedies it may have (none of which are waived), the State (a) may remove Casella and its agents from, and on demand Casella and its agents shall, vacate the Landfill, and (b) and/or make demand under the payment and performance bond.

(c) Upon termination of this Agreement for any reason, the State shall own all fixed capital improvements to the Landfill and all other buildings, fixtures and other improvements without any obligation to pay Casella.

(d) Termination of this Agreement for any reason shall not relieve a party of its obligations arising prior to the termination date or those obligations that survive termination, including certain of Casella payment obligations under Section 5.2 and Casella's obligations under Section 8.

SECTION 16 DEFAULT AND REMEDIES

16.1 Notice/Cure. If either party fails to perform a material obligation under this Agreement, then the other party shall give notice of such alleged material failure, describing the alleged material failure and the action required to cure such material failure, if any. If the party receiving such notice fails to cure any such material failure to perform pursuant to Section 17 hereof, then an "Event of Default" shall be deemed to have occurred and the other party shall have the rights and remedies set forth in subsection 15.1 above and 16.2 below.

16.2 Remedies. If any Event of Default occurs (as defined in subsection 16.1 above), then (i) this Agreement may be terminated by the non-defaulting party by giving notice of

termination to the defaulting party, and/or (ii) the non-defaulting party shall have the right to take whatever action at law or in equity it deems necessary or desirable to collect any amounts then due or thereafter to become due under this Agreement or to enforce performance of any covenant or obligation of the defaulting party under this Agreement, including as to the State the right to make demand on the payment and performance bond securing Casella's obligations under this Agreement.

SECTION 17 RIGHT TO CURE BREACH

Upon its receipt of a notice of alleged material failure to perform a material obligation under this Agreement issued under subsection 16.1 hereof, the receiving party shall either:

17.1 Cure the material failure to perform within thirty (30) days of receipt of the written notice from the other party, provided that there shall be no cure period for a breach by Casella of its obligations under section 13.7 and 21.2; or

17.2 Continuously demonstrate, for those defaults for which cure periods exist, within such thirty (30) day cure period that it is actively pursuing a course of action which reasonably can be expected to lead to a cure of the material failure to perform (and the cure period shall be extended for so long as the curing party is actively and continuously pursuing such course of action) within a commercially reasonable period of time not to exceed ninety (90) days; provided, however, that with respect to a default by Casella under Section 2.10, the aforesaid period of time shall be extended to one (1) year on the condition that Casella has established and is maintaining a capital improvement plan designed to bring Casella into compliance with and maintain Casella's compliance with the requirements of Section 2.10; alternatively, Casella shall have the right to cure such a default by posting a performance bond in the amount of the insufficient capacity, calculated at the rate of $2.90 per ton; provided further that, in the event of the failure of either party to pay the other party any amount required to be paid hereunder when

due, cure shall consist of payment in full which shall be made within ten (10) business days of written demand from the party entitled to the payment, together with interest accruing from the date the payment was due at a per annum rate equal to the Prime Rate, unless said sums are being contested.

SECTION 18 NON-BINDING MEDIATION

18.1 Non-Binding Mediation. The parties agree that in the event of any dispute, controversy or claim arising under or relating to this Agreement or any alleged breach thereof, other than a breach by Casella of its payment obligations or its obligations under Sections 13.7, 21.1 or 21.2 hereof, the parties shall attempt to come to a reasonable settlement of any dispute (i) by having their authorized representatives attempt to negotiate a resolution of the dispute for a period of thirty (30) days, and, if not resolved by the authorized representatives (ii) by having other more senior members of each party's management, who have no previous involvement in the dispute, but who have the authority to resolve the dispute, attempt to negotiate a resolution of the dispute for an additional fifteen (15) days.

18.2 Waiver of Jury Trial. THE STATE AND CASELLA AGREE THAT NEITHER OF THEM NOR ANY ASSIGNEE OR SUCCESSOR SHALL (A) SEEK A JURY TRIAL IN ANY LAWSUIT, PROCEEDING, COUNTERCLAIM OR ACTION ARISING UNDER OR RELATING TO THIS AGREEMENT, OR (B) SEEK TO CONSOLIDATE ANY SUCH ACTION WITH ANY OTHER ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED. THE PROVISIONS OF THIS PARAGRAPH HAVE BEEN FULLY DISCUSSED BY THE STATE AND CASELLA, AND THESE PROVISIONS SHALL BE SUBJECT TO NO EXCEPTIONS. NEITHER THE STATE NOR CASELLA HAS AGREED WITH OR REPRESENTED TO THE OTHER THAT THE PROVISIONS OF THIS SECTION WILL NOT BE FULLY ENFORCED IN ALL INSTANCES.

18.3 Consent to Jurisdiction. The parties and their assigns submit to the jurisdiction of any state or federal court located in the State of Maine in connection with any proceeding or action arising from or relating to this Agreement or the agreements referred to herein. The parties consent to the jurisdiction and venue of any such court and waive any argument that venue in such forums is not convenient. In the event a party commences any action in another jurisdiction or venue under any tort or contract theory arising directly or indirectly from the relationship created by this Agreement, the other party at its option shall be entitled to have the case transferred to one of the jurisdictions and venues above-described, or if such transfer cannot be accomplished under applicable law, to have such case dismissed without prejudice.

SECTION 19 FORCE MAJEURE

If either party hereto is rendered unable, in whole or in part, to perform any of its obligations under this Agreement (other than an obligation to pay money when due) as a result of the occurrence of an event of Force Majeure, then the obligations of the affected party shall be suspended and its non-performance thereof excused during the continuation of the event of Force Majeure. At any time that a party intends to rely upon an event of Force Majeure to suspend its obligations or excuse its non-performance as provided in this Section 19, the affected parties shall notify the other party as soon as reasonably practicable (but in no event later than 72 hours following such event) describing in reasonable detail the circumstances of the event of Force Majeure and its ongoing efforts to mitigate the effects of such event of Force Majeure. Notice shall again be given when the effect of the event of Force Majeure has ceased. As a condition of invoking the protection afforded by this Section 19, the party relying upon an event of Force Majeure shall be required to exercise its best and most diligent efforts to eliminate the Force Majeure or devise a means of performance notwithstanding the Force Majeure and re-establish performance hereunder as rapidly as possible

Notwithstanding anything to the contrary herein, upon the occurrence of a force majeure, Casella will make available to FJ disposal capacity for FJ Waste and Lincoln Biomass Ash at the then prevailing market rate at any other landfill in the State of Maine owned and/or operated by Casella or any Affiliate that is licensed to accept FJ Waste and Lincoln Biomass Ash for a total commitment of thirty (30) years or such earlier time as disposal capacity at such landfill(s) is exhausted; provided, however, that FJ or Lincoln, as applicable, shall pay any and all costs of transporting FJ Waste and Lincoln Biomass Ash to such site. Except as aforesaid, Casella's obligations to provide disposal capacity for FJ Waste and Lincoln Biomass Ash shall be suspended during the pendency of any Force Majeure.

SECTION 20 EMINENT DOMAIN

The State agrees to cooperate with Casella in opposing any effort by any governmental authority to exercise its rights of eminent domain. In the event an eminent domain award is made, the amount of the award, after deducting amounts due FJ resulting from any breach of the Acquisition Agreement or Casella's obligations to FJ hereunder shall be apportioned between the State and Casella on the basis of the value of Casella's contractual and other interests under this Agreement, including without limitation, the value of any capital improvements made by Casella hereunder, and the value of lost revenue under any Landfill waste disposal capacity otherwise available to Casella hereunder.

SECTION 21 INSURANCE

21.1 General Insurance Requirements. Casella shall maintain liability, fire and workers' compensation insurance insuring both the State and Casella in the amounts set forth in Schedule 21 attached hereto, issued by financially sound and reputable insurance companies reasonably acceptable to the State that are authorized and licensed to issue such policies in the

State of Maine. Casella shall pay any premiums with respect to such policies as they come due. If Casella fails to pay any such premiums when due, the State shall have the right and option to pay any such premiums, whereupon the amount of any such premiums paid by the State shall be reimbursed by Casella to the State upon demand therefor. Upon request from the State, Casella shall promptly provide copies of such policies to the State.

21.2 Environmental Impairment. During the Term hereof, and annually thereafter for a period equal to the longest applicable statute of limitations (so long as such insurance is commercially available) for claims (including governmental actions) under Environmental Laws, Casella shall cause the Landfill to be insured for third party environmental impairment under a claims made policy carried by Casella. The policy shall provide a limit of not less than the greater of (a) the amount required under applicable laws and regulations from time to time in effect or required in connection with license and permits, or (b) $1,000,000 primary coverage and a $10,000,000 umbrella, increased annually by Two Hundred Twenty-five Thousand Dollars ($225,000) on each anniversary date of the Effective Date. Such policies shall name the State and FJ as additional insureds and shall be reasonably acceptable to the State and FJ.

SECTION 22 COVENANT OF QUIET ENJOYMENT

The State covenants and agrees that Casella, upon its performance of its obligations hereunder, shall lawfully, peacefully and quietly hold, occupy and enjoy the Landfill during the Term without hindrance, objection or disturbance, subject in all instances to the terms and provisions hereof.

SECTION 23 THIRD-PARTY BENEFICIARY

23.1 Third Party Benefit to FJ. FJ is an intended third-party beneficiary of all agreements, commitments and promises of Casella under this Agreement that provide benefit to FJ, including without limiting the generality of the foregoing, the provisions of Sections 2.8, 2.9,

2.10, 3.1, 4.1, 4.2, 8, 13, 14, 19, 20, 21 and 23.2 hereof, including related definitions from Section 1 and Exhibits (collectively, the "FJ Commitments"). The parties acknowledge and agree that FJ has provided consideration for its status as a third-party beneficiary hereunder through the sale of the Landfill to the State contemporaneously herewith, and that FJ's status as a third-party beneficiary under this Agreement was a material inducement to FJ selling the Landfill to the State. FJ's status hereunder shall be fully vested and shall be absolute as of the date hereof and FJ shall be entitled to take whatever action, in law or in equity, as may be available to enforce FJ's rights hereunder against Casella or any Affiliate operating the Landfill. FJ's status hereunder as a direct, intended, fully vested, absolute third-party beneficiary shall not in any way limit, restrict, abrogate or otherwise alter its rights against the State under the Acquisition Agreement.

23.2 Third Party Benefit to Casella. Casella is an intended third party beneficiary of the Unwind Provisions set forth in Section 2.10, the Representations and Warranties of FJ set forth in Article 3, and the Reverter Option set forth in Section 10.1, of the Acquisition Agreement. The parties acknowledge that Casella has provided consideration for its status as a third party beneficiary through its undertakings hereunder, and that such status shall be fully vested and absolute as of the date hereof and that Casella shall be entitled to take whatever action, in law or equity, as may be available to enforce Casella's rights as a third party beneficiary.

23.3 Successors and Assigns. The provisions of this Section 23 shall inure to the benefit of, and be binding upon FJ and its respective successors and assigns. Casella shall not assign or otherwise transfer its obligations under the FJ Commitments without the express written consent of FJ.

SECTION 24 MISCELLANEOUS PROVISIONS

24.1 Assignment. This Agreement may not be assigned by either party without the prior written consent of the other, which consent may be granted or withheld by such party in its sole discretion; notwithstanding the foregoing, Casella shall have the right to assign this Agreement to any Affiliate provided that Casella remains fully liable hereunder and provides reasonable assurances of the same to State in connection with any such assignment; furthermore, until such time as the License Amendment is received and is substantially consistent with the terms and conditions of the License Application, Casella shall have the right to delegate or subcontract the operation of the Landfill to J.A. Construction, Inc., subject to the terms and conditions of this Agreement. Each party further agrees not to unreasonably withhold its consent to a collateral assignment of this Agreement by the other party of such party's rights under this Agreement.

24.2 Cumulative Remedies. The specified remedies available to a party under this Agreement are not exclusive of any other remedies or means of redress to which such party may be lawfully entitled in the event of any breach or threatened breach by the other party of any provision(s) of this Agreement.

24.3 Captions and Headings. Captions and headings contained in this Agreement are inserted for convenience and reference only and the words contained therein shall in no way be held or deemed to define, limit, describe, explain, modify, amplify or add to the interpretation, construction or meaning of any provision or of the scope or intent of this Agreement, nor in any way to affect this Agreement.

24.4 Amendments and Modifications. This Agreement shall not be amended, modified or changed, except pursuant to an agreement in writing signed by or on behalf of the party against whom enforcement of the amendment, modification or change is sought.

24.5 Notices. All notices or other communications required or permitted hereunder shall be in writing and may be given by personal delivery, by overnight express delivery, or by registered or certified U.S. mail, postage prepaid, return receipt requested, properly addressed as follows:

To the State:

Executive Department
State Planning Office
38 State House Station
Augusta, Maine 04333-0038
Attention: Director

With a copy to:

William H. Laubenstein III Esq.
Assistant Attorney General
State of Maine
Office of the Attorney General
6 State House Station
Augusta, ME 04333-0006

To Casella:

c/o Casella Waste Systems, Inc.
25 Greens Hill Lane
Rutland, VT 05702-0866

With a copy to:

Gordon F. Grimes, Esq.
Bernstein, Shur, Sawyer & Nelson, P.A.
100 Middle Street, P.O. Box 9729
Portland, Maine 04104

Either party may change the address to which notices are required to be sent by giving notice of such change in the manner provided in this Section 24.5. All notices shall be deemed to have been received on the date of delivery if service is made in person, on the day after sent by

overnight express delivery service, or on the third (3rd) business day after mailing in accordance with this Section 24.5, except that any notice of a change of address shall be effective only upon actual receipt.

24.6 Strict Performance. The failure of either party to insist on the strict performance of any of the terms, covenants and provisions of this Agreement or to exercise any right, remedy or option herein contained shall not be construed as a waiver or a relinquishment for the future of such term, covenant, condition, provision, right, remedy or option.

24.7 Severability. In the event that any one or more of the terms or provisions of this Agreement shall for any reason he held by a court or other tribunal of competent jurisdiction to be invalid, illegal or unenforceable in any respect, in whole or in part, such invalidity, illegality or unenforceability shall not affect any other terms or provisions of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable term or provision had never been contained herein, provided that it is the intention of the parties that, in lieu of such term or provision held to be invalid, illegal or unenforceable, there shall be added by mutual agreement as a part of this Agreement a term or provision as similar in terms to such illegal, invalid or unenforceable term or provision as may be possible, valid, legal and enforceable.

24.8 Construction. Words connoting the singular number shall include the plural in each case, and vice versa, and words connoting persons shall include corporations, companies, firms or other entities. The terms "herein", "hereunder", "hereby", "hereof" and any similar terms shall refer to this Agreement; the term "heretofore" shall mean before the date of execution of this Agreement. This Agreement is the result of joint negotiations and drafting and no part of this Agreement shall be construed as the product of any one of the parties hereto.

24.9 Entire Agreement. This Agreement, including covenants in the Acquisition

Agreement incorporated or referred to herein and the other agreements contemplated hereby, the covenants of Casella in the C&D Fuel Agreement and all exhibits and schedules attached hereto and thereto, constitute the entire agreement between the State and Casella with respect to the subject matter hereof, and supersede all prior or contemporaneous negotiations, representations, understandings and agreements, whether written or oral, between the parties with respect to the subject matter hereof.

24.10 Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original for all purposes, but all of which together shall constitute one and the same agreement.

24.11 Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Maine, without regard to the conflicts of law principles of such State.

24.12 Binding Effect; No Third Party Rights. This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective legal representatives, successors (whether by sale, assignment, transfer, merger, other acquisition, operation of law, or court ruling) and/or permitted assigns without releasing Casella of its obligations herein and shall be binding on any entity or entities that acquire all or substantially all of the assets or business of Casella and/or its Affiliates, in one or more transactions, whether by sale of assets, stock, merger or otherwise. Subject to the foregoing, and except as otherwise expressly provided herein (including Subsections 23.1 and 25), nothing in this Agreement shall be construed to confer any benefit on, or create any obligation, duty or liability to, or create any standard of care with respect to, any person, firm or entity not a party to this Agreement.

24.13 Authority of Parties. Each party hereto represents and warrants that the individual

who has executed this Agreement on its behalf has the full and complete authority to sign on behalf of such party for the purpose of duly binding such party to this Agreement.

24.14 State Special Services Agreement. This Agreement is subject to certain provisions of Rider B to the State's standard form of Agreement for Special Services, which provisions are attached hereto as Exhibit D.

SECTION 25 C&D FUEL COMMITMENT

Contemporaneously with the execution of this Agreement, Casella and FJ shall enter into a C&D Fuel Agreement in the form attached hereto as Exhibit B.

IN WITNESS WHEREOF, the parties have executed and delivered this Agreement as of the date first above written.

CASELLA WASTE SYSTEMS, INC.

Witness

Name: Richard Brennan
V.P. General Counsel

By: _____
Name: James W. Bohlig
Its President

STATE OF MAINE, Acting by and Through its Executive Department, State Planning Office

Witness

Name: George M MacDonald

By: Martha E. Freeman
Name: Martha E. Freeman
Its Director

APPENDIX B

MEDEP NOI APPROVAL LETTER

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

DEPARTMENT ORDER

IN THE MATTER OF		
NEWSME LANDFILL OPERATIONS LLC	)	MULTI-SECTOR GENERAL
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	PERMIT FOR STORMWATER
MER05B477	)	DISCHARGES ASSOCIATED
2828 BENNOCH RD	)	WITH AN INDUSTRIAL ACTIVITY
APPROVAL	)	**GENERAL PERMIT COVERAGE**

The Department of Environmental Protection (Department) has considered the Notice of Intent submitted by the NEWSME LANDFILL OPERATIONS LLC with supportive data, agency review comments and other related materials on file for coverage under the Multi-Sector General Permit For Stormwater Associated With An Industrial Activity (MSGP) #MER050000, issued by the Department on December 7, 2016, and FINDS THE FOLLOWING FACTS.

The permittee has agreed to comply with all terms and conditions of the MSGP. Operated in accordance with MSGP #MER050000, the discharges identified by the permittee will not have a significant adverse effect on water quality or cause or contribute to the violation of the water quality standards of the receiving water.

THEREFORE, the Department GRANTS the NEWSME LANDFILL OPERATIONS LLC , coverage under MSGP #MER050000 subject to the terms and conditions therein.

DONE AND DATED AT AUGUSTA, MAINE, THIS 2ND DAY OF March, 2017.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Michael Kuhn
for Paul Mercer, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

The Original Notice of Intent was received by the Department on February 7, 2017.
The Original Notice of Intent was accepted by the Department on February 7, 2017.

Date filed with Board of Environmental Protection: _____

This Order prepared by GREGG WOOD, BUREAU OF WATER QUALITY
MER05B477 March 1, 2017

Filed
MAR 0 2 2017
State of Maine
Board of Environmental Protection

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

March 1, 2017

TONI KING
NEWSME LANDFILL OPERATIONS LLC
2828 BENNOCH RD
OLD TOWN, ME 04468-4214
e-mail: toni.king@casella.com

RE: Multi-Sector General Permit For Stormwater Associated With An Industrial Activity
MER05B477– 2828 BENNOCH RD

Dear Brian G Oliver:

Enclosed, please find a Department Order granting coverage under the Multi-Sector General Permit For Stormwater Associated With An Industrial Activity (MSGP), which was issued by the Department on December 7, 2016, for a five year term.

Please read the MSGP and its attached conditions carefully. Compliance with this permit will protect water quality. If you have any questions regarding the matter, please feel free to call me at 287-7693.

Your Department compliance inspector is also a resource that can assist you with compliance. Please do not hesitate to contact them with any questions.

Thank you for your efforts to protect and improve the waters of the great state of Maine!

Sincerely,

Gregg Wood
Division of Water Quality Management
Bureau of Water Quality

Enc.
cc: David Ladd, DEP
Lori Mitchell, DEP/CMRO
Sandy Mojica, USEPA
Olga Vergara, USEPA
Marelyn Vega, USEPA

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

NOTICE OF INTENT TO COMPLY WITH THE MAINE MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Notice of Intent (NOI) submission constitutes the express intent of the entity in Section A (of this form) to discharge stormwater associated with an industrial activity to waters of the State (excluding groundwater), from the facility/site identified in Section C (of this form), under Maine's Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP). Submission of this NOI also certifies that the responsible official understands and meets the eligibility conditions of Special Condition C, *Applicability And Eligibility*, of the MSGP, agrees to comply with all applicable terms and conditions of the MSGP, and understands that continued authorization under the MSGP is contingent on maintaining eligibility for coverage. **Please send the completed form to the Maine Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017. A check for the appropriate permit fee made payable to: Treasurer, State of Maine may need to be submitted with the NOI. Please read the instructions on the back prior to completing the NOI form.**

A. Applicant Information – Legal Name & Mailing Address					
MSGP Permit:	MER05 B477				
Maine State Charter Number (if applicable):	20040538DC				
Legal Name of Applicant	NEWSME Landfill Operations, LLC				
Mailing Address	110 Main St., Suite 1308				
City/Town	Saco	State	ME	Zip Code:	04072
Daytime Phone: (with area code)	(207) 653-4421				
E-mail	toni.king@casella.com				

B. Contact Person for this NOI					
Permit Contact Person	Toni King				
Title	Region Engineer				
Contact Address	110 Main St., Suite 1308				
City/Town	Saco	State	ME	Zip Code	04072
Daytime Phone:	(207) 653-4421				
Email:	toni.king@casella.com				

C. Facility/Site Physical Location					
Physical Address	2828 Bennoch Road				
City/Town	Alton	State	ME	Zip Code	04468

Recv'd 2/7/17 Accpt 2/7/17

December 27, 2016

Entered & Permit 3-1-17 SP

NOTICE OF INTENT TO COMPLY WITH THE MAINE MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

Daytime Phone:	(207) 394-4372
Basis for Applicant's Title, Right, or Interest:	☐ Deed ☐ Lease ☒ Operating Agreement ☐ Other Attach a copy of the documentation demonstrating Title, Right or Interest

D. Receiving Water Information

Name of the receiving water(s):	Pushaw Stream
Does the facility discharge stormwater to a municipal separate stormwater sewer system (MS4)?	☐ Yes ☒ No
If yes, name of the MS4:	

E. Industrial Activity Information

The 4-digit Standard Industrial Classification (SIC) Code(s) or the 2 or 3 alpha-numeric Sub-Sector Code that best represents the industrial activity at the facility or any multiple sector-specific industrial activities.

SIC# or Sub-Sector Code	L1	Additional SIC# or Sub-Sector Code	

Applicable Sector(s) of industrial activity, as designated in Attachment A of the MSGP, that include associated discharges that you seek to have covered under this permit (check all that apply):

☐ Sector A	☐ Sector B	☐ Sector C	☐ Sector D	☐ Sector E	☐ Sector F	☐ Sector G	☐ Sector H
☐ Sector I	☐ Sector J	☐ Sector K	☒ Sector L	☐ Sector M	☐ Sector N	☐ Sector O	☐ Sector P
☐ Sector Q	☐ Sector R	☐ Sector S	☐ Sector T	☐ Sector U	☐ Sector V	☐ Sector W	☐ Sector X
☐ Sector Y	☐ Sector Z	☐ Sector AA	☐ Sector AB	☐ Sector AC	☐ Sector AD		

Does the facility have a complete and up-to-date Stormwater Pollution Prevention Plan (SWPPP)?	☒ Yes ☐ No
What date was the SWPPP last revised to bring it up-to-date?	January 2017

F. Certification of Responsible Official

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 there are significant civil and criminal penalties for submitting false information, including the possibility of fine and imprisonment. By my signature as a responsible official for the entity or individual identified in Section A of this NOI, I certify under penalty of law that that I am the operator of the facility, and have Title, Right or Interest, as indicated in Section C of this form.

Printed Name:	Toni King		
Title:	Region Engineer		
Signature:	Toni M. King	**Date:**	2/3/17

DEP OFFICE USE ONLY

Permit ID		

APPENDIX C

2016 MEDEP MULTI-SECTOR GENERAL PERMIT

STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Multi-Sector General Permit – Stormwater Discharge Associated With Industrial Activity

Maine Pollutant Discharge Elimination System Permit
Maine Waste Discharge License

Bureau of Water Quality

Final Permit - December 2016

MEPDES Permit #MER050000
Waste Discharge License #W008227-MN-C-R

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

MULTI-SECTOR GENERAL PERMIT – STORMWATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY

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ATTACHMENT A – SIC/NAICS Codes Covered by the General Permit

APPENDIX A. Sector A: Timber Products
APPENDIX B. Sector B: Paper and Allied Products Manufacturing
APPENDIX C. Sector C: Chemical and Allied Products Manufacturing, and Refining
APPENDIX D. Sector D: Asphalt Paving and Roofing Materials and Lubricant Manufacturers
APPENDIX E. Sector E: Glass, Clay, Cement, Concrete, and Gypsum Products
APPENDIX F. Sector F: Primary Metals
APPENDIX G. Sector G: Metal Mining
APPENDIX H. Sector H: Coal Mines and Coal Mining-Related Facilities
APPENDIX I. Sector I: Oil and Gas Extraction
APPENDIX J. Sector J: Non-Metallic Mineral Mining and Dressing
APPENDIX K. Sector K: Hazardous Waste Treatment, Storage, or Disposal
APPENDIX L. Sector L: Landfills, Land Application Sites, and Open Dumps
APPENDIX M. Sector M: Automobile Salvage Yards
APPENDIX N. Sector N: Scrap Recycling and Waste Recycling
APPENDIX O. Sector O: Steam Electric Power Generating Facilities

APPENDIX P. Sector P: Land Transportation and Warehousing
APPENDIX Q. Sector Q: Water Transportation
APPENDIX R. Sector R: Ship and Boat Building and Repair Yards
APPENDIX S. Sector S: Air Transportation
APPENDIX T. Sector T: Treatment Works
APPENDIX U. Sector U: Food and Kindred Products
APPENDIX V. Sector V: Textile Mills, Apparel, and Other Fabric Products
APPENDIX W. Sector W: Furniture and Fixtures
APPENDIX X. Sector X: Printing and Publishing
APPENDIX Y. Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries
APPENDIX Z. Sector Z: Leather Tanning and Finishing
APPENDIX AA. Sector AA: Fabricated Metal Products
APPENDIX AB. Sector AB: Transportation Equipment, Industrial or Commercial Machinery
APPENDIX AC. Sector AC: Electronic, Electrical Equipment and Components Photographic and Optical Goods
APPENDIX AD: Sector AD: Stormwater Designated by the Department as Requiring a Permit

STANDARD CONDITIONS

FACT SHEET

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

MULTI-SECTOR GENERAL PERMIT FOR		)	MAINE POLLUTANT DISCHARGE
STORMWATER DISCHARGE ASSOCIATED		)	ELIMINATION SYSTEM PERMIT
WITH INDUSTRIAL ACTIVITY		)	
STATE OF MAINE		)	AND
#MER050000		)	WASTE DISCHARGE LICENSE
#W008227-MN-C-R	**APPROVAL**	)	**RENEWAL**

In compliance with applicable provisions of *Pollution Control*, 38 M.R.S. §§ 411 – 424-B, *Water Classification Program*, 38 M.R.S. §§ 464 – 470 and *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, and applicable rules of the Maine Department of Environmental Protection (Department hereinafter), the Department has considered the renewal of Maine Pollutant Discharge Elimination System (MEPDES hereinafter) General Permit #MER050000 / Waste Discharge License (WDL) #W008227-5Y-B-R, which was issued on April 26, 2011, for a five-year term, with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

PROCEDURAL AND REGULATORY SUMMARY

On January 12, 2001, the Department received authorization from the U.S. Environmental Protection Agency (USEPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine. From that point forward, the program has been referenced as the MEPDES permit program.

On April 26, 2011, the Department issued *Stormwater Discharge Associated With Industrial Activity Multi-Sector General Permit* (General Permit) #MER050000 / WDL #W008227-5Y-B-R, for a five-year term. The April 26, 2011 General Permit superseded the initial General Permit, #MER050000 / WDL #W008227-5Y-A-N, which was issued on October 11, 2005 for a five-year term.

Beginning March 14, 2016, the Department commenced renewal proceedings and provided public notice of its intent to renew the April 26, 2011 General Permit in the *Bangor Daily, Kennebec Journal, Sun-Journal,* and *Portland Press Herald* newspapers. The notice solicited comments on a draft permit, when available, and provided an opportunity to request a public hearing.

CONCLUSIONS

Based on the findings in the attached permit and incorporated Fact Sheet, dated September 29, 2016, and subject to the special and standard conditions that follow, this Department makes the following **CONCLUSIONS:**

1. The discharge(s) covered under this General Permit, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.

2. The discharge(s) covered under this General Permit, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with State law.

3. The provisions of the State's antidegradation policy, *Classification of Maine waters*, 38 M.R.S. § 464(4)(F), will be met, in that:

   (a) Existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected;

   (b) Where high quality waters of the State constitute an outstanding national resource, that water quality will be maintained and protected;

   (c) Where the standards of classification of the receiving water body are not met, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification;

   (d) Where the actual quality of any classified receiving water body exceeds the minimum standards of the next highest classification that higher water quality will be maintained and protected; and

   (e) Where a discharge will result in lowering the existing water quality of any water body, the Department has made the finding, following opportunity for public participation, that this action is necessary to achieve important economic or social benefits to the State.

4. The discharge(s) covered under this General Permit is subject to effluent limitations that require application of best practicable treatment as defined in *Conditions of licenses*, 38 M.R.S. § 414-A(1)(D).

ACTION

Based on the findings and conclusions as stated above, the Department APPROVES the renewal of *Multi-Sector General Permit for Stormwater Discharge Associated With Industrial Activity*, #MER050000, for the discharge of stormwater associated with industrial activity and certain non-stormwater discharges to surface waters of the State, SUBJECT TO THE ATTACHED CONDITIONS, including:

1. The attached Special Conditions, including any effluent limitations and monitoring requirements.

2. *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, copy attached.

3. This General Permit and the authorization to discharge become effective **ninety (90) days** following the date of signature below and expire at midnight five (5) years from the effective date. Prior to expiration of this General Permit, the Department must make a determination if it is to be renewed, and, if so, must commence renewal proceedings. If this General Permit is to be renewed, it must remain in force until the Department takes final action on the renewal. [*Maine Administrative Procedure Act*, 5 M.R.S. § 10002, *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 C.M.R. 2(21)(A) (last amended October 19, 2015), and *General Permits for Certain Wastewater Discharges*, 06-096 C.M.R. 529(3)(c) (last amended June 27, 2007)]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

DONE AND DATED AT AUGUSTA, MAINE, THIS __7th__DAY OF __December___, 2016.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: ___/s/ Michael Kuhns for_____
PAUL MERCER, Commissioner

Date of Public Notice _____March 14, 2016_____.

Date filed with Board of Environmental Protection __December 8, 2016_____

This Order prepared by Bill Hinkel/Gregg Wood, BUREAU OF WATER QUALITY

MER050000 2016 12/5/16

SPECIAL CONDITIONS

A. AUTHORITY

A permit is required for the direct or indirect discharge of pollutants to waters of the State and United States. *Waste discharge licenses*, 38 M.R.S. § 413(1) and *Federal Water Pollution Control Act*, Title 33 U.S.C. § 1251, *et seq*. The Department is authorized by the USEPA to administer the NPDES permit program in Maine. The Department may issue a general permit authorizing the discharge of certain pollutants from multiple individual discharge sources and locations which all have the same type of discharges and which involve situations where the Department determines there is a relatively low risk for significant environmental impact. 06-096 C.M.R. 529. The Department has determined that discharges resulting from stormwater discharge associated with industrial activities located within the geographic area of coverage and that conform to the applicability and coverage standards established herein may be authorized by a general permit.

B. DEFINITIONS

In addition to the definitions found in *Definitions in the Waste Discharge Permitting Program*, 06-096 C.M.R. 520 (effective January 12, 2001) and in the waste discharge program and water classification laws, the following terms have the following meanings when used in this General Permit.

1. **Co-located Industrial Activities** – any industrial activities, excluding your primary industrial activity(ies), located on-site that are defined by the stormwater regulations at 06-096 CMR 521 §9(b)(14)(i) through (x) and 06-096 CMR 521 §9(b)(14)(xi). An activity at a facility is not considered co-located if the activity, when considered separately, does not meet the description of a category of industrial activity covered by the stormwater regulations or identified by the SIC code list in Attachment A of this permit or your primary industrial activity does not meet the description of a category of industrial activity covered by the stormwater regulations or identified by the SIC code list in Attachment A of this permit.

2. **Corrective Action**. "Corrective action" means any action taken, or required to be taken, to (1) repair, modify, or replace any stormwater control used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; and (3) remedy a violation of this General Permit.

3. **Discharge Point (Outfall).** – for the purpose of this permit the location where collected and concentrated stormwater flows are discharged from the facility such that the first receiving waterbody into which the discharge flows, either directly or through a separate storm sewer system, is a water of the State.

4. **Impaired Waters.** "Impaired Waters" means waters identified by the Department as not meeting an applicable water quality standard, and require development of a total maximum daily load (TMDL) (pursuant to Section 303(d) of the CWA), or are addressed by a USEPA-approved or established TMDL, or are covered by pollution controls requirements that meet the requirements of 40 CFR 130.7(b)(1). For discharges that enter a separate storm sewer system prior to discharge, the first water of the State to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system.

SPECIAL CONDITIONS

B. DEFINITIONS (cont'd)

5. **Industrial Activity.** "Industrial Activity" means the 10 categories of industrial activities included in the definition of "stormwater discharges associated with industrial activity" as defined in 06-096 C.M.R. 521(9)(b)(14)(i) through (x) and 06-096 C.M.R. 521(9)(b)(14)(xi).

6. **Municipal Separate Storm Sewer System ("MS4").** "Municipal Separate Storm Sewer System" or "MS4" means conveyances for stormwater, including, but not limited to, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels or storm drains (other than publicly owned treatment works and combined sewers) owned or operated by any municipality, sewer or sewage district, Maine Department of Transportation, Maine Turnpike Authority, State agency or Federal agency or other public entity that ultimately discharges directly to waters of the State other than ground water.

7. NEG – means National Effluent Guideline.

8. **No Exposure.** "No exposure" means that all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. See 40 CFR 122.26(g).

9. **Notice of Intent ("NOI").** "Notice of Intent" or "NOI" means a notification of intent to seek coverage under this General Permit made by the applicant to the Department on a form provided by the Department.

11. **Notice of Termination ("NOT").** "Notice of Termination" or "NOT" means a notification to end coverage under this General Permit on a form provided by the Department.

12. **Primary Industrial Activity** – Is the activity in which a facility is primarily engage in that meets the definition of Industrial Activity of these definitions. For a facility where therte is more than one activity or operation covered by a SIC code in Attachment A, it is recommended that the primary industrial determination be based on the value of receipts or revenues related to the operation in question or, if such information is not available for a particular facility, the number of employees or production rate for each operation may be compared. The operation that generates the most revenue or employs the most personnel is the operation in which the facility is primarily engaged. In situations where the vast majority of on-site activity falls within one SIC code, that activity may be the primary industrial activity.]

13. **Process Waste Water**. Means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by product or waste product.

14. **Qualifying Storm Event.** "Qualifying Storm Event" means precipitation or ice/snow melt waters that produce a measurable discharge of 0.1 inch or more in a 24-hour period at an outfall and occurs at least 72 hours from a previous qualifying storm event.

SPECIAL CONDITIONS

B. DEFINITIONS (cont'd)

15. **Representative Outfalls.** "Representative Outfalls" means two or more outfalls within a single drainage area that are anticipated to discharge substantially similar pollutants resulting from substantially similar industrial activities, materials or practices. If the facility contains representative outfalls, the permittee may conduct monitoring of one of the outfalls during a given sampling period provided that subsequent samples are taken from a different outfall within the representative outfalls' drainage area. The permittee will not be required to monitor more than one representative outfall within a designated drainage area per monitoring event. For this to be permissible, the SWPPP must include the permittee's narrative and include the following: locations of the outfalls and associated drainage area; why the outfalls are expected to discharge substantially identical effluents; and, estimates of the size of the drainage area (in square feet) for each outfall(s).

16. **Spill.** "Spill" means the release of a hazardous or toxic substance from its container or containment.

17. **Stormwater.** "Stormwater" means precipitation including runoff from rain, snow melt or ice melt that flows across the surface as sheet flow, shallow concentrated flow or in drainage ways. "Stormwater" means the same as "storm water".

18. **Stormwater Discharge Associated with Industrial Activity.** "Stormwater Discharge Associated with Industrial Activity" means the discharge from any point source which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial facility. The term does not include discharges from facilities or activities excluded from the MEPDES program under 38 M.R.S. § 413. For the categories of industries identified at 06-096 C.M.R. 521(9)(b)(14)(i) through (x) and 06-096 C.M.R. 521(9)(b)(14)(xi), the term includes, but is not limited to, stormwater discharges from industrial facility yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on facility lands separate from the facility's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with stormwater drained from the above described areas. Industrial facilities include those that are federally, State, or municipally owned or operated that meet the description of the facilities listed in 06-096 C.M.R. 521(9)(b)(14). The term also includes those facilities designated under the provisions of 06-096 C.M.R. 521(a)(1)(v).

19. **Watershed Management Plan.** "Watershed Management Plan" means a plan, subject to Department review and approval, to address stormwater discharges to an impaired water body. An acceptable plan capable of providing structural or operational best management practices to prevent discharges of pollutants that would cause or contribute to impairment of the water body.

SPECIAL CONDITIONS

C. APPLICABILITY AND ELIGIBILITY

To be eligible to discharge under this General Permit, an applicant must (1) have an allowable stormwater discharge, 2) an allowable non-stormwater discharge associated with industrial activity from the primary industrial activity, provided the primary industrial activity is included in Attachment A of this General Permit, or (3) be notified by the Department that you are eligible for coverage under Sector AD of this General Permit. Stormwater that is conveyed to a treatment facility regulated by the Department or the USEPA for treatment, is not a discharge for which a waste discharge permit is required pursuant to 38 M.R.S. § 413(1).

1. **Area of coverage.** The geographic area covered by this General Permit is the entire State of Maine. Subject to all terms and conditions specified herein, this General Permit authorizes the discharge of stormwater associated with industrial activity to Class GPA, tributaries to Class GPA, Classes AA, A, B, and C, Classes SA, SB, and SC, and those waters classified as such and having drainage areas of less than ten square miles.

2. **Allowable non-stormwater discharges.** The following allowable non-stormwater discharges may be covered by this General Permit provided that the discharge, either alone or in conjunction with other discharges, do not cause or contribute to a violation of an applicable water quality standard. The use of best management practices to minimize the contribution of pollutants from these discharges and the location(s) to where each source is anticipated to be discharged must be documented in the Storm Water Pollution Prevention Plan (SWPPP).[1]

    a. Discharges from emergency and unplanned fire-fighting activities;
    b. Fire hydrant flushings, provided the discharge does not cause or contribute to a violation of water quality standards as determined by the Department and the activity is documented in the SWPPP;
    c. Potable water, including water line flushings, provided they do not contribute to a violation of water quality standards as determined by the Department and the activity documented in the SWPPP;
    d. Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids;
    e. Irrigation drainage;
    f. Landscape watering, provided any pesticides, herbicides, and fertilizers have been applied in accordance with the approved labeling;
    g. Routine external building washdown / power wash water that does use detergents or hazardous cleaning products (e.g. those containing bleach, hydrofluoric acid, muriatic acid, sodium hydroxide, nonylphenols);
    h. Uncontaminated ground water and springs;
    i. Uncontaminated utility vault dewatering;
    j. Water from building foundations or footings that is not contaminated by contact with process materials;
    k. Incidental mist from cooling towers that collects on rooftops or adjacent portions of a facility, but not intentional discharge from cooling towers (e.g. “piped” cooling tower blowdown; drains.

1 The Department reserves the right to exclude non-stormwater discharges on a case-by-case basis if the permittee cannot objectively demonstrate to the Department’s satisfaction that the discharge will not violate an applicable water quality standard.

SPECIAL CONDITIONS

C. APPLICABILITY AND ELIGIBILITY (cont'd)

l. Incidental water that does not contain detergent draining from vehicles leaving an on-site rinse station, provided the waters from the rinse station itself are properly managed through best management practices addressed in the SWPPP; and

m. Incidental quantities of condensed steam that do not contributing to a violation of water quality standards (e.g. steam trap condensate).

n. Wash waters from cleaning roads, parking lots, sidewalks and other paved surfaces, provided no detergents or hazardous cleaning products are used (e.g. bleach, hydrofluoric acid, muriatic acid, sodium hydroxide, nonlphenols) and the wash waters do not come into contact with oil and grease deposits, sources of pollutants associated with industrial activities or any other toxic or hazardous materials, unless residues are first cleaned up using dry clean up methods (e.g. applying absorbent materials and sweeping, using hydrophobic mops/rags) and one has implemented appropriate control measures to minimize discharges of mobilized solids and other pollutants (e.g. filtration, detention, settlement).

o. The washing of new or used vehicles or equipment is allowed with the following prohibitions and recommended best management practices:

i. Engine, undercarriage and transmission washing is prohibited. Cleaning operations should minimize the detachment of paint residues, heavy metals or any other potentially hazardous materials from surfaces. .

ii .Vehicle and equipment washing should occur, where possible, on an impermeable surface (i.e., concrete, asphalt, plastic or other) and utilize an area that extends to a minimum of four (4) feet on all sides of the vehicle or equipment so that wash water and overspray falls initially on the impermeable surface. From the impermeable surface, wash water should then be directed to a vegetated area.

iii. Vehicles and equipment should not be washed near uncovered repair areas or chemical storage areas such that chemicals can be transported in wash water runoff. All wash water runoff should drain away from a shop repair or chemical storage area.

iv Wash water from cleaning the interior of truck trailers and other large commodity carrying containers must be collected and discharged to a POTW or treated in a closed-loop, wash water recycling system.

p. Non-stormwater discharges authorized in Sectors A through AD of this General Permit.

SPECIAL CONDITIONS

C. APPLICABILITY AND ELIGIBILITY (cont'd)

3. **Exclusions and restrictions.** The following exclusions and restrictions for coverage under this General Permit apply.

   a. Stormwater discharges that are comingled with other sources authorized by another MEPDES permit if the co-mingled waters cannot be separately characterized;
   b. Stormwater discharges which the Department has determined are or would cause or contribute to a violation of an applicable water quality standard. This exclusion does not apply if the applicant demonstrates participation and compliance with a Watershed Management Plan; and
   c. Stormwater discharges associated with construction activity disturbing one (1) acre or more, unless in conjunction with mining activities or certain oil and gas extraction activities as specified in Sectors G, H, I, and J of this General Permit.

4. **Conditional exclusion for no exposure.** Discharges composed entirely of stormwater are not stormwater discharges associated with industrial activity if there is no exposure of industrial materials and activities to rain, snow, snowmelt and/or runoff, and the discharger satisfies the conditions in this section. To qualify for exclusion, the permittee must submit the Department's No Exposure Certification Form DEPLW0968.

   a. Qualification requirements. To qualify for this exclusion, the permittee covered by this General Permit that becomes eligible for a no exposure exclusion must:

      1. Provide a storm resistant shelter to protect industrial materials and activities from exposure to rain, snow, snow melt, and runoff;
      2. Complete and sign a certification that there are no discharges of stormwater contaminated by exposure to industrial materials and activities from the entire facility;

      3. Submit the signed certification to the Department once every five years;
      4. Allow the Department to inspect the facility to determine compliance with the no exposure conditions;
      5. For facilities that discharge through an MS4, upon request, submit a copy of the certification of no exposure to the MS4 operator, as well as allow inspection and public reporting by the MS4 operator; and
      6. Notify the Department of changes in facility ownership in accordance with Special Condition D.7, *Changed conditions*.

   b. Shelter exclusions. To qualify for this exclusion, storm resistant shelter is not required for:

      1. Drums, barrels, tanks, and similar containers that are tightly sealed, provided those containers are not deteriorated, do not leak or do not otherwise contribute pollutants to stormwater;
      2. Adequately maintained vehicles used in material handling; and
      3. Products that would not contribute pollutants to stormwater.

SPECIAL CONDITIONS

C. APPLICABILITY AND ELIGIBILITY (cont'd)

c. Changed circumstances. If circumstances change and industrial materials or activities become exposed to rain, snow, snow melt, and/or runoff, the conditions for this exclusion no longer apply. In such cases, the discharge becomes subject to enforcement for un-permitted discharge. Any conditionally exempt discharger who anticipates changes in circumstances should apply for and obtain permit authorization prior to the change of circumstances.

5. **Co-located facilities.** Where more than one sector of industrial activity applies to a single facility, the permittee must comply with the requirements of all applicable sectors. In the case of a difference between numeric effluent limitations for a facility subject to multiple sectors, compliance is required with the more stringent limitation.

6. **Stormwater discharges to impaired waters.** Coverage under this General Permit for stormwater discharges associated with an industrial activity to impaired waters may only be approved if the Department determines that the discharge(s) does not cause or contribute to the failure of the water body to meet the standards of classification. The Department will determine whether a facility discharges to an impaired water based on receiving water information provided by the applicant on the NOI form. In making this determination, the entity seeking coverage must provide the Department with clear and compelling evidence that the discharge does not contain pollutants in concentrations or quantity that would cause or contribute to the impairment condition. Evidence may consist of, but is not necessarily limited to, effluent analytical data for the pollutants of concern, documentation from the facility's SWPPP that there is no exposure of all sources of the pollutants of concern at the facility and / or that treatment devices are installed to eliminate or sufficiently minimize the pollutants of concern from stormwater runoff. The Department reserves the right to require additional monitoring on a case-by-case basis to ensure stormwater discharges to impaired waters comply with applicable water quality laws and this General Permit.

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE

1. **Notice of Intent (NOI)**. The owner or operator of a facility discharging stormwater associated with industrial activity, as an applicant, and seeking coverage under this General Permit must submit a completed NOI to the Department for review and approval within **sixty (60) days** of the date the permit is signed by the Commissioner of the Department. NOI forms must be mailed or hand-delivered to:

Department of Environmental Protection
Bureau of Water Quality
Division of Water Quality Management
17 State House Station
Augusta, ME 04333-0017

The Department reserves the right to request additional information from the applicant based on review of the NOI. Permitting information, forms, and Augusta office directions may be obtained by contacting the Department's Waste Discharge Permitting Unit at 1-207-287-7688. Additionally, the General Permit, associated fact sheet and other forms are available for review and download at: http://www.maine.gov/dep/water/wd/multisector/index.html.

SPECIAL CONDITIONS

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE (cont'd)

2. **NOI information**. A complete NOI must contain the following information.

   a. The legal name, mailing address, e-mail address and telephone number of the owner and operator (*i.e.*, applicant) of the facility;
   b. The name and street address of the facility;
   c. A topographic or similar type map extending approximately one mile beyond the boundaries of the facility generating stormwater and the geographic coordinates (latitude and longitude) of the facility's main entrance or office, if known;
   d. The name(s) or descriptions of all known water bodies into which the stormwater discharge is conveyed, or the MS4 into which the discharge(s) is connected;
   e. The Standard Industrial Code(s) (SIC) or NAICS Code(s) and identification of the Sectors of the General Permit that apply to the industrial activity conducted at the facility;
   f. A copy of a signed participating landowner agreement associated with a Watershed Management Plan in which the facility is participating , if applicable;
   g. A statement that a complete and up-to-date SWPPP[2] is available;
   h. Evidence of title, right or interest (TRI) in all of the property that is proposed for development or use in accordance with 06-096 C.M.R. 2(11)(D);
   i. For corporations, a *Certificate of Good Standing* or a statement signed by a corporate officer affirming that the corporation is in good standing; and
   j. The signature of an authorized person in accordance with *Applications for Waste Discharge Licenses*, 06-096 C.M.R. 521(5) (effective January 12, 2001).

   Failure to submit all required NOI information may result in finding the NOI incomplete for processing and may delay processing or result in denial of the NOI.

3. **Decisions.**

   a. **Effective date of coverage**. The Department must approve or deny each NOI submitted for coverage under this General Permit: 1) within 31 calendar days of receipt of a complete NOI if discharging to waters not listed as impaired waters; 2) within 61 calendar days of receipt of a complete NOI if discharging to impaired waters; or 3) on the effective date of this General Permit, whichever is later. If the Department does not notify the applicant within the specified timeframe, the NOI is automatically approved and becomes effective as if signed by the Commissioner in accordance with 06-096 C.M.R. 2(19)(E). In the event coverage is denied, the Department must notify the applicant of the reason(s) for denial. Denial of coverage under this General Permit is not appealable to the Board of Environmental Protection and is not final agency action. The approval of coverage under this General Permit is appealable in accordance with 06-096 C.M.R. 2(24)(B).

2 For purposes of this section, complete and up-to-date SWPPP means a SWPPP that contains all of the components required by this General Permit.

SPECIAL CONDITIONS

E. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE (cont'd)

b. **Individual permit coverage**. The Department may require, or an interested party may request for consideration, that a facility covered under this General Permit obtain an individual MEPDES permit for any of the reasons specified at 06-096 C.M.R. 529(2)(b)(3)(i)(A-G). The owner or operator of a facility eligible for coverage under this General Permit may request to be excluded from this General Permit and instead apply for an individual MEPDES permit as provided at 06-096 C.M.R. 529(2)(b)(3)(iii).

4. **Effective term of coverage.** The term of this General Permit is five years. Coverage under this General Permit will be continued from year to year provided payment of an applicable annual fee pursuant to *Maine Environmental Protection Fund*, 38 M.R.S. § 353-B, and that there are no significant changes in the facility or its operation as described in the NOI.

   Prior to expiration of this General Permit, the Department must make a determination if it is to be renewed, and, if so, will commence renewal proceedings. Not less than 6 months prior to expiration of this General Permit, the Department must provide notice of its intent to renew or not renew the General Permit. If the General Permit is to be renewed, it will remain in force until the Department takes final action on the renewal. Upon reissuance of a renewal General Permit, persons wishing to continue coverage must apply for coverage under the renewal General Permit not later than 30 days following the issuance date of the new General Permit.

5. **Transfer of ownership.** In the event that the ownership of a facility is transferred to a new owner or operator, coverage under this General Permit may be transferred to the new owner or operator notifying the Department in writing within two weeks of the transfer. The notice must include documentation that the new owner or operator has: 1) a *Certificate of Good Standing* or a statement signed by a corporate officer affirming that the corporation is in good standing; 2) title, right or interest in the facility; 3) the technical and financial capacity to comply with this General Permit; and 4) a SWPPP that meets all requirements of this General Permit and that is certified in accordance with the signatory requirements of 06-096 C.M.R. 521(5). If increases or significant changes in the discharge(s) are proposed, a new NOI must be filed.

6. **Changed conditions**. In the event a permittee covered by this General Permit proposes to make significant changes in the nature or scope of the operations of facilities described in a NOI previously approved, the permittee must notify the Department as soon as becoming aware of and before implementing such changes. Based on its evaluation of the proposed changes, the Department may require the submittal of a new NOI or that an individual permit be obtained.

SPECIAL CONDITIONS

D. NOTIFICATION, DECISIONS AND EFFECTIVE TERM OF COVERAGE (cont'd)

7. **Notice of termination.** A permittee covered under this General Permit that has 1) ceased operations and has eliminated the potential for discharges of stormwater associated with industrial activity; or 2) has obtained coverage for the discharge covered under this General Permit through another MEPDES permit must, within 30 days of either condition, submit a request for permit termination to the Department by submitting a complete Department Form DEPLW0967. The Department will notify an entity that requested permit termination of the Department's decision to terminate coverage under this General Permit, including, but not limited to, identification of additional requirements necessary to make the permittee eligible for permit termination. In accordance with Standard Condition A.5, *Permit actions*, the filing of a request for permit termination does not eliminate any General Permit condition, including payment of an annual waste discharge license fee pursuant to Standard Condition A.11, *Other laws*, and *Annual waste discharge license fees*, 38 M.R.S. § 353-B.

E. AUTHORIZED DISCHARGES

A permittee covered under this General Permit is authorized to discharge: 1) only in accordance with the permittee's Notice of Intent; and 2) only in accordance with the terms and conditions of this General Permit. Discharges of pollutants from any other point source are not authorized under this General Permit, and must be reported in accordance with Standard Condition D(1)(f), *Twenty-four hour reporting*, of *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, attached to this General Permit. Any non-stormwater discharges not explicitly authorized pursuant to Special Condition C.2 of this General Permit are not covered and must be eliminated, or in the alternative, covered by a separate MEPDES permit.

F. NARRATIVE EFFLUENT LIMITATIONS

In addition to compliance with the numeric and non-numeric technology-based effluent established in this General Permit, the permittee must comply with the following narrative effluent limitations.

1. An entity covered under this General Permit must not discharge, at any time, effluent that contains a visible oil sheen, foam or floating solids, which would impair the uses designated for the classification of the receiving waters.

2. An entity covered under this General Permit must not discharge, at any time, effluent that contains materials in concentrations or combinations which are hazardous or toxic to aquatic life, or which would impair the uses designated for the classification of the receiving waters.

3. An entity covered under this General Permit must not discharge, at any time, effluent that imparts color, taste, turbidity, toxicity, radioactivity or other properties which cause those waters to be unsuitable for the designated uses and characteristics ascribed to their classification.

4. An entity covered under this General Permit must not discharge effluent that lowers the quality of any classified body of water below such classification, or lowers the existing quality of any body of water if the existing quality is higher than the classification

SPECIAL CONDIONS

G. CONTROL MEASURES

The permittee must select, design, install and implement control measures, adhering to good engineering practices and manufacturer's specifications, to minimize pollutant discharges from all potential sources. The control measure(s) selected must be capable of meeting 1) the non-numeric technology-based effluent limitations established in Special Condition H of this General Permit; 2) the numeric limitations specified in Special Condition I of this General Permit; and 3) all applicable water quality standards, including the goals of approved total maximum daily load (TMDLs) and water quality-based effluent limitations where established. Where more than one standard exists for a specific pollutant, compliance with this General Permit and the control measure design must be based on the most stringent standard. In selecting control measures, the permittee must address the following design and selection considerations.

1. Preventing stormwater from coming into contact with polluting materials;
2. Using control measures in combination;
3. Assessing the type and quantity of pollutants, including their potential to impact receiving water quality;
4. Minimizing impervious areas at the facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) in accordance with State laws and regulations;
5. Attenuating flow using open vegetated swales and natural depressions;
6. Conserving and/or restoring riparian buffers; and
7. Using treatment interceptors (*e.g.*, swirl separators and sand filters).

H. NON-NUMERIC TECHNOLOGY-BASED EFFLUENT LIMITATIONS

The permittee must comply with the following non-numeric effluent limitations in addition to any non-numeric effluent limitations specified in Sectors A through AD of this General Permit.

1. **Minimize exposure.** The permittee must minimize the exposure of manufacturing, processing, and material storage areas (including, but not limited to, loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and runoff in order to minimize pollutant discharges. Unless impractical, the permittee must also:

    a. Use grading, berming or curbing to prevent runoff of contaminated flows and divert run-on away from these areas;
    b. Locate materials, equipment, and activities so that potential leaks and spills are contained or able to be contained or diverted before discharge;
    c. Clean up spills and leaks promptly using dry methods (*e.g.*, absorbents) to prevent the discharge of pollutants;

SPECIAL CONDITIONS

H. NON-NUMERIC TECHNOLOGY-BASED EFFLUENT LIMITATIONS (cont'd)

d. Properly dispose of materials used for spill or leak clean up to prevent used clean up materials from being a source of pollutants in stormwater;
e. Store leaky vehicles and equipment indoors or, if stored outdoors, use drip pans and absorbents;
f. Use spill/overflow protection equipment;
g. The washing of new or used vehicles or equipment is allowed with the following prohibitions and recommended best management practices:
    1. Engine, undercarriage and transmission washing is prohibited**.** Cleaning operations should minimize the detachment of paint residues, heavy metals or any other potentially hazardous materials from surfaces. Information on temporary berms and magnetic storm drain covers is attached to this guidance.
    2. Vehicle and equipment washing should occur, where possible, on an impermeable surface (i.e., concrete, asphalt, plastic or other) and utilize an area that extends to a minimum of four (4) feet on all sides of the vehicle or equipment so that wash water and overspray falls initially on the impermeable surface. From the impermeable surface, wash water should then be directed to a vegetated area. Information on temporary berms and magnetic storm drain covers and suppliers is attached to this guidance.
    3. Vehicles and equipment should not be washed near uncovered repair areas or chemical storage areas such that chemicals can be transported in wash water runoff. All wash water runoff should drain away from a shop repair or chemical storage area.
    4. Wash water from cleaning the interior of truck trailers and other large commodity carrying containers must be collected and discharged to a POTW or treated in a closed-loop, wash water recycling system.
h. Drain fluids from equipment and vehicles that will be decommissioned, and, for any equipment and vehicles that will remain unused for extended periods of time, inspect at least quarterly for leaks.
i. locate industrial materials and activities inside or protecting them with storm resistant coverings where practical to do so.

2. **Good housekeeping.** The permittee must keep clean all exposed areas that are potential sources of pollutants. The permittee must perform good housekeeping measures in order to minimize pollutant discharges, including but not limited to, the following:

a. Sweep or vacuum at regular intervals as a primary measure or, alternatively, wash down the area as a secondary measure and collect and/or treat, and properly dispose of the washdown water;
b. Store materials in appropriate containers that are labeled to specify contents;
c. Keep all dumpster lids closed when not in use, or provide secondary containment to ensure that discharges have a control. For dumpsters, waste bins and roll-off containers that do not have lids and could leak, ensure that discharges have a control (e.g. secondary containment, treatment). Dumpsters and roll-off containers should only be used to hold solid waste materials and never used to hold liquid wastes. This permit does not authorize any dry weather discharges from dumpsters or roll-off containers;

SPECIAL CONDITIONS

H. NON-NUMERIC TECHNOLOGY-BASED EFFLUENT LIMITATIONS (cont'd)

d. Minimize the potential for waste, garbage and floatable debris to be discharged by keeping exposed areas free of such materials, or by intercepting them before they are discharged;
e. For facilities that handle pre-production plastic, implement best management practices to eliminate discharges of plastic in stormwater; and
f. Site and operate snow storage and disposal areas to prevent or minimize discharges of pollutants from snow maintenance activities.

3. **Maintenance.** The permittee must maintain all control measures that are used to achieve the effluent limits in this General Permit in effective operating condition, as well as all industrial equipment and systems, in order to minimize pollutant discharges. This includes:

a. Performing and documenting inspections and preventive maintenance of stormwater drainage, source controls, treatment systems, and plant equipment and systems that could fail and result in contamination of stormwater;
b. Diligently maintaining non-structural control measures (*e.g.*, keep spill response supplies available, personnel appropriately trained);
c. Inspecting and maintaining baghouses at least quarterly to prevent the escape of dust from the system and immediately removing any accumulated dust at the base of the exterior baghouse; and
d. Cleaning catch basins when the depth of sediment or debris reaches 2/3rds of the sump depth and keeping the sediment and debris surface at least six inches below the lowest outlet pipe or alternatively, establish a routine maintenance schedule such each catch basin is cleaned oat least nce per year.

4. **Spill prevention and response.** The permittee must minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur in order to minimize pollutant discharges. The permittee must conduct spill prevention and response measures, including but not limited to, the following:

a. Plainly label containers 55 gallons or greater *(e.g.*, "Used Oil," "Spent Solvents," "Fertilizers and Pesticides") that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;
b. Implement procedures for material storage and handling, including the use of secondary containment and barriers between material storage and traffic areas, or a similarly effective means designed to prevent the discharge of pollutants from these areas;
c. Develop training on spill response procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. As appropriate, execute such procedures as soon as possible;
d. Keep adequate and accessible spill kits on-site, located near areas where spills may occur or where a rapid response can be made; and
e. Notify appropriate facility personnel when a leak, spill, or other release occurs.

5. **Erosion and sediment controls.** The permittee must minimize erosion by stabilizing exposed soils at the facility in order to minimize pollutant discharges and by placing flow velocity dissipation devices in stormwater swales and ditches at discharge locations, as necessary, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points. The permittee must also use structural and non-structural control measures, as necessary, to minimize the discharge of sediment.

SPECIAL CONDITIONS

H. NON-NUMERIC TECHNOLOGY-BASED EFFLUENT LIMITATIONS (cont'd)

6. **Management of runoff**. The permittee must divert, infiltrate, reuse, contain, or otherwise manage stormwater runoff to minimize pollutants in the discharges.

7. S**alt storage piles or piles containing salt.** Unless otherwise authorized by variance pursuant to *Siting and Operation of Road Salt and Sand-Salt Storage Areas*, 06-096 C.M.R. 574 (effective December 3, 2001), the permittee must enclose or cover storage piles of salt, or piles containing salt, used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces, in order to minimize pollutant discharges. This includes preventing stormwater runoff from coming into contact with covered piles. The permittee must implement appropriate measures (*e.g.*, good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile.

8. **Employee training.** Annually, the permittee must train all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of this permit (*e.g.*, inspectors, maintenance personnel), including all members of the facility's stormwater pollution prevention team. The permittee must ensure the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:

    a. Personnel who are responsible for the design, installation, maintenance, and/or repair of controls (including pollution prevention measures);
    b. Personnel responsible for the storage and handling of chemicals and materials that could become contaminants in stormwater discharges;
    c. Personnel who are responsible for conducting and documenting monitoring and inspections pursuant to this General Permit; and
    d. Personnel who are responsible for taking and documenting corrective actions pursuant to this General Permit.

    Personnel must be trained in at least the following if related to the scope of their job duties (*e.g.*, only personnel responsible for conducting inspections need to understand how to conduct inspections):

    e. An overview of what is in the SWPPP;
    f. Spill response procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases, good housekeeping, maintenance requirements, and material management practices;
    g. The location of all controls on the site required by this General Permit, and how they are to be maintained;
    h. The proper procedures to follow with respect to the General Permit's pollution prevention requirements; and
    i. When and how to conduct inspections, record applicable findings, and take corrective actions.

9. **Dust generation and vehicle tracking of industrial materials.** The permittee must utilize control measures to minimize generation of dust and off-site tracking of raw, final, or waste materials. Discharges of pollutants associated with an industrial activity as the result of off-site tracking are not authorized by this General Permit.

SPECIAL CONDITIONS

I. NUMERIC TECHNOLOGY-BASED EFFLUENT LIMITATIONS

A permittee covered under this General Permit engaging in the following regulated activities must comply with all numeric effluent limitations specified in the Sector applicable to the facility.

Regulated Activity	40 CFR Part/Subpart	Applicable Sector
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	Part 429, Subpart I	A
Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products	Part 418, Subpart A	C
Runoff from asphalt emulsion facilities	Part 443, Subpart A	D
Runoff from material storage piles at cement manufacturing facilities	Part 411, Subpart C	E
Runoff from coal piles at any coal mine at which the extraction of coal is taking place	Part 434, Subpart A	H
Mine dewatering discharges at crushed stone (SIC 1422-1429), construction sand and gravel (SIC 1442), or industrial sand mining facilities (SIC 1446)	Part 436, Subparts B, C, or D	J
Runoff from hazardous waste landfills	Part 445, Subpart A	K
Runoff from non-hazardous waste landfills	Part 445, Subpart B	L
Runoff from coal storage piles at steam electric generating facilities	Part 423	O
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Part 449	S

J. STORMWATER POLLUTION PREVENTION PLAN – GENERAL REQUIREMENTS

1. **Availability of SWPPP.** The permittee must prepare a SWPPP for the facility prior to submission of a NOI for authorization to discharge stormwater associated with industrial activity under this General Permit. If a permittee prepared a SWPPP for coverage under a previous version of this General Permit, the permittee must review and update the SWPPP to implement all provisions of this General Permit prior to submitting a NOI. Upon receiving authorization under this General Permit, a copy of the SWPPP must be available to appropriate facility staff, Department and USEPA staff, and the operator of an MS4 receiving discharges from the facility. The permittee must keep a copy of the SWPPP on-site at all times for reference and review.

2. **SWPPP preparation.** The SWPPP must be prepared in accordance with good engineering practices and to industry standards. The SWPPP may be developed by either a person on the facility's staff or a third party, but it must be developed by a "qualified person" and must be certified in accordance with the signatory requirements of 06-096 C.M.R. 521(5). A "qualified person" is a person knowledgeable in the principles and practices of industrial stormwater controls and pollution prevention, and possesses the education and ability to assess conditions at the industrial facility that could impact stormwater quality,

SPECIAL CONDITIONS

J. STORMWATER POLLUTION PREVENTION PLAN – GENERAL REQUIREMENTS (cont'd)

and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit. A qualified person may include facility staff that is familiar with the facility's industrial activity and control measures necessary to reduce or eliminate the discharge of pollutants associated with the industrial activity.

3. **Amended SWPPP.** The permittee must amend the SWPPP within thirty (30) calendar days of completion of any of the following:

   a. A change in design, construction, operation, or maintenance at the facility that may have a significant effect on the discharge or potential for discharge of pollutants from the facility including the addition or reduction of industrial activity;
   b. Monitoring, inspections, or investigations by the permittee or by local, State, or Federal officials which determine the SWPPP is ineffective in eliminating or significantly minimizing the intended pollutants;
   c. A discharge under this General Permit that is determined by Department to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard.

K. STORMWATER POLLUTION PREVENTION PLAN – GENERAL CONTENTS

This subsection describes the minimum requirements that must be addressed or contained within an acceptable SWPPP.

1. **Stormwater Pollution Prevention Team.** The SWPPP must identify the individual(s) (by name or title) who comprise the facility's Stormwater Pollution Prevention Team. The Stormwater Pollution Prevention Team is responsible for assisting the facility/plant manager in developing, implementing, maintaining and revising the facility's SWPPP. Responsibilities of each team member must be listed.

2. **Nature of activities.** The SWPPP must provide a description of the nature of the industrial activities at the facility.

3. **Maps.** The SWPPP must contain a general location map with sufficient detail to identify the location of the facility and all receiving waters for all stormwater discharges. In addition to any Sector-specific map requirements, a site map (or multiple as necessary) depicting the following features must also be included with the SWPPP.

   a. Boundaries of the property and the size of the property in acres;
   b. Location and extent of significant structures and impervious surfaces;
   c. Directions of stormwater flow (use arrows);
   d. Locations of all stormwater control measures;
   e. Locations of all receiving waters, including wetlands, in the immediate vicinity of the facility;
   f. Locations of all stormwater conveyances including catch basins, ditches, pipes, and swales;
   g. Locations of potential pollutant sources;

SPECIAL CONDITIONS

K. STORMWATER POLLUTION PREVENTION PLAN – GENERAL CONTENTS (cont'd)

h. The location of all above ground wastewater or process water containment tanks;
i. For the purposes of the site map, identify areas of frequent spills (greater than three occurrences per year) and large spills (greater than 10 gallons) that have occurred in the last three years. All locations of fuel frequent/large spills must be documented within the SWPPP or applicable Spill Prevention Control & Counter Measure (SPCC) Plan;
j. Locations of all stormwater monitoring points;
k. Locations of stormwater inlets and outfalls, with a unique identification code for each outfall (*e.g.*, Outfall 001, 002) and an approximate outline of the areas draining to each outfall;
l. Locations of the following activities where such activities are exposed to precipitation:
   - fueling stations;
   - vehicle and equipment maintenance and/or cleaning areas;
   - loading/unloading areas;
   - locations used for the treatment, storage, or disposal of wastes;
   - liquid storage tanks;
   - processing and storage areas;
   - immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;
   - transfer areas for substances in bulk;
   - machinery; and
   - locations and sources of run-on to the site from adjacent property that contains significant quantities of pollutants.

4. **Summary of potential pollutant sources.** The SWPPP must provide a description of the areas at the facility where industrial materials or activities are exposed to stormwater or from which allowable non-stormwater discharges originate. Industrial materials or activities include, but are not limited to: material handling equipment or activities; industrial machinery; raw materials; industrial production and processes; and intermediate products, by-products, final products, and waste products. Material handling activities include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. Structures located in areas of industrial activity are potential sources of pollutants.

   For each separate area identified, the description must include the following.

   a. Activities in the area. A list of the industrial activities exposed to stormwater and the predicted direction of flow of stormwater from each activity and outfall.

   b. Pollutants. A list of pollutants associated with each identified activity, which could be exposed to rainfall or snowmelt and could be discharged from the facility. The pollutant list must include all significant materials that have been handled, treated, stored or disposed, and that have been exposed to stormwater in the three years prior to the date you prepare or amend your SWPPP.

SPECIAL CONDITIONS

K. STORMWATER POLLUTION PREVENTION PLAN – GENERAL CONTENTS (cont'd)

c. Spills and leaks. The permittee must document where potential spills and leaks could occur that could contribute pollutants to stormwater discharges, and the corresponding outfall(s) that would be affected by such spills and leaks. The permittee must document all frequent or large spills and leaks of oil or toxic or hazardous substances that actually occurred at exposed areas, or that drained to a stormwater conveyance, in the three years prior to the date the SWPPP was prepared or last amended. The permittee must document the circumstances leading to the release and actions taken in response to the release and the measures taken to prevent the recurrence of such releases.

d. Wastewater or process water containment. Any stationary above ground tank, container, or container storage area used for the storage of wastewater or process water that has the potential to discharge to surface waters or a stormwater conveyance during a malfunction must be held in a secondary containment device capable of containing 100% of the contents of the tank, plus precipitation. The containment devices must meet all Federal and State rules for primary and secondary containment. Secondary containment requirements are waived if the tank is equipped with a level sensor and alarm to signal an overflow or leak and the facility has a contingency plan in place to remove excess liquid to a second containment structure or off site treatment facility to prevent exposure to stormwater. The containment structures must be visually inspected for signs of deterioration at least once per year. The contingency plan and tank inspection procedure must be documented in the SWPPP.

e. Non-stormwater discharges – The permittee must document that it has evaluated its site for the presence non-stormwater discharges not listed in Section C(2). Documentation must include the following.

1. The date of the evaluation;
2. A description of the evaluation criteria used;
3. A list of the outfalls or onsite drainage points that were directly observed during the evaluation; and
4. The action(s) taken, such as a list of control measures used to eliminate unauthorized discharge(s), or documentation that a separate MEPDES permit was obtained.

f. Salt storage. The permittee must document the location of any storage piles containing salt used for deicing or other commercial or industrial purposes.

g. Sampling data. Existing dischargers must summarize all stormwater discharge sampling data collected at the facility during the previous permit term. The summary must include a narrative description (and may include data tables/figures) that adequately summarizes the collected sampling data to support identification of potential pollution sources at the facility. New dischargers and new sources must provide a summary of any available stormwater runoff data they may have.

h. Method of on-site storage or disposal. A storage practice or disposal method must be detailed for all raw materials, intermediate materials, final products and waste materials. Waste materials must be handled in accordance with applicable federal and State waste management rules and regulations.

SPECIAL CONDITIONS

K. STORMWATER POLLUTION PREVENTION PLAN – GENERAL CONTENTS (cont'd)

5. **Procedures for conducting monitoring.** The SWPPP must document the procedures and frequencies for conducting the three types of analytical monitoring (Benchmark, Numeric, and Impaired Waters) and Visual Monitoring where applicable. SWPPP documentation must include the following.

   a. Location of sample collection (outfall designation);
   b. Sampling parameters and sampling frequency for each parameter including the benchmark or limit associated with that parameter; and
   c. Monitoring schedule including monitoring exceptions, adverse weather conditions, and waivers.

L. STORMWATER POLLUTION PREVENTION PLAN – CONTROL MEASURES

This condition contains SWPPP requirements for control measures to meet effluent limitations. The permittee must review all control measures at least quarterly and complete corrective action(s) to modify any control measures that are not achieving the intended effect of minimizing pollutant discharges. The SWPPP must document the type and location of all control measures selected to ensure compliance with technology-based and water quality-based effluent limitations.

1. **Best management practices (BMPs) considerations.** Best management practices must be applied to all areas described in the summary of potential pollutant sources documented in the SWPPP. The SWPPP must include an implementation schedule for all proposed BMPs. The permittee must consider, at a minimum, the following in selection of BMPs:

   a. The quantity and nature of the pollutants, and their potential to impact the water quality of receiving waters;
   b. Preventing stormwater from coming into contact with polluting materials;
   c. Using control measures in combination to minimize pollutants in stormwater discharges;
   d. Opportunities to offset stormwater and temperature impacts from impervious areas on dry weather flows and low flow situations to streams;
   e. Minimizing impervious areas at the facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches);
   f. Attenuating flow using open vegetated swales and natural depressions; and
   g. Use of treatment interceptors (*e.g.*, swirl separators, sand filters, catch basin inserts/filters) to minimize the discharge of pollutants.

2. **Non-structural control measures** The permittee must comply with the non-structural control measures in Special Condition H, *Non-Numeric Technology Based Effluent Limitations*, of this permit.

SPECIAL CONDITIONS

M. STORMWATER POLLUTION PREVENTION PLAN – RECORDS

The permittee must keep the following inspection, monitoring and certification records on site with the SWPPP.

1. A copy of the NOI submitted to the Department for coverage under this General Permit;

2. A copy of the NOI approval issued by the Department for coverage under this General Permit;

3. A paper or electronic copy of this General Permit and any Sectors that are applicable to the facility;

4. Documentation of maintenance and repairs of control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair/replacement, and for repairs, date(s) that the control measure(s) returned to full function, and the justification for any extended maintenance/repair schedules;

5. All inspection reports and monitoring data required by this General Permit, including any required sector-specific reports and monitoring data;

6. Documentation of monitoring exceedances and the permittee's response;

7. A description of any deviations from the schedule for visual assessments and/or monitoring, and the reason for the deviations (*e.g.*, adverse weather or it was impracticable to collect samples within the first 60 minutes of a measurable storm event);

8. Dates and descriptions of all spills and leaks that must be documented by this General Permit;

9. Corrective Action Reports and summary of completed actions taken at the site, including event(s) and date(s) when problems were discovered and modifications occurred; and

10. Documentation to support any determination that pollutants of concern are not expected to be present above natural background levels if the permittee discharges directly to impaired waters, and that such pollutants were not detected in the discharge or were solely attributable to natural background sources.

11. A copy of records for all employee training as required by Section H(8) of this permit.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS

1. **Monitoring Generally.**

   a. **Monitoring categories and methods.** This General Permit contains the following types of monitoring: routine facility inspections; visual monitoring; Sector-specific benchmark monitoring; numeric technology-based effluent limitation monitoring; and water quality-based impaired waters monitoring. The monitoring requirements and numeric limitations applicable to a facility depend on the types of industrial activities conducted and the receiving water quality. Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the discharge over the sampling and reporting period. The permittee must conduct sampling and analysis in accordance with a) methods approved by 40 CFR Part 136; b) alternative methods approved by the Department in accordance with the procedures in 40 CFR Part 136; or c) as otherwise specified by the Department. Samples that are sent out for analysis must be analyzed by a laboratory certified by the State of Maine's Department of Health and Human Services for wastewater. Samples that are sent to a publicly owned treatment works licensed pursuant to *Waste discharge licenses*, 38 M.R.S. § 413 are subject to the provisions and restrictions of *Maine Comprehensive and Limited Environmental Laboratory Certification Rules*, 10-144 C.M.R. 263 (effective April 1, 2010). If the permittee monitors any pollutant more frequently than required by this General Permit using test procedures approved under 40 CFR Part 136 or as specified in this General Permit, the results of this monitoring must be maintained with the SWPPP.

   Monitoring prescribed in this subsection is not required for entities covered under this General Permit that are participating in a Watershed Management Plan. The Long Creek Watershed Management Plan in the municipalities of South Portland, Portland, Westbrook and Scarborough is a Department Approved Watershed Management Plan.

   b. **Monitoring timing.** Stormwater samples should, whenever practicable, be collected within the first sixty (60) minutes of the beginning of a discharge during a qualifying storm event. If a sample cannot be collected within the first 60 minutes, the permittee must document with inspection forms the reason(s) or circumstance(s) why it was not practicable to obtain a timely sample. Samples collected more than 2.25 hours following the beginning of a discharge during a qualifying storm event are not acceptable and will be rejected by the Department.

   In the case of snowmelt, samples must be collected during a period with a measurable discharge from the representative outfall.

   If a stormwater discharge event associated with a qualifying storm event does not occur during normal operating business hours an entire calendar quarter, the permittee must document in the SWPPP that there was no discharge to sample. Monitoring requirements under these circumstances are waived.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

2. **Routine Facility Inspections.**

a. **Applicability.** All permittees covered under this General Permit must conduct routine facility inspections of areas of the facility covered by the requirements in this General Permit, including, but not limited to, the following:

1. Areas where industrial materials or activities are exposed to stormwater;
2. Areas identified in the SWPPP and those that are potential pollutant sources;
3. Areas where spills and leaks have occurred in the past three years;
4. Discharge points; and
5. Control measures used to comply with the effluent limits contained in this General Permit.

b. **Minimum inspection requirements.** Routine facility inspections must be conducted once per calendar quarter each year the permittee is covered under this General Permit. These inspections must be equally spaced with a minimum of sixty (60) days between inspections. At least once each calendar year, the routine inspection must be conducted during a period when a stormwater discharge is occurring. Alternatively, a permittee with multiple outfalls may inspect one outfall from each sector provided that it is representative of the entire sector. Representative outfalls must be rotated and all outfalls must be inspected over the course of the five-year permit cycle. The permittee must document findings from each routine facility inspection in a signed, certified report maintained with the SWPPP including, but not limited to, the following:

1. The inspection date and time;
2. The name(s) and signature(s) of the inspector(s);
3. Weather information (precipitation in the previous 48 hour period of time);

4. All observations relating to the implementation of control measures at the facility, including:
    a. A description of any discharges occurring at the time of the inspection;
    b. Any new discharges from and/or pollutants at the site;
    c. Any evidence of, or the potential for, pollutants entering the drainage system;
    d. Observations regarding the physical condition of and around all outfalls, including any flow dissipation devices, and evidence of pollutants in discharges and/or the receiving water;
5. Any control measures needing maintenance, repairs, or replacement;
6. Any additional control measures needed to comply with the General Permit requirements; and
7. Any incidents of noncompliance.

Visual monitoring requirements required by this General Permit may be satisfied at the same time a routine facility inspection is conducted provided all components of both monitoring types are included in the report.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

c. **Exception for inactive and unstaffed sites.** The requirement to conduct facility inspections on a routine basis does not apply at a facility that is inactive and unstaffed (temporarily or permanently closed), provided that there are no industrial materials or activities exposed to stormwater. Such a facility is only required to conduct an annual site inspection in accordance with the other requirements of this subsection. To invoke this exception, the permittee must maintain a signed and certified statement with the facility SWPPP stating that the site is inactive and unstaffed, and that there is no exposure to stormwater.

If circumstances change and industrial materials or activities become exposed to stormwater or the facility becomes active and/or staffed, this exception no longer applies and the permittee must immediately begin complying with the applicable monitoring requirements as if it was in the first year of permit coverage.

3. **Visual Monitoring.**

a. **Applicability.** All permittees covered under this General Permit must conduct visual monitoring.

b. **Minimum monitoring requirements.** Visual monitoring must be conducted once per calendar quarter each year the permittee is covered under this General Permit. The permittee must collect a stormwater sample from each outfall or a representative outfall during a qualifying storm event and conduct a visual assessment of these samples. See section B(13) of this permit for documenting a representative outfall. These samples are not required to be collected in accordance with 40 CFR Part 136 procedures but must be collected in such a manner that the samples are representative of the stormwater discharge. The sample must be collected in a clean, colorless glass or plastic container, and examined in a well-lit area. The visual assessment must be performed and documented in accordance with standard operating procedures outlined in document DEPLW0768, Visual Monitoring of Stormwater Discharges Associated with Industrial Activity, hereby incorporated into this General Permit.

c. **Monitoring parameters.** The permittee must visually inspect or observe the sample for the following water quality characteristics:

1. Color;
2. Odor;
3. Clarity (diminished);
4. Floating solids;
5. Settled solids;
6. Suspended solids;
7. Foam;
8. Oil sheen; and
9. Other obvious indicators of stormwater pollution

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

d. **Exception for inactive and unstaffed sites.** The requirement for visual monitoring does not apply at a facility that is inactive and unstaffed, provided that there are no industrial materials or activities exposed to stormwater. To invoke this exception, the permittee must maintain a signed and certified statement with the facility SWPPP stating that the site is inactive and unstaffed, and that there is no exposure to stormwater.

4. **Sector-Specific Benchmark Monitoring.**

a. **Applicability.** This General Permit specifies pollutant benchmark thresholds that are applicable to certain Sectors. The permittee must monitor for any benchmark parameters specified for the industrial Sector(s), both primary industrial activity and any co-located industrial activities, applicable to the discharge. The sector-specific benchmark thresholds are listed in the sector-specific sections appended to this General Permit. The benchmark thresholds are not effluent limitations; a benchmark exceedance, therefore, is not a violation of this General Permit. However, if corrective action is required as a result of a benchmark exceedance, failure to conduct required corrective action is a violation of this General Permit.

b. **Minimum monitoring requirements.** Benchmark monitoring must be conducted quarterly for the first four full calendar quarters of coverage under this General Permit. When conditions prevent the permittee from obtaining four samples in four consecutive quarters, the permittee must continue monitoring until the four samples required for calculating your benchmark monitoring average have been obtained. The permittee must collect a stormwater sample from each outfall or a representative outfall for sector-specific benchmark monitoring. See section B(13) of this permit for documenting a representative outfall.

c. **Exceedances.** After collection of four quarterly samples, if the average of the four monitoring values for any parameter exceeds the benchmark threshold, the permittee must review the selection, design, installation, and implementation of the control measures to determine if modifications are necessary to meet the effluent limits in this General Permit, and either:

1. Make the necessary modifications and continue quarterly monitoring until the permittee has completed four additional quarters of monitoring for which the average does not exceed the benchmark; or

2. Propose to the Department that no further pollutant reductions are technologically available and economically practicable and achievable in light of best industry practice to meet the technology-based effluent limits or are necessary to meet applicable water-quality-based effluent limitations, in which case the permittee must continue monitoring quarterly, unless other requirements to reduce pollutants are imposed by the Department. The permittee must also document its rationale for concluding that no further pollutant reductions are achievable, and retain all records related to this documentation with the SWPPP. The Department will evaluate each proposal and make a determination as to whether or not additional pollutant reductions are technologically available and economically practicable and achievable.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

The permittee must review its control measures and perform any required corrective action within fourteen (14) calendar days (or document why no corrective action is required) without waiting for the full four quarters of monitoring data, when an exceedance of the four quarter average is mathematically certain. If after modifying the control measures and conducting four additional quarters of monitoring, the average still exceeds the benchmark (or if an exceedance of the benchmark by the four quarter average is mathematically certain prior to conducting the full four additional quarters of monitoring), the permittee must again review its control measures and take one of the two actions above.

Following the first four quarters of benchmark monitoring, if the average concentration of a pollutant exceeds a benchmark value, and that exceedance of the benchmark is attributable solely to the presence of that pollutant in the natural background, the permittee is not required to perform corrective action or additional benchmark monitoring provided that:

3. The average concentration of the benchmark monitoring results is less than or equal to the concentration of that pollutant in the natural background; and

4. The permittee documents and maintains with the SWPPP supporting rationale, including data, literature studies any other pertinent information, for concluding that benchmark exceedances are in fact attributable solely to natural background pollutant levels.

d. **Exception for inactive and unstaffed sites.** Notwithstanding applicable sector-specific requirements, the requirement for benchmark monitoring does not apply at a facility that is inactive and unstaffed (temporarily or permanent), provided that there are no industrial materials or activities exposed to stormwater. To invoke this exception, the permittee must maintain a signed and certified statement with the facility SWPPP stating that the site is inactive and unstaffed, and that there is no exposure to stormwater.

If circumstances change and industrial materials or activities become exposed to stormwater or the facility becomes active and/or staffed, this exception no longer applies and the permittee must immediately begin complying with the applicable benchmark monitoring requirements as if it was in the first year of permit coverage.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

5. **Numeric Technology-Based Effluent Limitation Monitoring.**

a. **Applicability.** Special Condition I of this General Permit establishes numeric technology-based effluent limitations based on USEPA effluent guidelines limitations. A permittee covered under this General Permit engaging in the regulated activities specified in Special Condition I of this General Permit must comply with all numeric effluent limitations specified in the Sector applicable to the facility. The effluent limitations guidelines are listed in the sector-specific sections appended to this General Permit. The effluent limitations set forth for each Sector are enforceable effluent limitations; an exceedance of an effluent limitation is a violation of this General Permit.

b. **Minimum monitoring requirements.** Stormwater effluent monitoring must be conducted once per year each calendar year the permittee is covered under this General Permit, except for permittees subject to Sectors A & J, which includes non-stormwater discharges. Minimum monitoring requirements for Sector A & J facilities are specified in Appendix A & J of this General Permit. The permittee must collect a stormwater sample from each representative outfall for numeric monitoring.

c. **Exceedances.** If any monitoring value exceeds a numeric effluent limitation contained in this General Permit, the permittee must:

1. Submit the monitoring results to the Department within 14 days of receiving monitoring results;

2. Comply with all applicable requirements for SWPPP Review and Correction Actions as specified in Special Condition O of this General Permit;

3. Conduct follow-up monitoring within 30 calendar days (or during the next qualifying storm event, should none occur within 30 days) of implementing corrective action(s). If any follow-up monitoring result exceeds a numeric effluent limitation contained in this General Permit, submit the monitoring results to the Department within 14 days of receiving monitoring results; and

4. Continue to monitor, at least quarterly, until your discharge is in compliance with the numeric effluent limit or until the Department waives the requirement for additional monitoring.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

6. **Impaired Waters Monitoring.**

a. **Applicability.** Impaired waters monitoring applies to stormwater discharges to a water body listed on the 303(d) list of the current USEPA-approved Integrated Water Quality Monitoring and Assessment Report. The Department will determine whether a facility discharges to an impaired water based on receiving water information provided by the applicant on the NOI form.

b. **Minimum monitoring requirements.**

1. If a total maximum daily load (TMDL) has not been approved for the water body, stormwater effluent monitoring must be conducted once per year each calendar year the permittee is covered under this General Permit; or

2. For storm water discharges to impaired waters with a USEPA approved or established TMDL, permittee's are not required to monitor for the pollutant(s) for which the TMDL was written unless the Department's informs the permittee, upon examination of the applicable TMDL and its wasteload allocation, that the permittee is subject to such a requirement consistent with the assumptions and requirements of the applicable TMDL and its wasteload allocation. The Department's notice will include specifications on monitoring parameters and testing frequency. Permittees must consult the Department for guidance regarding required monitoring under this section. See Attachment B of the Fact Sheet associated with this permit for a list of pollutant causing potential impairments, the specific monitoring parameters associated with the pollutant and the EPA approved method numbers. The list is being provided as guidance in the event a permittee chooses to be proactive in monitoring prior to being notified by the Department of specifications on monitoring parameters and testing frequency.

No monitoring is required when a water body's biological communities are impaired but no pollutant, including indicator or surrogate pollutants, is specified as causing the impairment, or when a water body's impairment is related to hydrologic modifications, impaired hydrology, or other non-pollutant.

c. **Monitoring parameters.** If the pollutant of concern for the impaired water body is suspended solids, turbidity or sediment/sedimentation, the permittee must monitor stormwater effluent for total suspended solids (TSS). If a pollutant of concern is expressed in the form of an indicator or surrogate pollutant, the permittee must monitor for that indicator or surrogate pollutant. Monitoring is required for all pollutants for which the water body is impaired and for which a standard analytical method exists pursuant to 40 CFR Part 136. Monitoring for specific parameters may cease when the discharge does not exceed or have reasonable potential to exceed ambient water quality criteria (AWQC) and is at or below natural background levels.

SPECIAL CONDITIONS

N. MONITORING REQUIREMENTS (cont'd)

If the pollutant of concern is not detected and not expected to be present in the discharge, or it is detected but the permittee has determined that its presence is caused solely by natural background sources, the permittee may discontinue monitoring for that pollutant. To support a determination that the pollutant's presence is caused solely by natural background sources, the permittee must keep the following documentation of this discharge with the facility's SWPPP.

1. An explanation of why the permittee believes that the presence of the pollutant of concern in the discharge is not related to the activities or materials at the facility; and
2. Data or studies which link the presence of the pollutant causing the impairment to what can be considered natural background sources in the watershed.

d. **Exceedances.** If any monitoring value exceeds a water quality-based limitation or ambient water quality criterion (AWQC), the permittee must:

1. Submit the monitoring results to the Department within 14 days of receiving monitoring results;

2. Comply with all applicable requirements for SWPPP Review and Correction Actions as specified in Special Condition O of this General Permit;

3. Conduct follow-up monitoring within 30 calendar days (or during the next qualifying storm event, should none occur within 30 days) of implementing corrective action(s). If any follow-up monitoring result exceeds a water quality-based limitation or AWQC, submit the monitoring results to the Department within 14 days of receiving monitoring results; and

4. Continue to monitor, at least quarterly, until your discharge is in compliance with the numeric effluent limit or until the Department waives the requirement for additional monitoring.

e. **Exception for inactive and unstaffed sites.** The requirement for impaired waters monitoring does not apply at a facility that is inactive and unstaffed (temporarily or permanently closed), provided that there are no industrial materials or activities exposed to stormwater. To invoke this exception, the permittee must maintain a signed and certified statement with the facility SWPPP stating that the site is inactive and unstaffed, and that there is no exposure to stormwater.

If circumstances change and industrial materials or activities become exposed to stormwater or the facility becomes active and/or staffed, this exception no longer applies and the permittee must immediately begin complying with the applicable impaired waters monitoring requirements as if it was in the first year of permit coverage.

SPECIAL CONDITIONS

O. SWPPP REVIEW AND CORRECTIVE ACTIONS

1. **Conditions Requiring SWPPP Review and Revision to Ensure Effluent Limits are Met.**

   When any of the following conditions occur or are detected during an inspection, monitoring or other means, or the Department or the operator of the MS4 through which the facility discharges informs the permittee that any of the following conditions have occurred, the permittee must review and revise, as appropriate, the SWPPP (*e.g.*, sources of pollution; spill and leak procedures; non-stormwater discharges; the selection, design, installation and implementation of your control measures) so that this General Permit's effluent limits are met and pollutant discharges are minimized:

   a. An unauthorized release or discharge (*e.g.*, spill, leak, or discharge of non-stormwater not authorized by this or another MEPDES permit to a water of the State) occurs at the facility;
   b. A discharge violates a numeric effluent limitation contained in this General Permit, including Sector-specific effluent guidelines limitations, or an applicable water quality-based limitation or ambient water quality criteria associated with impaired waters monitoring;
   c. The control measures are not stringent enough for the discharge to meet applicable water quality standards or the non-numeric effluent limits in this permit;
   d. A required control measure was never installed, was installed incorrectly, or is not being properly operated or maintained; or
   e. Whenever a visual assessment shows evidence of stormwater pollution (*e.g.*, color, odor, floating solids, settled solids, suspended solids, foam).

2. **Conditions Requiring SWPPP Review to Determine if Modifications Are Necessary.**

   If any of the following conditions occur, the permittee must review the SWPPP to determine if modifications are necessary to meet the effluent limitations in this General Permit:

   a. Construction or a change in design, operation, or maintenance at the facility that significantly changes the nature of pollutants discharged in stormwater from the facility, or significantly increases the quantity of pollutants discharged; or
   b. The average of four quarterly sampling results exceeds an applicable benchmark. If less than four benchmark samples have been taken, but the results are such that an exceedance of the four quarter average is mathematically certain (*i.e.*, if the sum of quarterly sample results to date is more than four times the benchmark level) this is considered a benchmark exceedance, triggering this review.

SPECIAL CONDITIONS

O. SWPPP REVIEW AND CORRECTIVE ACTIONS (cont'd)

3. **Corrective Actions and Deadlines.**

a. **Immediate actions.** If corrective action is needed, the permittee must immediately take all reasonable steps necessary to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events.

Note: In this context, the term "immediately" requires the permittee to, on the same day a condition requiring corrective action is found, take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational. However, if a problem is identified at a time in the work day when it is too late to initiate corrective action, the initiation of corrective action must begin no later than the following work day. "All reasonable steps" means that the permittee has undertaken initial actions to assess and address the condition causing the corrective action, including, for example, cleaning up any exposed materials that may be discharged in a storm event (e.g., through sweeping, vacuuming) or making arrangements (i.e., scheduling) for a new BMP to be installed at a later date. "All reasonable steps" for purposes of complying with Special Condition O.2, Conditions Requiring SWPPP Review to Determine if Modifications Are Necessary, when the permittee concludes a corrective action is, in fact, not necessary, could include documenting why a corrective action is unnecessary

b. **Subsequent actions.** If the permittee determines that additional actions are necessary beyond those implemented in accordance with immediate action response, the permittee must complete the corrective actions (*e.g.*, install a new or modified control and make it operational, complete the repair) before the next storm event if possible, and within 14 calendar days from the time of discovery of the corrective action condition. If it is infeasible to complete the corrective action within 14 calendar days, the permittee must document why it is infeasible to complete the corrective action within the 14-day timeframe. The permittee must also identify the schedule for completing the work, which must be done as soon as practicable after the 14-day timeframe but no longer than 45 days after discovery. If the completion of corrective action will exceed the 45-day timeframe, the permittee may take the minimum additional time necessary to complete the corrective action, provided that the permittee notifies the Department of the intention to exceed 45 days, the permittee's rationale for an extension, and a completion date, which the permittee must also include in its corrective action documentation. Where the permittee's corrective actions result in changes to any of the controls or procedures documented in your SWPPP, the permittee must modify the SWPPP accordingly within 14 calendar days of completing corrective action work.

c. **Corrective Action Report (CAR).** A Corrective Action Report is a signed, certified report to document actions taken in response to triggering the need for corrective action review due to an exceedance of a water quality based limitation, ambient water quality criterion or a deficiency identified in a Department inspection report.

SPECIAL CONDITIONS

O. SWPPP REVIEW AND CORRECTIVE ACTIONS (cont'd)

The existence of any of the conditions listed Special Condition O.1 and O.2 of this General Permit triggers the need for corrective action review.

A complete CAR must contain the following information:

1. The existence of any of the conditions listed Special Condition O.1 and O.2 of this General Permit and description of the condition triggering the need for corrective action review;
2. For any spills or leaks: a description of the incident including material, date/time, amount, location, and cause for spill, and any leaks, spills or other releases that resulted in discharges of pollutants to waters of State, through stormwater or otherwise;
3. Date the condition was identified;
4. Description of immediate actions completed, including measures taken to prevent the reoccurrence of such releases;
5. A description of the corrective actions taken or to be taken as a result of the identified conditions;
6. The dates when each corrective action was initiated and completed (or is expected to be completed); and
7. If the event triggering corrective action is associated with an outfall that had been identified as a representative outfall, documentation that the permittee assessed the need for corrective action for all related representative outfalls. All of the subsequent actions and deadlines specified above apply to representative outfalls.

d. **Effect of corrective action.** If the event triggering the review is a violation of this General Permit (*e.g.*, non-compliance with an effluent limit), correcting it does not remove the original violation. Additionally, failing to take corrective action in accordance with this section is an additional violation of this General Permit.

P. RETENTION OF RECORDS

The permittee shall retain copies of the SWPPP, all reports, certifications and monitoring results required by this General Permit, and records of all data used to complete the Notice of Intent to be covered by this General Permit, for a period beginning the date that the facility is covered under this General Permit and lasts through the date of renewed coverage under a subsequent permit or through the date the permittee submits a Notice of Termination (NOT) for coverage under this permit.

Q. REOPENING OF PERMIT FOR MODIFICATION

In accordance with 38 M.R.S. § 414-A(5), the Department may, with notice to the permittee, reopen this General Permit to add or change conditions or effluent limitations for toxic compounds, to include specific limitations based on new information, or based on any other pertinent information obtained during the term of this General Permit.

SPECIAL CONDITIONS

R. SEVERABILITY

In the event that any provision, or part thereof, of this General Permit is declared to be unlawful by a reviewing court, the remainder of the General Permit must remain in full force and effect, and must be construed and enforced in all aspects as if such unlawful provision, or part thereof, had been omitted, unless otherwise ordered by the court.

APPENDIX D

2016 MEDEP MSGP SECTOR-SPECIFIC REQUIREMENTS

Appendix L

Sector L - Landfills, Land Application Sites, and Open Dumps

L.1 Covered Stormwater Discharges.

The requirements in Sector L apply to stormwater discharges associated with industrial activity from Landfills and Land Application Sites as identified by the Activity Code specified in Sector L of Attachment A of the General Permit.

L.2 Industrial Activities Covered by Sector L.

This permit may authorize stormwater discharges for Sector L facilities associated with waste disposal at landfills, land application sites that receive or have received industrial waste, including sites subject to regulation under Subtitle D of RCRA. This permit does not cover discharges from landfills that receive only municipal wastes.

L.3 Limitations on Coverage.

L.3.1 ***Prohibition of Non-Stormwater Discharges.*** The following discharges are not authorized by this permit: leachate, gas collection condensate, drained free liquids, contaminated ground water, laboratory wastewater, and contact wash water from washing truck and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

L.3.2 ***Prohibition Stormwater Discharges from Open Dumps.*** Discharges from open dumps as defined under RCRA are also not authorized under this permit.

L.4 Definitions.

L.4.1 ***Contaminated stormwater*** – stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Some areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

L.4.2 ***Drained free liquids*** – aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

L.4.3 ***Landfill wastewater*** – as defined in 40 CFR Part 445 (Landfills Point Source Category) all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated ground water, and wastewater from recovery pumping wells. Landfill process wastewater includes, but is not limited to, leachate; gas collection condensate; drained free liquids; laboratory-derived wastewater; contaminated stormwater; and contact wash water from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

L.4.4 ***Leachate*** – liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

L.4.5 ***Non-contaminated stormwater*** – stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Non-contaminated stormwater includes stormwater that flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

L.5 Additional Technology-Based Effluent Limits.

L.5.1 ***Preventive Maintenance Program.*** As part of your preventive maintenance program, maintain the following: all elements of leachate collection and treatment systems, to prevent commingling of leachate with stormwater; the integrity and effectiveness of any intermediate or final cover (including repairing the cover as necessary), to minimize the effects of settlement, sinking, and erosion.

L.5.2 ***Erosion and Sedimentation Control.*** Provide temporary stabilization (e.g., temporary seeding, mulching, and placing geotextiles on the inactive portions of stockpiles) for the following in order to minimize discharges of pollutants in stormwater: materials stockpiled for daily, intermediate, and final cover; inactive areas of the landfill or open dump; landfills or open dump areas that have gotten final covers but where vegetation has yet to establish itself; and land application sites where waste application has been completed but final vegetation has not yet been established.

L.6 Additional SWPPP Requirements.

L.5.1 ***Drainage Area Site Map.*** Document in your SWPPP where any of the following may be exposed to precipitation or surface runoff: active and closed landfill cells or trenches, active and closed land application areas, locations where open dumping is occurring or has occurred, locations of any known leachate springs or other areas where uncontrolled leachate may commingle with runoff, and leachate collection and handling systems.

L.5.2 ***Summary of Potential Pollutant Sources.*** Document in your SWPPP the following sources and activities that have potential pollutants associated with them: fertilizer, herbicide, and pesticide application; earth and soil moving; waste hauling and loading or unloading; outdoor storage of significant materials, including daily, interim, and final cover material stockpiles as well as temporary waste storage areas; exposure of active and inactive landfill and land application areas; uncontrolled leachate flows; and failure or leaks from leachate collection and treatment systems.

L.7 Additional Inspection Requirements.

L.7.1 ***Inspections of Active Sites.*** Inspect operating landfills, open dumps, and land application sites at least once every 7 days. Focus on areas of landfills that have not yet been finally stabilized; active land application areas, areas used for storage of material and wastes that are exposed to precipitation, stabilization, and structural control measures; leachate collection and treatment systems; and locations where equipment and waste trucks enter and exit the site. Ensure that sediment and erosion control measures are operating properly. For stabilized sites and areas where land application has been completed, or where the climate is arid or semi-arid, conduct inspections at least once every month.

L.7.2 ***Inspections of Inactive Sites.*** Inspect inactive landfills, open dumps, and land application sites at least quarterly. Qualified personnel must inspect landfill (or open dump) stabilization and structural erosion control measures, leachate collection and treatment systems, and all closed land application areas.

L.8 Additional Post-Authorization Documentation Requirements.

L.8.1 ***Recordkeeping and Internal Reporting.*** Keep records with your SWPPP of the types of wastes disposed of in each cell or trench of a landfill or open dump. For land application sites, track the types and quantities of wastes applied in specific areas.

L.9 Sector-Specific Benchmarks.

No benchmarks are established for Sector L.

L.10. Effluent Limitations Based on Effluent Limitations Guidelines.

Table L-2 identifies effluent limitations that apply to the industrial activities described below. Compliance with these effluent limitations is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table L-2[1]

Industrial Activity	Parameter	Effluent Limitation
Discharges from non-hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart B.	Biochemical Oxygen Demand (BOD_5)	140 mg/L, daily maximum
		37 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.033 mg/L, daily maximum
		0.016 mg/L monthly avg. maximum
	Benzoic Acid	0.12 mg/L, daily maximum
		0.071 mg/L, monthly avg. maximum
	p-Cresol	0.025 mg/L, daily maximum
		0.014 mg/L, monthly avg. maximum
	Phenol	0.026 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Total Zinc	0.20 mg/L, daily maximum
		0.11 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

[1] Monitor annually. As set forth at 40 CFR Part 445 Subpart B, these numeric limitations apply to contaminated stormwater discharges from MSWLFs that have not been closed in accordance with 40 CFR 258.60, and to contaminated stormwater discharges from those landfills that are subject to the provisions of 40 CFR Part 257 except for discharges from any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;

(b) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation, or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;

(c) landfills operated in conjunction with CWT facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills;

APPENDIX E

SPILL REPORTING FORM

SPILL REPORTING FORM

Emergency Contact Information	
Fire Department	911
Medical Emergency	911
MEDEP Oil Spill Response Hotline	1-800-482-0777
National Response Center	1-800-424-8802

Spill Information		
Site Name/Company:		
Street Address:	City or Town/State:	
Date & Time of Spill:	Product Spilled:	Quantity Spilled:
Location of Spill:	Source of Spill:	
Immediate Measures Taken to Control Spill:		
Measures Taken to Prevent Re-Occurrence:		

Notifications	Yes	Not Required	Date & Time	Contact Name
911				
MEDEP 1-800-482-0777				
Other				

Name **Signature**

APPENDIX F

INITIAL EVALUATION OF NON-STORMWATER DISCHARGES

INITIAL EVALUATION OF NON-STORMWATER DISCHARGES

<table>
<tr><td colspan="2">Site Name/Company: Juniper Ridge Landfill/NEWSME Landfill Operations, LLC</td></tr>
<tr><td>Evaluation Date: 1/4/16 & 1/15/21</td><td>Evaluation Time: 12:00 PM</td></tr>
<tr><td>Inspector Name/Title: Anthony Ortiz/Project Mgr.</td><td>Inspector Signature: </td></tr>
<tr><td>Which of the outfalls described in the SWPPP were observed during the evaluation?</td><td>Outfalls #1-7</td></tr>
<tr><td colspan="2">The following non-stormwater discharges are authorized under the MSGP:
Firefighting activities
Fire hydrant flushing
Portable water, including water line
Uncontaminated condensate from air conditioners, coolers, other compressors, and outside storage of refrigerated gases or liquids
Irrigation drainage
Landscape watering
Routine external building wash-down/power wash water not contaminated with detergents or hazardous cleaning products
Uncontaminated groundwater and springs
Uncontaminated utility vault dewatering
Water from building foundations or footings not contaminated by contact with process materials
Incidental mist from cooling towers that collects on roofs or adjacent portions of the site
Incidental water that does not contain detergents from on-site rinse stations
Incidental condensed steam that does not contribute to violations of water quality standards
Wash water from cleaning roads, parking lots, sidewalks or other paved surfaces that does not contain detergents, hazardous cleaning products, oil & grease, or toxic pollutants
Wash water from vehicles and equipment cleaning
Non-stormwater discharges explicitly authorized in Sectors A through AD</td></tr>
<tr><td>Unauthorized discharges or outfalls observed?</td><td>None observed</td></tr>
<tr><td>Source of the unauthorized discharge?</td><td>N/A</td></tr>
<tr><td>Actions taken to control measures to eliminate unauthorized discharges:</td><td>N/A</td></tr>
<tr><td>New MEPDES permit required?</td><td>N/A</td></tr>
</table>

INITIAL EVALUATION OF NON-STORMWATER DISCHARGES

Site Name/Company: Juniper Ridge Landfill/NEWSME Landfill Operations, LLC	
Evaluation Date: 12/1/2023	Evaluation Time: 3:00 PM
Inspector Name/Title: Thalia Harrington/Project Mgr.	Inspector Signature: Thalia Thurpe
Which of the outfalls described in the SWPPP were observed during the evaluation?	Outfalls #1-7, Outfalls #8-9 under construction
The following non-stormwater discharges are authorized under the MSGP: • Firefighting activities • Fire hydrant flushing • Portable water, including water line • Uncontaminated condensate from air conditioners, coolers, other compressors, and outside storage of refrigerated gases or liquids • Irrigation drainage • Landscape watering • Routine external building wash-down/power wash water not contaminated with detergents or hazardous cleaning products • Uncontaminated groundwater and springs • Uncontaminated utility vault dewatering • Water from building foundations or footings not contaminated by contact with process materials • Incidental mist from cooling towers that collects on roofs or adjacent portions of the site • Incidental water that does not contain detergents from on-site rinse stations • Incidental condensed steam that does not contribute to violations of water quality standards • Wash water from cleaning roads, parking lots, sidewalks or other paved surfaces that does not contain detergents, hazardous cleaning products, oil & grease, or toxic pollutants • Wash water from vehicles and equipment cleaning • Non-stormwater discharges explicitly authorized in Sectors A through AD	
Unauthorized discharges or outfalls observed?	None observed
Source of the unauthorized discharge?	N/A
Actions taken to control measures to eliminate unauthorized discharges:	N/A
New MEPDES permit required?	N/A

APPENDIX G

SWPPP TRAINING LOG

SWPPP TRAINING LOG

Trainer Name:	**Location:**
Title:	
Date:	

Training Topics:

- An overview of the SWPPP;
- Spill response procedures, maintenance requirements, and material management practices;
- The location of all controls on the site required by the MSGP, and how they are to be maintained;
- The proper procedures to follow with respect to the MSGP's pollution prevention requirements;
- When and how to conduct inspections, record applicable findings, and take corrective actions;
- Used and spent oil solvent management;
- Fueling procedures;
- General good housekeeping practices; and
- Used battery management.

Name	**Signature**

APPENDIX H

VISUAL MONITORING OF STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY MEDEP PROCEDURE – DEPLW0768

Standard Operating Procedure
Attachment A
Bureau of Land and Water Quality
Date: April 20, 2006
Revised: June 12, 2017
Doc num: DEPLW0768

Instructions for Completing the Visual Monitoring Form

1. Completely fill out all required information on the top of the visual monitoring form.

2. Pour the sample into a 1 L clear polycarbonate Imhoff cone or 1000 ml graduated cylinder. Record the total sample volume measured in the cone or graduated cylinder to the nearest 10 milliliter. Evaluate the sample for the following parameters according to the following instructions.

   - **Odor:** The must be recorded first. If the sample has no odor other than natural rainwater or snowmelt, write "normal" on the visual monitoring form. Note the presence of any of the following odors if detected: Gasoline, diesel, oil, solvents (WD-40, other petroleum products, etc.), landfill, fishy, glycol, any other unusual odors not normally present in clean stormwater runoff from the area(s) sampled.

   - **Foam:** This must be recorded second. Examine the sample for foam immediately after pouring it into the cone. Record foam results on the visual monitoring form as they most closely match one of the descriptions listed below.

     i. **None**-Most bubbles break down within ten (10) seconds of pouring; only a few large bubbles persist longer than ten (10) seconds.

     ii. **Moderate**-Many small bubbles are present but these bubbles persist for less than two (minutes) after pouring.

     iii. **High**-Many small bubbles are present and they persist longer than two (2) minutes after pouring.

3. Examine the sample for the following criteria after it has settled for ten (10) minutes. Record the results on the visual monitoring form as they most closely match the descriptions listed below.

   - **Color:** Record the best description of the sample color in the appropriate space on the visual monitoring form.

   - **Clarity:** Record sample clarity results as they most closely match one of the descriptions listed below.

     i. **Clear**-Sample doesn't filter out any light, can be seen through regardless of color.

     ii. **Cloudy-**Sample filters out some light; not clear but objects can still be identified when looking through the cone.

     iii. **Very Cloudy**-Sample filters out most light; objects are indiscernible when looking through the cone.

iv. **Opaque**-Sample doesn't allow any light to pass through; objects cannot be seen when looking through the cone.

- **Floating Solids:** Give a general description of the type of floating solids present (wood chips, leaf debris, algae, etc) in the general comments section for each sample. Record results for amount floating solids present as they most closely match the descriptions listed below. Record amount data in the appropriate box on page 1 of the visual monitoring form.

  i. **None**- No floating solids present on the surface of the sample.

  ii. **Slight**-Only a few floating particles observed on the surface of the sample.

  iii. **Moderate**- Less than 20% of the surface of the sample is covered with floating solids.

  iv. **High**- More than 20% of the surface of the sample is covered with floating solids.

- **Settled Solids:** Give a general description of the type of settled solids present (sand, decayed plant matter, rust particles etc) in the general comments section for each sample. Allow settle for one hour. Measure the settled solids in the bottom of the cone to the nearest milliliter and record the results in the appropriate box on page 1 of the visual monitoring form.

- **Suspended solids:** In the general comments section for each sample, give a general description of the type of solids present if any are observed suspended below the sample surface. Record whether or not settled solids were present in the appropriate box on page 1 of the visual monitoring form.

- **Oil Sheen:** Record whether or not an oil sheen is present in the sample.

- **General Comments Section on Page 2:** Make sure you have described the type of floating, settled and suspended solids observed in the samples in the general comments section provided for each outfall sample. Also note the following conditions at each outfall during the time sampled: General volume of water and flow, algae (if any is present), odor, color, and any other unusual characteristics noticed at the sampling location. Record the number of days since the last known measurable storm or runoff event.

4. Ensure that all visual monitoring forms are filed on site with the Stormwater Pollution Prevention Plan (SWPPP) each time visual monitoring is performed.

APPENDIX I

QUARTERLY VISUAL MONITORING FORM

QUARTERLY VISUAL MONITORING FORM

Person Collecting Sample:

Person Performing Visual Assessment:

Site Name and Address: Juniper Ridge Landfill, 2828 Bennoch Road, Alton, Maine

Date and Time:

Time Since Previous Storm Event:

Time Since Current Storm Event Began:

Measurable Discharge from Outfall(s):

Outfall	Time	Type of Discharge (rainfall/ snowmelt)	Observations								
			color	odor	clarity	floating solids	settled solids	suspended solids	foam	oil sheen	other
Outfall #1											
Outfall #2											
Outfall #3											
Outfall #4											
Outfall #5											
Outfall #6											
Outfall #7											
Outfall #8											
Outfall #9											
Comments											

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:_____ Title:_____ Date:_____

APPENDIX J

ROUTINE INSPECTION FORM

ROUTINE INSPECTION REPORT

Site Name/Company	Juniper Ridge Landfill/NEWSME Landfill Operations, LLC
Location	2828 Bennoch Road, Alton, Maine
Date of Visit	
Inspector Name/Signature	
Weather	

Does this inspection qualify as the one required annual inspection conducted during qualifying storm event? ☐ Yes ☐ No

Are there any new discharges or pollutants at the site? ☐ Yes ☐ No

Table 1
Inspection of Potential Pollutant Sources (PPS)

Description	
Industrial Activity or Area	**Describe where any of the following were observed:** • **Any discharges present at the time of inspection;** • **Any evidence of pollutants entering the drain system or outfalls;** • **The condition of the outfalls, including any restricted flow;** • **Industrial materials, residue or trash on the ground;** • **Leaks or spills from industrial equipment, drums, barrels, tanks or other containers;** • **Offsite tracking of industrial or waste materials or sediment; and** • **Tracking or blowing of raw, final, or waste materials.**
Scale House and Scale	
Salt & Sand Storage Area	
Soil Stockpile Areas	
Borrow Pit	
Wood Waste Handling Area	

Table 1
Inspection of Potential Pollutant Sources (PPS)

Maintenance Building	
Rubb Building	
LFG Treatment Facility	
RNG Facility	
Leachate Storage Tank	
Leachate Loading Rack	
Leachate Collection System	
Gravel Laydown Area	
Employee Parking Area	
1,500-Gallon Gasoline Tank	
2,500-Gallon Diesel Delivery Truck	
Access Roads	
Foam Production Well	

Table 2
Inspection of Structural Control Measures and Outfalls

BMP	Describe where any of the following were observed: • Any evidence that the BMP is not functioning properly; • Any evidence of erosion; and • Industrial materials, residue, or trash.
Detention Pond 1	
Geomembrane Lined Storage Pond	
Detention Pond 2	
Detention Pond 6	
Litter Fence	
Leachate Storage Tank Containment Area	
Leachate Storage Tank Containment Area Riprap Outlet	
Leachate Loading Rack Catch Basin	
Detention Pond 9	
2,000-Gallon Underground Storage Tank	
Detention Pond 10	
Detention Pond 11	
RNG Facility Stormwater Pond	

Table 2
Inspection of Structural Control Measures and Outfalls

Outfall No. 1	
Outfall No. 2	
Outfall No. 3	
Outfall No. 4	
Outfall No. 5	
Outfall No. 6	
Outfall No. 7	
Outfall No. 8	
Outfall No. 9	

Table 3
Corrective Actions Required for PPS(s) and/or Existing Structural Control Measures

Reference	Description/Schedule	Date Completed

Table 4
Recommendation for New PPS(s) and/or Structural Control Measures

Reference	Description/Schedule	Date Completed

Table 5
Modifications Required to SWPPP or Site Plan

Reference	Description

Certification

☐ Site is in compliance with SWPPP and MSGP.
☐ Site is not in compliance with SWPPP and MSGP and either structural control measure maintenance, additional controls, or modifications to the SWPPP are required.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	**Telephone:**
Signature:	**Date:**

APPENDIX K

WEEKLY/MONTHLY INSPECTION FORM

WEEKLY/MONTHLY INSPECTION FORM

Site Name/Company	Juniper Ridge Landfill/NEWSME Landfill Operations, LLC
Location	2828 Bennoch Road, Alton, Maine
Date of Visit	
Inspector Name/Signature	

Note: For weekly inspections, only Table 1 and Table 3 need to be completed. For monthly inspections, Tables 1, 2 and 3 need to be completed.

Table 1
Inspection of Active Areas at the Facility

Active Areas at the Facility			
Leachate	Is leachate observed on the ground, or leaking from tanks or piping, with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Access Roads	Are industrial materials, residue or trash observed on roads where vehicles enter or exit the active landfill with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
MSW and CDD (windblown debris)	Is MSW and/or CDD on ground, tracking, blowing or whirling with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Borrow Pit	Is there evidence of tracking or erosion from site soil borrow areas with potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Mobile Equipment	Is mobile equipment leaking oil or other liquids with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)

Active Areas at the Facility	
Comments	

Table 2
Inspection of Stabilized Areas at the Facility

Stabilized Active Areas at the Facility			
Leachate	Is leachate observed on the ground, or leaking from tanks or piping, with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Access Roads	Are industrial materials, residue or trash observed on roads where vehicles enter or exit the active landfill with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
MSW and CDD (windblown debris)	Is MSW and/or CDD on ground, tracking, blowing or whirling with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Comments			

Table 3
Inspection of Stormwater BMPs, Conveyances and Outfalls

BMP	Describe where any of the following were observed: • Any evidence that the BMP is not functioning properly.
Detention Pond 1	
Geomembrane Lined Storage Pond	
Detention Pond 2	
Detention Pond 6	
Litter Fence	
Leachate Storage Tank Containment Area	
Leachate Storage Tank Containment Area Riprap Outlet	
Leachate Loading Rack Catch Basin	
Detention Pond 9	
2,000-Gallon Underground Storage Tank	
Detention Pond 11	
RNG Facility Stormwater Pond	
Detention Pond 10	
Outfall No. 1	

Table 3
Inspection of Stormwater BMPs, Conveyances and Outfalls

BMP	Describe where any of the following were observed: • Any evidence that the BMP is not functioning properly.
Outfall No. 2	
Outfall No. 3	
Outfall No. 4	
Outfall No. 5	
Outfall No. 6	
Outfall No. 7	
Outfall No. 8	
Outfall No. 9	

Table 4
New Potential Pollutant Source and/or Recommendations for Additional BMPs

Reference	Description	Schedule

Certification

☐ Site is in compliance with SWPPP and MSGP. ☐ Site is not in compliance with SWPPP and MSGP and either structural control measure maintenance, additional controls, or modifications to the SWPPP are required.
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	**Telephone:**
Signature:	**Date:**

APPENDIX L

CORRECTIVE ACTION REPORT

CORRECTIVE ACTION REPORT

Site Name/Company:	
Location:	
Contact Name:	**Contact Signature:**
Date of Discovery:	
Date of Corrective Action Initiation:	
Date of Corrective Action Completion:	
Condition Requiring Corrective Action	
Immediate Measures Taken to Control	
Measures Taken to Prevent Re-Occurrence	

Corrective actions must be completed within 14 days of the discovery of the condition. SWPPP modifications must be completed within 14 days of the completion of the corrective action. In the case of a spill, fill out Appendix E – Spill Report in addition to this form.

If it is not feasible to complete the corrective action within 14 days, please describe the reason and proposed schedule for completion: _____

_____

_____

If corrective actions cannot be completed within 45 days of discovery, MEDEP must be notified.

APPENDIX G

WASTE CHARACTERIZATION AND ACCEPTANCE PLAN

SME
SEVEE & MAHER
ENGINEERS

JUNIPER RIDGE LANDFILL
WASTE CHARACTERIZATION AND ACCEPTANCE PLAN
(SPECIAL AND OTHER REGULATED WASTES)

1.0 HISTORY

Juniper Ridge Landfill (JRL) is permitted as a non-hazardous solid waste landfill that accepts various types of special and other regulated wastes. The site's Waste Characterization and Acceptance Plan (Plan) is designed to operate in compliance with the Maine Solid Waste Rules as they pertain to non-hazardous solid waste landfills (Subtitle D).

Within the Plan, approval procedures are defined, ensuring that specific analytical requirements are met and license restrictions followed. Procedures are based upon criteria laid out within various MEDEP blanket permits, individual generator permits, and solid waste licenses.

2.0 WASTE CHARACTERIZATION PROCESS (FIRST TIME WASTES)

Prior to being accepted for disposal, special wastes must first be assessed, confirming that they are classified as non-hazardous waste. In most cases, the generator is responsible for ensuring that a representative sample is obtained and then analyzed according to the requirements of the applicable license held by JRL. The Special Waste Approval Manager (SWAM) is responsible for supplying the generator with the appropriate analytical requirements. If a particular waste does not fit within an existing blanket or individual permit, then a new permit must be obtained from the MEDEP prior to accepting the waste.

When a generator contacts the SWAM regarding the acceptance of a new (first time) waste, the following process must take place prior to allowing the waste into the landfill:

- The SWAM initially ascertains whether the type of waste is acceptable or unacceptable according to current licensed conditions.
- If the waste is found to be acceptable and fits within one the facility's blanket or individual permits, then the SWAM informs the generator of the analytical requirements. This information is conveyed to the generator by completing the Special Waste Characterization Profile Form, which is then forwarded it to the generator via email, fax, or mail.
- The generator must then have a representative sample of the waste analyzed (by a certified laboratory) for the parameters checked-off on Appendix A of the Special Waste Characterization Profile Form or as outlined in the facility's blanket or individual permits.
- When the generator receives the lab results, they are forwarded along with the completed & signed Special Waste Characterization Profile Form and any other requested supporting documentation, to the SWAM.
- The SWAM then reviews the test results and ascertains whether or not they fall within the allowable limits as specified in the license(s). At this point, the waste is either approved for landfill disposal or rejected if the results exceed any regulatory limit.
- If approved, the generator is notified by email and made aware of any ongoing applicable testing frequencies.
- Copies of the approval form and lab tests and supporting documents are forwarded to the scales, so that manifesting and scheduling may be arranged prior to shipment.

3.0 WASTE CHARACTERIZATION PROCESS (ONGOING WASTES)

At JRL, a majority of the wastes accepted, fit into a particular blanket permit category which allows for ongoing special wastes to be accepted. Additionally, numerous generators (in state only) who had previously held an individual permit for disposal at Pine Tree Landfill are allowed to dispose of their waste(s) at JRL.

For tracking purposes, a special waste acceptance database was developed to track ongoing special waste generators and the status of their analytical requirements. The database is updated by the SWAM, as generators submit updated analytical data as required. This database allows for the information to be accessed by the SWAM, the scales, and the sales team.

When an active special waste generator has an approaching analysis due date, the SWAM notifies the generator to remind them that a new analysis will be required prior to their next delivery of waste. The scales attendant also reminds the generator when they call to schedule a delivery.

Listed below are the steps taken prior to accepting ongoing waste at the landfill.

- The SWAM and/or scale attendant verifies whether or not the generator has a current approval (updated analytical data) for the particular waste. If the waste has a current (unexpired) approval, it may be immediately accepted at the landfill.
- If the generator's analytical data for the waste is past due, the generator must sample the waste and have it tested as required.
- Once tested, the generator forwards the test results to the SWAM for approval.
- The SWAM approves or rejects the waste based upon the analytical results.
- When a waste is approved, the SWAM updates the waste acceptance database information for the particular generator, which is then available to the scales and sales team. The generator is then notified of their acceptance status.
- The waste may be accepted anytime following this process.

4. JUNIPER RIDGE LANDFILL BLANKET CATEGORY PERMITS

The blanket category wastes listed below have received MEDEP approval for acceptance at JRL, contingent upon successfully meeting all acceptance criteria.

#	LICENSE NUMBER	ISSUE DATE	ENTITY	DESCRIPTION
1	S-01987-WD-BM-M	5/6/1994	Carried Blanket (SERF)	Leather Tanning Scraps
2	S-01987-WD-BN-M	7/15/1994	Carried Blanket (SERF)	Leather Tanning Filter Press Cake & Scrapings
3	S-01987-WD-BK-M	12/14/1994	Carried Blanket (SERF)	Petroleum Contaminated Soil & Debris
4	S-01987-WD-BO-M	1/4/1995	Carried Blanket (SERF)	Ash & Sludge Wastes
5	S-01987-WD-BP-M	6/16/1995	Carried Blanket (SERF)	Commercial & Industrial Laundry Sludge
6	S-01987-WD-BQ-M	3/29/1996	Carried Blanket (SERF)	SERF CDD Processing Residuals
7	S-01987-WD-BT-M	12/4/1996	Carried Blanket (SERF)	High Vanadium Ash
8	S-01987-WD-BU-M	5/12/1997	Carried Blanket (SERF)	Pigeon Wastes
9	S-01987-WD-BV-M	6/26/1997	Carried Blanket (SERF)	Ambient Air & Water Filtration Media
10	S-01987-WD-GY-M	12/12/1997	Carried Blanket (SERF)	Non-Hazardous Chemical Products
11	S-01987-WD-HA-M	4/29/1998	Carried Blanket (SERF)	Oversized Bulky Wastes
12	S-01987-WD-IA-M	9/23/1998	Carried Blanket (SERF)	FEPR & Oversized Bulky Waste
13	S-020700-WU-L-N	1/22/2002	Georgia Pacific	City of Old Town Burn Pile Ash / Hot Load Ash
14	S-01987-WD-YA-M	2/20/2003	Carried Blanket (PTL)	Virgin Petroleum Contaminated Soil & Debris
15	S-01987-WD-ZA-M	8/29/2003	Carried Blanket (PTL)	RR Tie Ash, WTP Sludge, Dredged Spoils
16	S-01987-WD-WA-M	12/19/2003	Carried Blanket (PTL)	Urban Fill Soil & Debris
17	S-01987-WD-EB-M	1/7/2004	Carried Blanket (PTL/SERF)	Ash & Sludge Wastes Revision to WD-BO-M
18	S-020700-WD-O-M	3/12/2004	State Planning Office	Additional Ash Sources
19	S-01987-WD-KB-M	5/3/2005	Carried Blanket (PTL)	Spray Booth Paint Filters & Dried Paint Residue
20	S-020700-WU-AN-N	3/1/2010	State Planning Office	Pine Tree Waste Oily Debris
21	S-020700-WU-AP-N	5/21/2010	State Planning Office	New England Waste Services Sulfur Wastes
22	S-020700-WU-AJ-N	6/30/2010	State Planning Office	Treated Biomedical Waste
23	S-020700-WU-CD-N	12/16/2020	Bureau of General Services	Various Special Wastes & Rev. to Former Licenses

5.0 WASTES FROM RECYCLING AND PROCESSING FACILITIES

Although not classified as a special waste, the residues from processing and recycling facilities in Maine that were not utilizing JRL at the time JRL's DEP license #S-020700-WD-BC-A was issued (December 20, 2013) and that accept out-of-state waste may not be accepted at existing JRL. JRL staff will follow the procedures described below prior to accepting these residues in the landfill areas covered in the JRL license #S-020700-WD-N-A. Condition 8 of JRL license #S-020700-WD-BC-A prohibits the disposal of residues from these facilities in the existing landfill licensed in 2004 (license #S-020700-WD-N-A). These procedures do not apply to waste disposed in the expansion portion of JRL (license #S-020700-WD-BI-N).

- JRL staff (accounts receivable manager) that process new customer requests will determine, as part of their review, whether any new (to JRL) in-state processing or recycling facility is accepting any out of state (OOS) waste. If so, the request to utilize the portion of JRL subject to this condition will be denied.
- Any customer request from a new in-state processing or recycling facility to utilize JRL must be approved by the JRL General Manager.
- To be approved, new in-state processing or recycling customers must provide a formal written

response stating, they do not accept OOS waste, and that they will cease delivery of residues to JRL prior to accepting any OOS waste in the future.

- If that new in-state processing or recycling facility is approved to dispose of residue at JRL, they will be informed that approval to utilize the existing portion of JRL will terminate if and when they do accept OOS waste.

6.0 ACCEPTABLE & UNACCEPTABLE WASTES

Listed below is a generic list of acceptable and unacceptable waste streams at JRL. Of this list, most are special wastes and must be analyzed and approved prior to acceptance. Any waste found on this list may still be unacceptable dependent upon the waste's individual characteristics.

ACCEPTABLE MATERIALS
ASH - Burn Pile / Biomass, Coal, & Multi-fuel Boiler / MSW & Biomedical Incinerator
BURNED STRUCTURES
CATCH BASIN GRIT & STREET SWEEPINGS
CONSTRUCTION DEMOLITION DEBRIS (CDD) & PROCESSING RESIDUE - Mixed CDD, Bulky Waste, & & Fines
CLEAN WOOD DEBRIS - (For Beneficial Use)
CRUSHED GLASS
DEAD ANIMALS (on a case-by-case basis)
FILTER MEDIA FROM NON-AMBIENT SOURCES
FRONT END PROCESSING RESIDUES (FEPR)
INDUSTRIAL SLUDGES
INDUSTRIAL WASTEWATER TREATMENT PLANT SLUDGE
LEATHER SCRAPS
LIME & MUD GRIT
MANUFACTURED GAS PLANT (MGP) SOIL & DEBRIS
MANUFACTURING WASTES - (Refractory brick, casting sands, slag, swarf, residue, baghouse dust, resins, deburring or abrasive media, and grindings or shavings)
MARIJUANA, HEMP, & INVASIVE PLANT SPECIES RELATED WASTES
METAL IMPACTED SOIL & DEBRIS
MUNICIPAL SOLID WASTE (MSW) - Bypassed from Maine incinerators and or processing facilities
NON-FRIABLE ASBESTOS
NON-HAZARDOUS CHEMICAL RELATED
OFF-SPEC FOOD OR PRODUCT
OIL SPILL DEBRIS
OIL & GASOLINE CONTAMINATED SOIL & DEBRIS
OTHER APPROVED SPECIAL WASTES
PIGEON DROPPINGS
POLYCHLORINATED BIPHENYL (PCB) IMPACTED SOIL & DEBRIS
PULP MILL WASTE & SLUDGE
REMEDIATION SITE SOIL & DEBRIS
SANDBLAST GRIT
SHORT-PAPER FIBER & SLUDGE
SPOILED FOODS
SULFUR SCRUBBING RESIDUALS
TANK BOTTOM SLUDGE
TIRE CHIPS - Oversized & Type B
TREATED BIOMEDICAL WASTE
TREATED WOOD STORAGE SOIL & DEBRIS
URBAN FILL SOIL & DEBRIS
WASTEWATER TREATMENT PLANT SLUDGE & GRIT SCREENINGS
WOOD BRUSH & STUMPS - (Grinding)

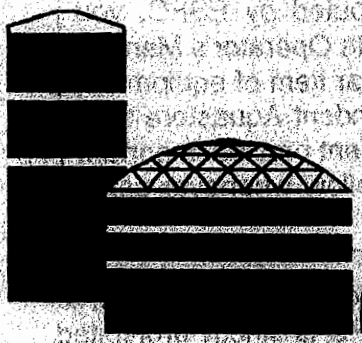
UNACCEPTABLE MATERIALS
AUTOMOTIVE BATTERIES
APPLIANCES & WHITE GOODS - Washing Machines, Dryers, Stoves, Dishwashers, & Microwaves
BIOMEDICAL WASTE - Untreated
CFC & HCFC CONTAINING DEVICES - Refrigerators, Air Conditioners, Freezers, Dehumidifiers, & Water Coolers
FRIABLE ASBESTOS
HAZARDOUS WASTES
JUNK & ABANDONED VEHICLES
LIQUID WASTES
MUNICIPAL SOLID WASTE (MSW) - Non-bypass MSW
OTHER NON-APPROVED SPECIAL WASTES
OUT OF STATE WASTES
PAINTS / STAINS / CHEMICIALS / WASTE OIL
PATHOLOGICAL WASTES
UNIVERSAL WASTES - Fluorescent Lamps, Mercury Containing Items, Light Ballasts w/PCB's, TV's, etc.

APPENDIX H

OPERATIONS AND MAINTENANCE MANUAL
LEACHATE STORAGE TANKS

SME
SEVEE & MAHER
ENGINEERS

OPERATION and MAINTENANCE MANUAL



AQUASTORE®
Tanks

Water Storage Tanks

Waste Treatment Tanks

Landfill Leachate Storage Tanks

Trickling Filter Shells

This operator's manual is intended to be a guide for the safe and efficient operation of your Engineered Storage Products Company (ESPC) Aquastore® water storage tank, waste treatment tank, or trickling filter shell. This manual is considered as a portion of the equipment and should accompany the equipment.

Installation and service of Aquastore brand equipment is the responsibility of an authorized independent Aquastore tank dealer and the equipment owner/operator and not the manufacturer, ESPC.

ESPC is continually improving its products. Accordingly, ESPC reserves the right to change design and/or specifications without notice.

APPROVED
By
Date 12/21/04
New England Tank Systems, Inc.

NOTICE: The information contained herein is general in nature and is drawn from sources deemed to be reliable. It is intended for general information purposes only.

The results obtained by the use of these products are dependent upon strict adherence to manufacturer's instructions for proper operation of the equipment as outlined in the appropriate operator's manual. In all instances the employment of good management practices in circumstances not specifically referenced in such manuals is required.

CAUTION:
Before using any equipment manufactured or distributed by ESPC, you should thoroughly study and understand the appropriate Operator's Manual. If you do not have an Operator's Manual for a particular item of equipment, one can be obtained through your authorized independent Aquastore tank dealer. Decals as illustrated and placed on the equipment provide important safety and operating instructions which you should follow whenever using the products.

Your right to copy this manual is limited by copyright law. Making copies, adaptations, or compilation works without prior explicit written permission of ESPC is strictly prohibited by law and constitutes a violation of the law.

Aquastore tanks are designed and manufactured by Engineered Storage Products Company, 345 Harvestore Drive, DeKalb, Illinois 60115. These tanks have been designed to specifications supplied by the tank purchaser and/or his specifying engineer. Specific design constraints have been provided by the specifying party including, but not limited to: the density of the stored product, the location of the overflow devices, the filling and emptying means, the design codes controlling the design of the tank, etc. This specific information has been supplied as an integral part of the submittal package prior to the construction process. You must consider this information as part of your operation and maintenance review.

Specific procedures may need to be generated by you as the tank operator based on a specific need of you, your employees, and others involved in the maintenance and use of this tank. Use of this tank for purposes other than those specified in the original design documents may void your warranty, damage the tank, and/or create the risk of personal injuries or death. Should you have need for specific information not available to you from your files, please contact the installing dealer and/or ESPC at the address provided.

SECTION 1 - SAFETY GUIDELINES

Aquastore tanks are used for many purposes and can be incorporated into larger storage or process systems. Therefore, other safety related guidelines, in addition to those presented in this section, may be appropriate for your installation. You or your system designers are in the best position to make these recommendations.

1. GENERAL

Access to all Aquastore tanks must be limited to authorized personnel. To deter vandalism or tampering, the owner operator should implement appropriate security measures including, but not limited to: enclosing the tank area with a fence, providing lighting at tank ladders and platforms, installing an alarm system and/or a ladder gate. If the tank has a roof, keep the top manway locked. This manway should be opened by authorized personnel only.

When entering a tank it is your responsibility to comply with the following safety information topics.

RECOGNIZE SAFETY INFORMATION

Look for this symbol, it means...
Attention! Be alert!
Your safety is involved!

DANGER:
Tanks may be considered to be "confined spaces" under certain local, state and/or national regulations and standards. You should establish and implement a confined space entry safety program to conform with such regulations, standards, and reasonable safety measures. ESPC cannot design a program to suit your specific needs and situation.

Many well conceived confined space safety programs include the following:

1. Identification of the existence of a "confined space" and the hazard(s) associated with that confined space, i.e., a confined space has a restricted means for entry or exit, and has the potential for containing a hazardous atmosphere or other dangerous condition;
2. Restrictions on access to a confined space so that only properly instructed and properly equipped personnel enter the confined space;
3. The use of various equipment and procedures to control the hazard presented by the confined space, i.e., the use of retrieval lines, respirators or special protective clothing;
4. The presence of an attendant outside the confined space to maintain contact with personnel inside the confined space and to monitor events; and
5. Access to properly trained rescue personnel and rescue equipment.

DANGER:
Flammable, explosive, or lethal gasses may be present in and around certain tanks. Do not smoke or allow open flames or sparks in the tank area. Fire or explosion may result. Use an approved breathing apparatus and protective clothing when dangerous gases are being handled or may be present in or around the tank. Failure to heed may cause serious personal injury or death.

2. SAFETY DECALS

The safety decals that are located on the types of tanks covered in this manual are illustrated on the following page. You should inspect each decal or safety sign at least annually. Those which are worn, missing or illegible must be replaced by you. Use the attached graphic display to aid in your inspection. Contact your authorized independent Aquastore tank dealer if new decals are required.

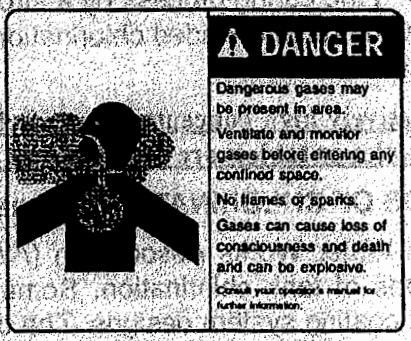
WATER STORAGE TANK DECAL

IMPORTANT

This tank contains a liquid that must not be contaminated. Keep manway locked at all times. Manway should be unlocked by operating personnel only for the purpose of visual inspection and/or sampling.

Part No. 257249-000

ALL TANKS



Part No. 262778-000

ALL TANKS

WARNING

Do not cut holes in or make attachments to any part of this tank without prior approval of a qualified structural engineer. Failure to heed this warning may result in structural failure, collapse, personal injury or death.

Part No. 260581-000

ALL TANKS

IMPORTANT

NO HOT SPARKS!

No hot sparks should come in contact with the panel!

- NO WELDING
- NO GRINDING
- NO CUTTING
- NO CUT OFF SAW

WITHIN 20 FEET OF THIS TANK

If working closer, you must protect the panel from hot sparks with a welding blanket, plywood, or other adequate means. Molten steel particles melted into the panel will quickly rust and may require the panels to be replaced at a substantial cost per panel. This tank was inspected by the Builder and there was no spark damage when the tank was completed.

Part No. 262166-000

SECTION 2 - SANITIZATION - (DESCRIBED FOR POTABLE WATER STORAGE TANKS)

1. FORMS OF CHLORINE

Various forms of chlorine are used for the purpose of sanitizing potable water tanks. Aquastore tanks are constructed using a joint sealant which can be substantially degraded during the curing process by a strong oxidizer such as chlorine. Care must be taken to follow the recommended chlorination procedures to prevent deterioration of the tank joint sealant.

NOTE: Excessively high concentrations of chlorine will damage the tank joint sealant if granules or tablets are not dissolved prior to their being placed in the tank.

2. METHODS OF CHLORINATION (REFERENCE AWWA C-652)

The American Water Works Association (AWWA) Standard C-652 describes in detail several methods of tank chlorination. Some are more or less appropriate depending upon tank and coating system designs. The chlorination of a tank after construction and prior to being placed in service needs to be coordinated with your authorized independent Aquastore tank dealer. Specific criteria apply to the cure time requirements for structure sealants prior to the first filling and/or sanitization process.

a. The recommended method for chlorination of an Aquastore tank and the method preferred by many tank operators is to fill the tank with potable water to approximately 5% of its volume. Add sufficient available chlorine to this water to attain a 50 milligrams/liter (mg/l) available chlorine level. The chlorine can be added by: injecting gaseous chlorine by use of a gas-flow chlorinator; introducing sodium hypochlorite by chemical feed pump to the inflowing water; or pouring dissolved sodium hypochlorite into the tank from a side manway or roof hatch. Never exceed 50 mg/l concentration for the volume of water actually in the tank. This solution is to be retained for 6 hours. Then, fill the tank to the overflow level with potable water and retain at that level for a minimum of 24 hours. The free chlorine residual after 24 hours must be not less than 2 mg/l.

   The highly chlorinated water in the drain piping must then be purged. The remaining water should be tested and certified for acceptable quality according to local health department codes prior to delivery to the distribution system.

b. As an alternative method, the tank can be filled with potable water to the overflow level. Enough chlorine must be added so that the available chlorine concentration shall be 10 mg/l at the end of 6 hours, but at no time should the concentration exceed 50 mg/l. The chlorine can be added by injecting gaseous chlorine or introducing sodium hypochlorite by chemical feed pump to assure uniform mixing.

   After six hours, the chlorine residual should be reduced to not more than 2 mg/l by a combination of additional holding time and/or draining and refilling the tank with potable water having a lower chlorine residual. The water must then be tested for acceptable quality according to local health department code prior to delivery to the distribution system.

Care should be taken when handling any chemical. Only experienced personnel should attempt to chlorinate the tank contents. Use the utmost care and check local codes prior to disposal of chlorinated water.

SECTION 3 - WINTER OPERATION

1. MINIMIZE ICE FORMATION

Ice formation in water tanks can cause extensive damage. Interior sealer or coating damage may result from the abrasive action and/or impact of an ice cap moving within the tank with changing water levels.

> **CAUTION:**
> The formation of ice in a tank can result in damage to the tank, its roof (if applicable) and its accessories. The owner/operator must take appropriate steps to limit the formation of ice in the tank.

In any tank, catastrophic structural failure can result from the tremendous forces of ice expansion or the loads created by the weight of ice. Internal accessories, level gauges, overflow weirs, etc., can be ripped from tank walls causing structural damage.

To avoid this type of damage you must limit the formation of ice. There are various devices available to assist in this process, including the use of insulation to control heat loss. It is the owner's responsibility to determine if the use of this tank requires such devices.

The most widely used method to control ice in potable water tanks is to keep turning over the tank contents. It is recommended that pumping schedules be maintained so that water is kept moving during periods of lowest demand. On a daily basis, at least one third of the tank volume should be turned over. If necessary, water may have to be discharged to allow fresh, warmer water to be added. Take care to discharge water in an appropriate manner.

Additionally, on tanks supplied with a roof, roof damage can occur when ice formations come in contact with the roof. To help minimize the chance of this type of damage, the high water level in the tank should be lowered during the winter months to keep ice formations from contacting the roof.

2. THAWING A FROZEN TANK

A tank which has frozen has a high risk of structural damage. A tank which is no longer operational because of excessive ice buildup must be thawed immediately to limit further damage.

The tank thawing process itself can create substantial risks. Experienced contractors should be employed to carry out the work, usually under the guidance of a consulting engineer. If the tank has experienced an extensive ice buildup requiring a thawing-out process, it should be drained and inspected for damage at the earliest opportunity. Your authorized independent Aquastore tank dealer can make this inspection and perform repairs at your direction.

SECTION 4 - INSPECTION and MAINTENANCE

Inspection and maintenance are important parts of the use of every piece of equipment. Your ESPC manufacturer's warranty may provide for certain maintenance responsibilities as conditions of your warranty. You should carefully review the terms of that document. In addition, the following listed steps will help you provide for the minimum maintenance needs of your equipment.

1. INSPECTION and MAINTENANCE DOCUMENTATION

Many successful tank operators have found a maintenance log document to be helpful. Often, forms fulfilling this purpose already exist within the owner's system and can simply be adapted for this use. The frequency, type of activity, and identity of persons performing maintenance should be reflected in the document. Generate a format that best serves your purposes, with the understanding that such a log will be most helpful to you in providing for the successful operation of your tank. Additional information can also be found in the **Aquastore Tank Maintenance Awareness Review**; part number 265307-000.

2. TANK CLEANING

Potable water tanks should be drained and cleaned at least annually to prevent accumulation of silt and sediment which may affect water quality and damage water meters, valves, etc. Normally a water hose with line pressure water is sufficient. Hot water or cleaning additives are not recommended. Do not use high pressure water.

A plan should be established for maintaining adequate water supply during the time the tank is out of service for routine inspection and cleaning. Cleaning schedules may also be appropriate for other types of Aquastore tanks.

3. VISUAL INSPECTION

At the time of the regular tank cleaning, a visual inspection must be made to check the glass coated sheets for any evidence of physical damage. Repairs should be made according to instructions found in the **Manufacturer's Procedure for the Touch-Up and Care of the Glass Coating on Aquastore Tanks**; part number 266468-000. If structural damage is found, contact your authorized independent Aquastore tank dealer for recommended repair methods.

4. LADDERS AND PLATFORMS

Ladder, ladder cage, and platform connection brackets must be visually inspected for corrosion or damage at each use. Replace damaged brackets if required. Ladder rungs should also be visually inspected to assure they are safe for use. If a safety climbing device was specified, follow the manufacturer's instructions on proper care and use.

The installation or use of fixed interior ladders is not recommended as they are susceptible to corrosion and ice damage.

5. VENTILATION FOR ROOFED TANKS

The tank vent is provided to prevent damage to the tank from pressure and/or vacuum created by normal filling and emptying of the tank. It is designed to prevent most birds, insects and debris from entering the tank.

The vent screen must be inspected at least annually. It must be cleared of leaves and debris which would prevent it from functioning properly. The screen can be cleaned by removing the four (4) bolts that secure the top cover. (Two 9/16" wrenches are required.) Lift off the cover and clean the screen thoroughly with a soft brush. Reinstall the cover by reversing the above procedure.

6. OVERFLOW PIPE

Overflow pipes can become clogged with debris. To prevent entry of birds or small animals, the discharge ends should be screened, provided with a flap valve, or other method of closure. The overflow pipe should be kept clear and checked regularly to be certain it operates freely.

7. CATHODIC PROTECTION SYSTEM

Some Aquastore tanks include a manufacturer supplied cathodic protection corrosion control system. In order to comply with warranty requirements, this system must be checked on a periodic basis, and results of all checks must be retained. Your authorized independent Aquastore tank dealer can advise you of the inspections required as they apply to the warranty provided with this tank.

8. GRAFFITI AND VANDALISM

Aquastore sheets can usually be wiped clean of painted-on graffiti without damaging the coating. A hydrocarbon solvent paint remover wiped on the graffiti with a cloth should be sufficient to thoroughly remove painted-on graffiti. If not, a stiff brush can be used to remove paint. Follow label instructions for the paint remover being used, then wash the cleaned area with mild detergent and water. The coating typically does not suffer any damage from organic solvents. Avoid prolonged contact between the solvent and any sealant.

9. DOME ROOF

Some Aquastore tanks include a dome supplied by ESPC. The dome must be inspected annually in order to comply with warranty requirements. Inspect the flashing, batten bar screws, and the handrail for loose and missing hardware. Tighten loose hardware and replace missing hardware as necessary.

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Aquastore® Tank Inspection and Maintenance Awareness Review

It is important that tank inspection and maintenance be included as part of your system operation. There are many tank types available, and since they are utilized for a number of purposes, we recommend that you review your intended use with your authorized independent Aquastore tank dealer. As noted below, every Aquastore tank will require periodic inspection and maintenance. You will need to design your system to accommodate those inspection and maintenance requirements.

Exterior and interior inspections and maintenance are needed to keep your Aquastore tank in proper operating condition.

- **Exterior**
  This type of inspection is to be performed yearly and focuses on the exterior portions of the tank. You can do this type of inspection while the tank is in service.
- **Interior**
  This type of inspection is to be performed at least every five (5) years and focuses on the interior portions of the tank. You perform this type of inspection while the tank is *out of service.*

Exterior Inspection (Yearly)

You should inspect the exterior of your tank on a yearly basis. The focus of this section is on those portions of the tank that can be inspected from the exterior, while the tank is in service.

1. Inspect all safety and information related decals for legibility.
2. Inspect overflow pipes, overflow weirs, and pipe terminations to assure that they will perform their design function.
3. Inspect the tank ventilation systems, including screens designed to prevent birds, insects, and debris from entering the tank.
4. Inspect the exterior coating of the tank for possible damage.
5. Inspect ladders, locks, platforms, ladder cages, and safety climbing devices (if specified) for corrosion and/or damage.

For each of the above items you should perform any necessary maintenance and repairs as part of the inspection process.

APPENDIX I

ENVIRONMENTAL MONITORING PLAN

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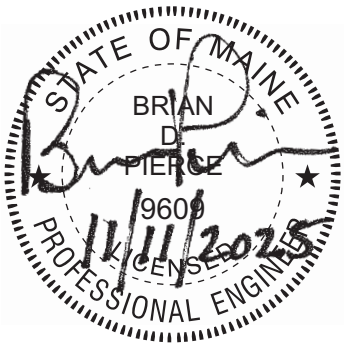
PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
ENVIRONMENTAL MONITORING PLAN
VOLUME IV

Prepared for

NEWSME LANDFILL OPERATIONS LLC



November 2025

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SME
SEVEE & MAHER
ENGINEERS

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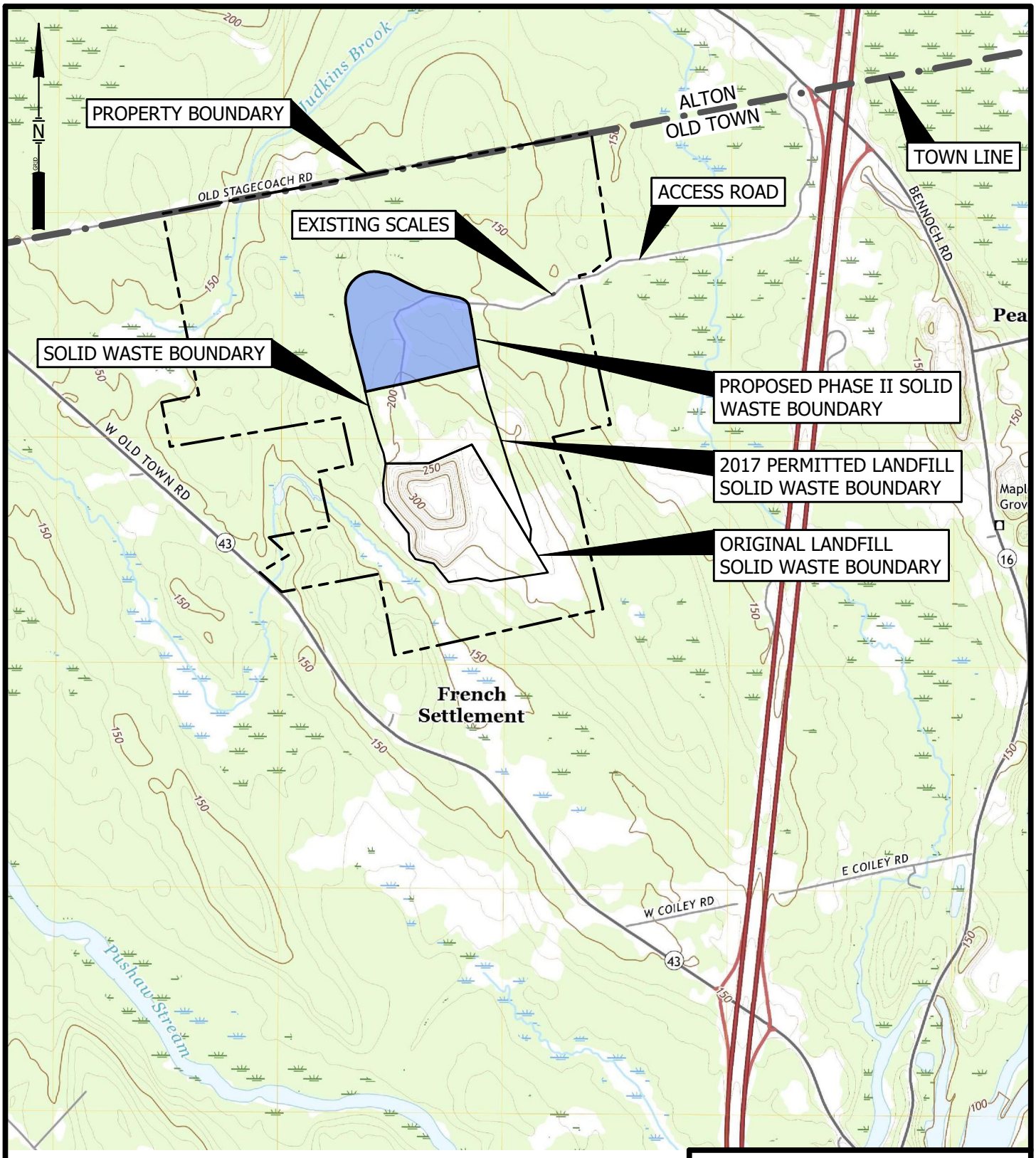
ENVIRONMENTAL MONITORING PLAN
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

1.0 INTRODUCTION

This Environmental Monitoring Plan (EMP) summarizes the sampling procedures and analytical techniques that will be used to monitor groundwater, surface water, pore-water, leachate, and landfill gas at the Juniper Ridge Landfill (JRL) site (see Figure 1-1), which is operated by NEWSME Landfill Operations, LLC (NEWSME) on behalf of the State of Maine and the Maine Bureau of General Services (BGS). The EMP has been revised to address changes in site conditions, including the Phase II Expansion. The EMP is a living document in that it will be updated as changes occur in the number and locations of monitoring points and in the monitoring parameters and monitoring frequency. Appendix A summarizes the changes to the EMP since 2011. This EMP is applicable to the original JRL facility (i.e., Cells 1-10), the Phase I Expansion (i.e., Cells 11-17), and the Phase II Expansion (i.e., Cells 18-22). Cells 1-16 are expected to be constructed as of the end of 2025. Cell 17 construction is planned for 2026. Cell 18 of the Phase II Expansion, assuming it is approved in time, is scheduled for construction in 2027 and construction of the succeeding cells is expected to occur between 2028 and 2035.



BASEMAP ADAPTED FROM 7.5 MIN USGS TOPO QUADS
OLD TOWN, ME - 2024

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

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DWG: SITELOC-EXPANSION LMN: NONE CTB: SME-STD.CTB JOB#: 240100.00 REV: 4/15/2025

\\Nserver\cfs\Casella\OldTownLandfill\Expansion\Phase II Expansion\Acad\Figures\SITELOC-EXPANSION.dwg, A_FIG 1-1, 4/15/2025 7:47:55 AM, sjm

2.0 OBJECTIVES OF THE ENVIRONMENTAL MONITORING PLAN

The purposes of the JRL EMP are to routinely:

- Evaluate the quality of groundwater, stormwater, pore-water, and surface water in the vicinity of the JRL;
- Evaluate the performance of the primary liner systems underlying each of the cells, including routine characterization of the liquid discharged from the underdrain systems beneath Cells 1-10, the underdrain systems beneath Cells 12-14, underdrain systems beneath future Cells 18-22, the underdrain for the former leachate pond, and the leak detection systems beneath Cells 11-16 (as of the date of this EMP), and future Cells 17-22; and
- Evaluate the quality and quantity of leachate generated at the site.

3.0 MONITORING LOCATIONS AND FREQUENCY

The EMP includes monitoring of more than sixty groundwater monitoring wells, six surface water monitoring locations, six pore-water monitoring locations, two stormwater monitoring locations, sixteen underdrain monitoring locations, nine leak detection monitoring locations, and one leachate monitoring location. The monitoring locations are summarized in Tables 3-1 and 3-2 and shown on Figures 3-1 and 3-2. Note that several of the monitoring locations in Tables 3-1 and 3-2 will be installed approximately one year before the associated adjacent Phase II Expansion cell is constructed. The projected year of installation for the wells associated with the Phase II Expansion are included in Table 3-1.

3.1 Groundwater Monitoring

The JRL groundwater monitoring wells are described in Table 3-1 and are located as shown on Figures 3-1 and 3-2. The groundwater monitoring wells are sampled during the spring, summer, and fall. The EMP monitoring frequency is listed in Table 3-3 and the monitoring parameter list for JRL is described in Section 4.0.

The JRL groundwater monitoring locations include piezometers that are typically one-inch-diameter wells (designated as P-XXX), observation wells that are typically two-inch-diameter wells (designated as OW-XXX), and monitoring wells that are also typically two-inch-diameter wells (designated as MW-XXX). The piezometers were typically installed during the site investigation phase, as were many of the monitoring wells. The wells referred to as observation wells are generally located close to the landfill boundary whereas the monitoring wells are typically located farther from the landfill cells between the landfill boundary and identified sensitive receptors.

Each time a new monitoring well location is installed, and prior to construction of each new expansion cell (Cell 11-Cell 22), baseline characterization monitoring is performed. Baseline characterization consists of monitoring water quality during the initial four monitoring events and analyzing samples for the parameters described in Section 4.0. The status of characterization monitoring is summarized in Table 3-3. Following baseline characterization monitoring and once a monitoring location's associated cell has been constructed, the monitoring wells for the JRL expansion are sampled tri-annually, as described above. The monitoring frequency and monitoring parameters are summarized in Table 3-3 and Table 4-2, respectively.

Each time a groundwater monitoring location is sampled, the groundwater elevation at the sampling location will be measured and converted to water level elevation. The groundwater elevations will be evaluated with respect to flow direction on an annual basis and discussed in the Annual Water Quality Report for the JRL facility.

3.2 Surface Water, Stormwater, and Pore-Water Monitoring

The JRL surface water, stormwater, and pore-water monitoring locations are described in Table 3-2 and shown on Figures 3-1 and 3-2. As of April 2025, there are:

- Four surface water monitoring locations along the unnamed tributary to Pushaw Stream (located west of the landfill);
- One surface water monitoring location along the unnamed tributary to Judkins Brook (located west of the landfill);
- Four pore-water monitoring locations in the soils along the east side of the unnamed tributary to Pushaw Stream;
- One pore-water monitoring location in the soils along the east side of the unnamed tributary to Judkins Brook; and
- Two stormwater monitoring locations in stormwater detention ponds for the JRL facility.

Surface water, stormwater, and pore-water monitoring locations are sampled during the spring, summer, and fall seasons for the monitoring parameters summarized in Section 4.0.

Surface water monitoring location SW-5 and pore-water monitoring location PWS-5 are expected to be established in summer 2025 and monitoring of those locations will commence at the same time. The first monitoring locations to be associated with the Phase II Expansion are expected to be established in 2026.

TABLE 3-1

GROUNDWATER MONITORING LOCATIONS
JRL EMP

Monitoring Well Designation	Monitoring Well Location (Upgradient or Downgradient of the Landfill)	Screened Interval (ft below ground surface)	Monitoring Zone	Installation Year	Abandon as part of Phase II Expansion
MW-204	Downgradient	13.8 – 18.8	Overburden	1990	--
MW-206	Upgradient	15.0 – 20.0	Overburden	1990	--
P-206A	Upgradient	85.5 – 90.5	Bedrock	1990	--
MW-223A	Downgradient	28.0 – 33.0	Bedrock	1990	--
MW-223B	Downgradient	12.6 – 17.6	Overburden	1990	--
MW-227	Downgradient	15.0 – 20.0	Overburden	1990	--
MW-301	Downgradient	162.7 – 182.7	Bedrock	1996	--
MW12-303R	Upgradient	30.4 – 40.4	Overburden	2012	--
MW-401A	Downgradient	98.8 – 108.8	Bedrock	2004	--
MW-401B	Downgradient	10.0 – 20.0	Overburden	2004	--
MW-402A	Downgradient	95.5 – 105.5	Bedrock	2004	--
MW-402B	Downgradient	12.0 – 22.0	Overburden	2004	--
DP-4	Downgradient of former leachate pond	18.5 – 24.5	Overburden	2004	--
P-04-02R	Downgradient of former leachate pond	30.0 – 35.0	Overburden	2015	--
P-04-04	Downgradient of former leachate pond	25.0 – 30.0	Overburden	2004	--
P-04-11A	Downgradient	48.0 – 49.0	Overburden	2004	x (~2027)
P-04-11B	Downgradient	9.0 – 10.0	Overburden	2004	x (~2027)
P-04-12A	Downgradient	TBD	Bedrock	2004	--
P-04-12B	Downgradient	TBD	Overburden	2004	--
MW-04-09A	Downgradient	38.0 – 39.0	Bedrock	2004	x (~2031)
MW-04-09B	Downgradient	14.0 – 15.0	Overburden	2004	x (~2031)
MW04-102	Downgradient of former leachate pond	10.0 – 15.0	Overburden	2004	--
MW04-105	Downgradient of former leachate pond	14.8 – 19.8	Overburden	2004	--
MW04-109R	Downgradient	15.0 – 20.0	Overburden	2009	--
P-04-07A	Downgradient	19.7 – 24.7	Bedrock	2004	--
P-04-07B	Downgradient	12.0 - 13.0	Bedrock	2004	--
MW-501	Downgradient	35.0 – 45.0	Bedrock	2018	--
MW-502	Downgradient	38.0 – 43.0	Bedrock	2019	--
MW-503	Downgradient	60.0 – 70.0	Bedrock	2020	--
MW-504	Downgradient	71.5 – 81.5	Bedrock	2020	x (~2027)
MW-505	Downgradient	72.2-82.2	Bedrock	2020	x (~2027)
MW-506	Downgradient	50.0-60.0	Bedrock	2020	x (~2029)
MW-507	Downgradient	22.5 – 220.0	Bedrock (Open Borehole)	2017	--
MW-508	Downgradient	26.0 – 36.0	Bedrock	2022	--
MW06-01	Downgradient	10.0 – 20.0	Overburden	2006	--
MW09-901	Downgradient	15.0 – 20.0	Overburden	2009	--
OW-601A	Downgradient	66.6 – 76.6	Bedrock	2018	--
OW-601B	Downgradient	46.2 – 56.2	Overburden	2018	--
OW-602A	Downgradient	22.5 – 240.0	Bedrock (Open Borehole)	2017	--
OW-603B	Downgradient	16.2 – 26.2	Overburden/Bedrock	2018	--
OW-604A	Downgradient	22.5 – 32.5	Bedrock	2018	--
OW-605A	Downgradient	62.5 – 260.0	Bedrock (Open Borehole)	2017	--
OW-606A	Downgradient	42.5 – 240.0	Bedrock (Open Borehole)	2017	--
OW-606B	Downgradient	7.0-12.7	Overburden/Bedrock	2020	--
OW-607B	Downgradient	41.0 – 51.0	Overburden	2020	x (~2027)

TABLE 3-1 (cont'd)
GROUNDWATER MONITORING LOCATIONS
JRL EMP

Monitoring Well Designation	Monitoring Well Location (Upgradient or Downgradient of the Landfill)	Screened Interval (ft below ground surface)	Monitoring Zone	Installation Year	Abandon as part of Phase II Expansion
OW-608A	Downgradient	62.5 – 260.0	Bedrock (Open Borehole)	2017	x (~2027)
OW-608B	Downgradient	33.5 – 43.5	Overburden	2020	x (~2027)
OW-609B	Downgradient	39.0 – 49.0	Overburden	2020	x (~2029)
OW-610A	Downgradient	26.7 – 36.7	Bedrock	2022	--
OW-611A	Downgradient	12.5 – 220.0	Bedrock (Open Borehole)	2017	--
OW-612A	Downgradient	TBD	Bedrock	Est. 2026	--
OW-612B	Downgradient	TBD	Overburden	Est. 2026	--
OW-613A	Downgradient	TBD	Bedrock	Est. 2032	--
OW-613B	Downgradient	TBD	Overburden	Est. 2032	--
OW-614A	Downgradient	TBD	Bedrock	Est. 2034	--
OW-614B	Downgradient	TBD	Overburden	Est. 2034	--
OW-615A	Downgradient	TBD	Bedrock	Est. 2034	--
OW-615B	Downgradient	TBD	Overburden	Est. 2034	--
OW-616A	Downgradient	TBD	Bedrock	Est. 2030	--
OW-616B	Downgradient	TBD	Overburden	Est. 2030	--
OW-617A	Downgradient	TBD	Bedrock	Est. 2026	--
OW-617B	Downgradient	TBD	Overburden	Est. 2026	--
OW-06-03	Downgradient	13.0 – 23.0	Overburden	2018	--
MW-08-01	Downgradient	117.0-127.0	Bedrock	2020	x (~2027)
PW 08-04A	Downgradient	TBD	Bedrock	Est. 2030	--
PW 08-04B	Downgradient	TBD	Overburden	Est. 2030	--

Notes:
[1] Estimated (Est.) well installation year is one year before associated cell is expected to be constructed to allow four rounds of characterization monitoring of well before waste is placed is associated cell.

TABLE 3-2

SURFACE WATER, PORE-WATER, STORMWATER, LEACHATE, LEAK DETECTION, AND UNDERDRAIN MONITORING LOCATIONS
JRL EMP

Location Designation	Location Description	Collection Method	Position Relative To Landfill	First Recorded	Current Status
Surface Water					
SW-1	Unnamed tributary of Pushaw Stream	Grab	Downgradient	November 1990	Active
SW-2	Unnamed tributary of Pushaw Stream	Grab	Upgradient	November 1990	Active
SW-3	Unnamed tributary of Pushaw Stream	Grab	Downgradient	May 1994	Active
SW 23-4	Surface water feature which drains to unnamed tributary to Judkins Brook East	Grab	Downgradient	March 2023	Active
SW-5	Surface water feature which drains to unnamed tributary of Pushaw Stream West	Grab	Downgradient	To Be Established	To be established upon completion of Cell 17
SW-6	Unnamed tributary that connects to Junkins Brook	Grab	Downgradient	To Be Established	To be established Summer 2025
Pore-Water					
PWS10-1	Pore-water sample east of unnamed tributary of Pushaw Stream	Std	Downgradient	April 2010	Active
PWS10-2	Pore-water sample east of unnamed tributary of Pushaw Stream	Std	Downgradient	April 2010	Active
PWS10-3	Pore-water sample east of unnamed tributary of Pushaw Stream	Std	Downgradient	April 2010	Active
PWS-4	Pore-water sample near surface water feature which drains to unnamed tributary to Judkins Brook East	Std	Downgradient/Northeast of Landfill	March 2023	Active
PWS-5	Pore-water sample near surface water feature which drains to unnamed tributary of Pushaw Stream West	Std	Downgradient/Northwest of Landfill	To Be Established	To be established upon completion of Cell 17
PWS-6	Pore-water sample near unnamed tributary that connects to Junkins Brook	Std	Downgradient/Northwest of Landfill	To Be Established	To be established Summer 2025
Stormwater					
SW-DP1	Detention pond #1	Grab	Downgradient	May 2004	Active
SW-DP6	Detention pond #6	Grab	Downgradient	October 2009	Active
Leachate					
LT-C4LR	Leachate storage tank	Grab	Upgradient/South	July 2013	Active

TABLE 3-2 (cont'd)
SURFACE WATER, PORE-WATER, STORMWATER, LEACHATE, LEAK DETECTION, AND UNDERDRAIN MONITORING LOCATIONS
JRL EMP

Location Designation	Location Description	Collection Method	Position Relative To Landfill	First Recorded	Current Status
Underdrains and Leak Detection					
LF-UD-1	Cell 1 underdrain at manhole #5	Grab	Underdrain	July 2004	Active
LF-UD-2	Cell 2 underdrain at manhole #5	Grab	Underdrain	July 2004	Active
LF-UD-3A,B	Cell 3A, 3B underdrain at manhole #5	Grab	Underdrain	July 2011	Active
LF-UD-4	Cell 4 underdrain at manhole #5	Grab	Underdrain	March 2009	Active
LF-UD-5 and 6	Outfall pipe	Grab	Underdrain	July 2011	Active
LF-UD-6	Cell 6 underdrain	Grab	Underdrain	February 2011	Active
LF-UD-7	Cell 7 underdrain at manhole #5	Grab	Underdrain	November 2011	Active
LF-UD-8	Cell 8 underdrain	Grab	Underdrain	April 2013	Active
LF-UD-9	Cell 9 underdrain	Grab	Underdrain	April 2016	Active
LF-UD-10	Cell 10 underdrain	Grab	Underdrain	October 2017	Active
LF-UD-12+13+14	Cell 11, 12, 13, and 14 underdrain	Grab	Underdrain discharge on Eastern side of Cell 14	August 2022	Active
LF-UD-18+21	Cell 18 and 21 underdrain	Grab	Underdrain discharge on Eastern side of Cell 18	To Be Established	Upon completion of Cell 18
LF-UD-19+20	Cell 19 and South portion of Cell 20 underdrain	Grab	Underdrain discharge on Western side of Cell 19	To Be Established	Upon completion of Cell 19
LF-UD-20+22	North portion of Cell 20 and Cell 22 underdrain	Grab	Underdrain discharge on Northern side of Cell 20	To Be Established	Upon completion of Cell 20
LF-LD-11	Cell 11 Leak Detection System	Grab	Eastern Perimeter Dike Leak Detection	October 2019	Active
LF-LD-12	Cell 12 Leak Detection System	Grab	Eastern Perimeter Dike Leak Detection	October 2020	Active
LF-LD-13	Cell 13 Leak Detection System	Grab	Eastern Perimeter Dike Leak Detection	April 2022	Active
LF-LD-14	Cell 14 Leak Detection System	Grab	Eastern Perimeter Dike Leak Detection	July 2022	Active
LF-LD-15	Cell 15 Leak Detection System	Grab	Western Perimeter Dike Leak Detection	July 2023	Active
LF-LD-16+17	Cell 16 + 17 Leak Detection System	Grab	Western Perimeter Dike Leak Detection	January 2025	Active
LF-LD-18+21	Cell 18 + 21 Leak Detection System	Grab	Eastern Perimeter Dike Leak Detection	To Be Established	Upon completion of Cell 18
LF-LD-19+20S	Cell 19 and South portion of Cell 20 Leak Detection System	Grab	Western Perimeter Dike Leak Detection	To Be Established	Upon completion of Cell 19
LF-LD-20N+22	North portion of Cell 20 and Cell 22 Leak Detection System	Grab	Northern Perimeter Dike Leak Detection	To Be Established	Upon completion of Cell 20
LP-UD-1	Former Leachate Pond underdrain south end at manhole #7	Grab	Leachate pond underdrain	July 2004	Active
LP-UD-2	Former Leachate Pond underdrain north end at MH #7	Grab	Leachate pond underdrain	July 2004	Active
LF-COMP	Composite sample of LF-UD-1, LF-UD-2, LF-UD-3A,B, LF-UD-4, and LF-UD-7 when water level in manhole #5 covers all of the inlet pipes	Grab	Underdrain	August 2004	Active
LP-COMP	Composite sample of LP-UD-1 and LP-UD-2 when water level in manhole #7 covers both inlet pipes	Grab	Underdrain	May/October 2004	Active

TABLE 3-2 (cont'd)
SURFACE WATER, PORE-WATER, STORMWATER, LEACHATE, LEAK DETECTION, AND UNDERDRAIN MONITORING LOCATIONS
JRL EMP

Notes:
[1] Cell 18 leak detection layer will extend to all of Cell 21 leak detection layer.
[2] Cell 19 leak detection layer will extend to southern portion of Cell 20 leak detection layer.
[3] Northern portion of Cell 20 leak detection layer will extend to all of Cell 22 leak detection layer.
[4] The northern portion of the Cell leak detection layer will be sampled using a temporary pump station until Cell 22 and permanent pump station are constructed.

Acronyms:
SW-X – Surface Water Location
SW-DPX – Stormwater Detention Pond Location
LT-C4LR – Leachate Sample Location
P-X – Piezometer Location
PW-X --
PWS-X – Pore-Water Sample Location
LF-UD-X – Landfill Underdrain Sample Location
LF-LD-X – Landfill Leak Detection System Sample Location
LP-UD-X –Former Leachate Pond Underdrain Sample Location

TABLE 3-3

MONITORING FREQUENCY
JRL EMP

Sample Type	Parameters - Detection (D) / Expansion Landfill Detection (D(E)) / Field Parameters (FP) / Volatile Organic Compounds (VOC) / Dissolved Methane (M) / Per- and Polyfluoroalkyl Substances (PFAS)					Field Parameters Monthly[1]
	Monitoring Location	Characterization Monitoring	Spring	Summer	Fall	
Groundwater	MW-204	N/A	-	-	FP[2]	-
	MW-206	N/A	D(E), M	D(E), M	D(E), M	-
	P-206A	N/A	D(E), M	D(E), M	D(E), M	-
	MW-223A	N/A	D	D	D	-
	MW-223B	N/A	D, M	D, M	D, M	-
	MW-227	N/A	D	D	D	-
	MW-301	N/A	D	D	D	-
	MW12-303R	N/A	D	D	D	-
	MW-401A	N/A	D	D	D	-
	MW-401B	N/A	D, VOC	D	D	-
	MW-402A	N/A	D	D	D	-
	MW-402B	N/A	D	D	D	-
	DP-4	N/A	-	-	FP[2]	-
	P-04-02R	N/A	D	D	D	-
	P-04-04	N/A	D	D	D	-
	P-04-11A	2021	FP	D(E), M	FP	-
	P-04-11B	2021	FP	D(E), M	FP	-
	MW-04-09A	2020	D(E), M	D(E), M	D(E), M	-
	MW-04-09B	2020	D(E), M	D(E), M	D(E), M	-
	MW04-102	N/A	D	D	D	-
	MW04-105	N/A	-	-	FP[2]	-
	MW04-109R	N/A	D	D	D	-
	P-04-07A	2022 - 2023	FP	D(E), M	FP	-
	P-04-07B	2022 - 2023	FP	D(E), M	FP	-
	MW-501	2018	D(E), M	D(E), M	D(E), M	-
	MW-502	2020	D(E), M	D(E), M	D(E), M	-
	MW-503	2021	D(E), M	D(E), M	D(E), M	-
	MW-504	2021	D(E), M	D(E), M	D(E), M	-
	MW-505	2021	D(E), M	D(E), M	D(E), M	-
	MW-506	2021	D(E), M	D(E), M	D(E), M	-
	MW-507	2018	D(E), M	D(E), M	D(E), M	-
	MW-508	2022 - 2023	D(E), M	D(E), M	D(E), M	-
	MW06-01	2018	D(E), M	D(E), M	D(E), M	-
	MW09-901	N/A	D	D	D	-
	OW-601A	2018	FP	D(E), M	FP	-
	OW-601B	2018	FP	D(E), M	FP	-
	OW-602A	2018	FP	D(E), M	FP	-
	OW-603B	2018	FP	D(E), M	FP	-
	OW-604A	2018	FP	D(E), M	FP	-
	OW-605A	2018	FP	D(E), M	FP	-
	OW-606A	2018	FP	D(E), M	FP	-
	OW-606B	2021	FP	D(E), M	FP	-
	OW-607B	2021	FP	D(E), M	FP	-
	OW-608A	2018	FP	D(E), M	FP	-
	OW-608B	2021	FP	D(E), M	FP	-
	OW-609B	2021	FP	D(E), M	FP	-

TABLE 3-3 (cont'd)
MONITORING FREQUENCY
JRL EMP

Sample Type	Parameters - Detection (D) / Expansion Landfill Detection (D(E)) / Field Parameters (FP) / Volatile Organic Compounds (VOC) / Dissolved Methane (M) / Per- and Polyfluoroalkyl Substances (PFAS)					Field Parameters Monthly[1]
	Monitoring Location	Characterization Monitoring	Spring	Summer	Fall	
Groundwater (cont'd)	OW-610A	2022 - 2023	FP	D(E), M	FP	-
	OW-611A	2018	FP	D(E), M	FP	-
	OW-612A	Approx. 2026	FP	D(E), M	FP	-
	OW-612B	Approx. 2026	FP	D(E), M	FP	-
	OW-613A	Approx. 2032	FP	D(E), M	FP	-
	OW-613B	Approx. 2032	FP	D(E), M	FP	-
	OW-614A	Approx. 2034	FP	D(E), M	FP	-
	OW-614B	Approx. 2034	FP	D(E), M	FP	-
	OW-615A	Approx. 2034	FP	D(E), M	FP	-
	OW-615B	Approx. 2034	FP	D(E), M	FP	-
	OW-616A	Approx. 2030	FP	D(E), M	FP	-
	OW-616B	Approx. 2030	FP	D(E), M	FP	-
	OW-617A	Approx. 2026	FP	D(E), M	FP	-
	OW-617B	Approx. 2026	FP	D(E), M	FP	-
	OW-06-03	2018	FP	D(E), M	FP	-
	MW-08-01	2021	D(E), M	D(E), M	D(E), M	-
	OW-08-04A[9]	Approx. 2030	FP	D(E), M	FP	-
	OW-08-04B	Approx. 2030	FP	D(E), M	FP	-
Surface Water[3]	SW-1	N/A	D	D	D	-
	SW-2	N/A	D	D	D	-
	SW-3	N/A	D	D	D	-
	SW 23-4	N/A	D(E)	D(E)	D(E)	-
	SW-5[4]	N/A [5]	D(E)	D(E)	D(E)	-
	SW-6		D(E)	D(E)	D(E)	
Pore-Water	PWS10-1	N/A	D, M	D, M	D, M	-
	PWS10-2	N/A	D, M	D, M	D, M	-
	PWS10-3	N/A	D, M	D, M	D, M	-
	PWS-4	N/A	D(E), M	D(E), M	D(E), M	-
	PWS-5[4]	N/A [5]	D(E), M	D(E), M	D(E), M	-
	PWS-6		D(E), M	D(E), M	D(E), M	
Stormwater	SW-DP1	N/A	D	D	D	-
	SW-DP6	N/A	D	D	D	-
Leachate	LT-C4LR	N/A	D[6], VOC, PFAS	D, VOC, PFAS	D, VOC, PFAS	-
Leak Detection	LF-LD-11[7]	N/A	-	D(E), M	-	X
	LF-LD-12[7]	N/A	-	D(E), M	-	X
	LF-LD-13[7]	N/A	-	D(E), M	-	X
	LF-LD-14[7]	N/A	-	D(E), M	-	X
	LF-LD-15[7]	N/A	-	D(E), M	-	X
	LF-LD-16+17[4,7]	N/A	-	D(E), M	-	X
	LF-LD-18+21	N/A	-	D(E), M	-	X
	LF-LD-19+20S	N/A	-	D(E), M	-	X
	LF-LD-20N+22	N/A	-	D(E), M	-	X
	LF-LD-17[4,7]	N/A	-	D(E), M	-	X

TABLE 3-3 (cont'd)
MONITORING FREQUENCY
JRL EMP

Sample Type	Parameters - Detection (D) / Expansion Landfill Detection (D(E)) / Field Parameters (FP) / Volatile Organic Compounds (VOC) / Dissolved Methane (M) / Per- and Polyfluoroalkyl Substances (PFAS)					Field Parameters Monthly[1]
	Monitoring Location	Characterization Monitoring	Spring	Summer	Fall	
Underdrain	LF-UD-1	N/A	D, VOC	D	D	X
	LF-UD-2	N/A	D, VOC	D	D	X
	LF-UD-3A,B	N/A	D, VOC	D	D	X
	LF-UD-4	N/A	D, VOC	D	D	X
	LF-UD-5 and 6	N/A	D, VOC	D	D	X
	LF-UD-6	N/A	D, VOC	D	D	X
	LF-UD-7	N/A	D, VOC	D	D	X
	LF-UD-8	N/A	D, VOC	D	D	X
	LF-UD-9	N/A	D, VOC	D	D	X
	LF-UD-10	N/A	D, VOC	D	D	X
	LF-UD-12+13+14	N/A	-	D(E), VOC, M	-	X
	LF-UD-18+21	N/A	-	D(E), VOC, M	-	X
	LF-UD-19+20	N/A	-	D(E), VOC, M	-	X
	LF-UD-20+22	N/A	-	D(E), VOC, M	-	X
	LP-UD-1	N/A	D, VOC	D	D	X
	LP-UD-2	N/A	D, VOC	D	D	X
	LF-COMP	N/A	D	D	D	-
	LP-COMP	N/A	D	D	D	-

Notes:
1. JRL personnel will complete monthly underdrain and bi-weekly leak detection monitoring during the nine months of the year that water quality sampling is not conducted. Monthly parameters include flow and specific conductance. X indicates monthly monitoring to be completed.
2. Only field parameters will be collected at monitoring wells DP-4, MW04-105, and MW-204 during the fall round; no samples will be collected.
3. Landfill gas monitoring does not include surface water, pore-water, or stormwater locations.
4. Monitoring location to be established; see Table 3-2 for the installation schedule.
5. Baseline Characterization monitoring for groundwater locations (four rounds) as summarized in Table 4-3 will be completed prior to waste placement of expansion cells.
6. Analyzed for MEDEP Rules Chapter 405 Appendix A Column 3 parameters.
7. Discharge from pump stations will be measured monthly for specific conductance and flow as noted in the Leak Response Action Plan (See Appendix B).
8. Appendix A contains details of historical monitoring program changes.
9. OW-08-04A is proposed to be installed inside existing investigation well PW-08-04, which is a six-inch diameter bedrock well. OW-08-04B is intended to be installed as a new monitoring location, companion to OW-08-04A. Construction details will be determined in collaboration with MEDEP.

- = not sampled
N/A = Not Applicable

3.3 Leachate Monitoring

Leachate sampling occurs at the JRL leachate storage tank that is located as shown on Figure 3-1. The leachate is sampled during the spring, summer, and fall seasons for detection parameters, VOCs, and PFAS, as specified in Table 3-3. During the spring monitoring event, additional parameters are included to complete the list of parameters in MEDEP Rules Chapter 405, Appendix A, Column 3, as described in Section 4.0.

3.4 Underdrain Monitoring

The underdrain systems at the JRL consist of sand, stone, and embedded perforated collection piping that is installed beneath existing portions of all existing cells but Cell 11 and below the former leachate pond's liner system. The underdrain sampling locations are located at pipe discharge and are shown on Figures 3-1 and 3-2. The underdrain designations and descriptions are included in Table 3-2 and the monitoring frequency is noted in Table 3-3. The underdrain samples are analyzed for the monitoring parameters as summarized in Section 4.0.

3.5 Leak Detection Monitoring

The leak detection monitoring is conducted for each of the cells that comprise the Phase I Expansion and the Phase II Expansion. Samples for the leak detection monitoring are obtained from sampling ports attached to the discharge lines associated with each cell's leak detection pump station. The leak detection systems are sampled during the spring, summer, and fall seasons for the monitoring parameters summarized in Section 4.0. The leak detection systems are also monitored monthly for volume of liquid removed from the leak detection system(s) and bi-weekly for specific conductance. The results of the monthly leak detection system monitoring will be compared to Action Levels defined in the Expansion's Leak Response Action Plan (LRAP) provided in Appendix B. The LRAP outlines the procedures to evaluate the data collected from the leak detection systems and the actions that will be implemented if the evaluation suggests the primary liner is not performing as designed.

3.6 Landfill Gas Monitoring

Landfill gas monitoring for methane equivalent, hydrogen sulfide, and carbon dioxide at the JRL will be performed during the spring, summer, and fall seasons at the groundwater monitoring locations and the manhole locations shown on Figures 3-1 and 3-2. Landfill gas monitoring will follow the procedures described in Section 5.5.

Landfill gas monitoring for hydrogen sulfide is monitored continuously at air monitoring stations located beyond the JRL property boundary as shown in Volume IV – Operations and Maintenance Manual for the Phase II Expansion Application.

3.7 Monitoring Wells Measured for Specific Conductance Annually

Specific conductance is measured annually from a specific list of monitoring wells that surround the existing JRL operations. The specific conductance monitoring is completed in October and is based on a request made by MEDEP in 2008. The locations measured annually for specific conductance are listed in Table 3-4 and shown on Figure 3-3.

TABLE 3-4

MONITORING WELL AND PIEZOMETER LOCATIONS
USED FOR ANNUAL SPECIFIC CONDUCTANCE MEASUREMENTS
JRL EMP

Location Designation	
DP-4	P-04-02R
MW04-102	P-04-04
MW04-104	P-201A
MW04-105	P-201B
MW04-109R	P-201C
MW09-901	P-201D
MW12-303R	P-201E
MW-204	P-202A
MW-206	P-202B
MW-216BR	P-206A
MW-223A	P-209A
MW-223B	P-209B
MW-227	P-209C
MW-301	P-211A
MW-401A	P-211B
MW-401B	P-220A
MW-402A	P-220B
MW-402B	

HYDROGEN SULFIDE
MONITOR LOCATION A N
482095.70
E 929404.13

PROPERTY LINE

SW23-4
PWS-4
MW06-01
MW-501
OW-613A,B
OW-612A,B
MW-502
OW-606A
MW-503
OW-606B
OW-604A
OW-06-03
OW-603B
OW-602A
OW-601A
OW-601B
MW-206
P-206A
OW-614A,B
LF-LD-14
OW-605A
LF-UD-12-13-14
OW-607B
LF-LD-13
LF-LD-12
LF-LD-11
MW-08-01
MW-504
MW12-303R
LT-C4LR
MW11-207R
LEACHATE STORAGE TANK
P-04-11A
P-04-11B
MW-505
LF-UD-10
LF-UD-9
OW-615A,B
OW-608A
OFFICE WELL
MW-04-09B
MW-04-09A
OW-608B
LF-UD-8
OW-616A,B
SCALEHOUSE WELL
SW-DP6
OW-609B
LEACHATE POND 1A
SEE FIGURE 3-2
PROPOSED EXPANSION BOUNDARY
MW-506
FUTURE
CELL 16
CELL 17
MW-302R
LF-UD-6
OW-08-04A,B
P-04-04
P-04-02R
MW-402B
MW-402A
MH#5 (LF-UD)
SW-DP5
LF-LD-17
MW09-901
SW-2
P-04-12B
P-04-12A
OW-617A,B
MW-507
LF-LD-16
LF-LD-15
SW-DP1
MW04-102
OW-610A
MW-223A
PWS10-3
LF-UD-5AND6
P-04-07A
P-04-07B
OW-611A
MW-223B
MW04-109R
MW-227
MW-401B
MW-508
MW-401A
MW04-105
MW-204
MH#7 (LP-UD)
PWS-6
SW-6
MW-301
PWS10-1
PWS25-5
SW-25-5
PWS10-2
SW-1
DP-4
DETENTION POND 1A
(FORMER LEACHATE POND)
SW-3
HYDROGEN SULFIDE
MONITOR LOCATION D N
482955.24
E 921878.25

LEGEND

- GROUNDWATER SAMPLING AND GAS MONITORING LOCATION
- DECOMMISSIONED WELL
- SURFACE WATER SAMPLING LOCATION
- HYDROGEN SULFIDE MONITORING LOCATION
- PORE WATER SAMPLING LOCATION
- FALL FIELD PARAMETER AND GAS MONITORING LOCATION
- LF-UD-6 UNDERDRAIN SAMPLING AND GAS MONITORING LOCATION
- LF-LD-11 LEAK DETECTION SAMPLING AND GAS MONITORING LOCATION

NOTES:

1. TOPOGRAPHY FROM AERIAL SURVEY PERFORMED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 5/31/2025. VERTICAL DATUM: BRASS PLUG AT FORMER LEACHATE POND PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC, CUMBERLAND, MAINE.
2. TOPOGRAPHY CONTOURS INCLUDE PROPOSED TOPOGRAPHY FOR CELL 16 BASE GRADES.

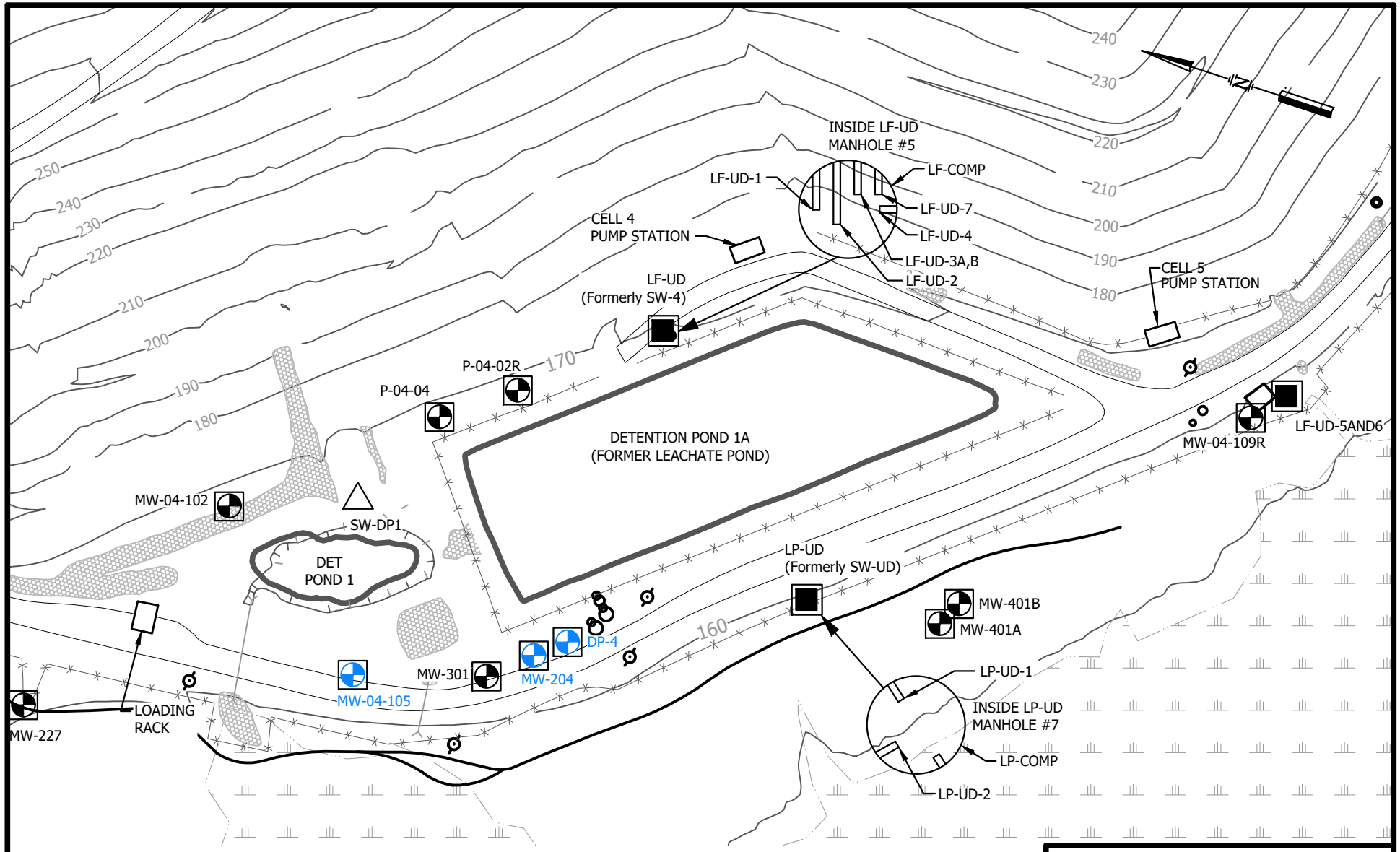
400 0 800 1600 FEET

FIGURE 3-1
SITE LAYOUT AND ENVIRONMENTAL MONITORING LOCATIONS
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: EMP LMN: EXP EMP 3-1 CTB: SME-STD REV: 10/31/2025

\\Nserver\cfs\Casella\OldTownLandfill\GeneralSiteInfo\Acad\EMP.dwg, EXP EMP FIG 3-1, 10/31/2025 9:36:25 AM, bwb



NOTE:
TOPOGRAPHY FROM AERIAL SURVEY PERFORMED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. VERTICAL DATUM: BRASS PLUG AT FORMER LEACHATE POND PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC, CUMBERLAND, MAINE.

50 0 100 FEET

LEGEND

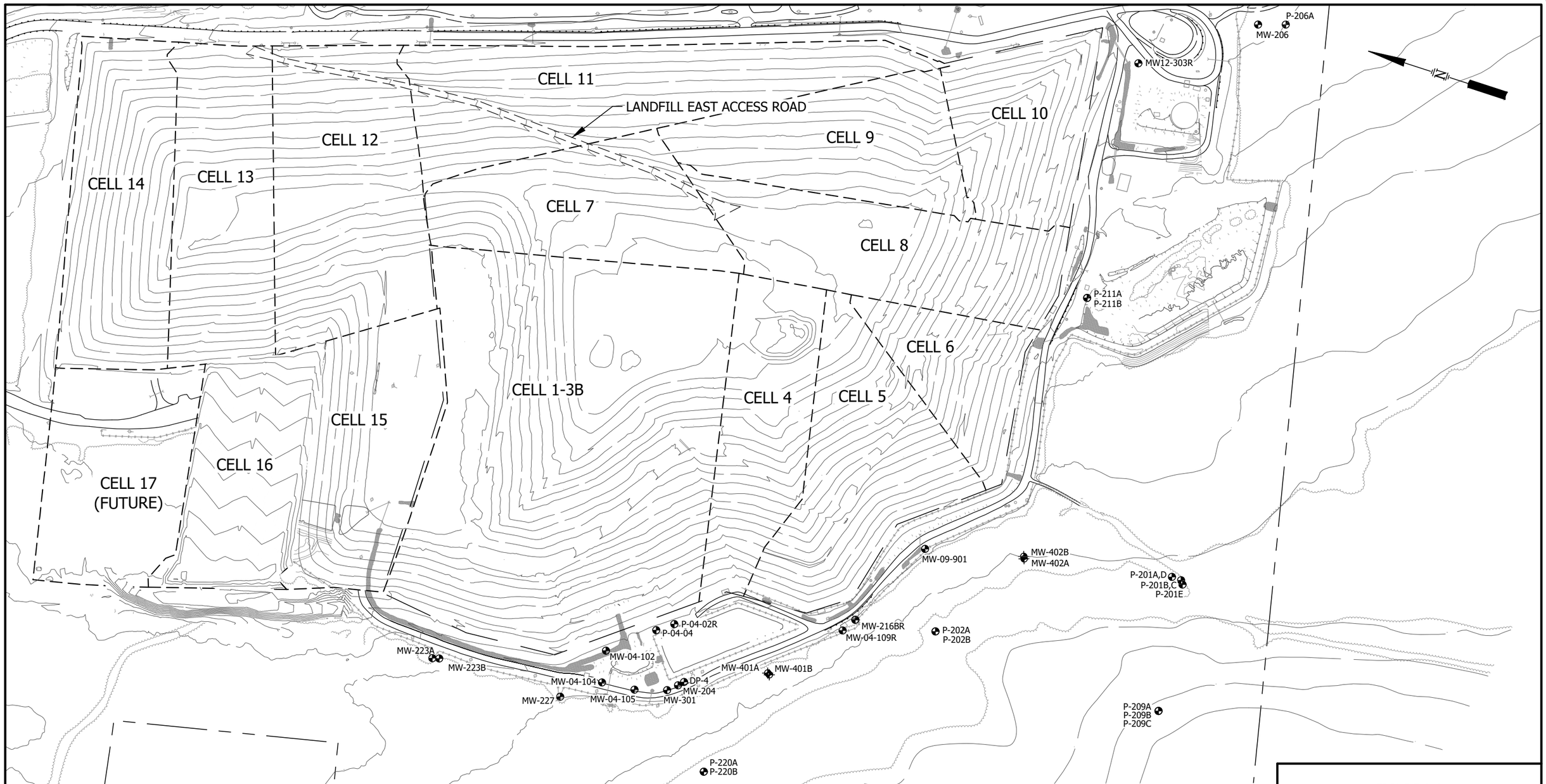
- GROUNDWATER MONITORING LOCATION
- SURFACE WATER MONITORING LOCATION
- GAS MONITORING LOCATION
- UNDERDRAIN MONITORING LOCATION
- FALL FIELD PARAMETER ONLY

FIGURE 3-2
ENVIRONMENTAL MONITORING LOCATIONS
ADJACENT TO
FORMER LEACHATE POND
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: EMP LMN: EXP EMP 3-2 CTB: SME-STD REV: 5/1/2025

\\Nserverdfs\Casella\OldTownLandfill\GeneralSiteInfo\Acad\EMP.dwg, EXP EMP 3-2, 5/20/2025 1:50:54 PM, sjm



NOTES

1. TOPOGRAPHY FROM AERIAL SURVEY PERFORMED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. VERTICAL DATUM: BRASS PLUG AT FORMER LEACHATE POND PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC, CUMBERLAND, MAINE.
2. REMAINDER OF BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2025. VERTICAL DATUM: BRASS PLUG AT PUMP STATION AND AT THE ADMINISTRATION BUILDING. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC, CUMBERLAND, MAINE.
3. 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.
4. LOCATIONS OF EXPLORATIONS ARE APPROXIMATE.

LEGEND

MW-402B — GROUNDWATER SAMPLING LOCATION

DECOMMISSIONED GROUNDWATER SAMPLING LOCATION

150 0 300 FEET

FIGURE 3-3
MONITORING WELL LOCATIONS USED FOR ANNUAL CONDUCTIVITY MEASUREMENTS
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: GW LMN: EXP EMP 3-3 CTB: SME-STD-HALF REV: 4/18/2023

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4.0 SELECTION OF MONITORING PARAMETERS

The environmental monitoring program of the JRL was initiated in March 1990 as part of the landfill site search study performed by Sevee & Maher Engineers, Inc. (SME) for Fort James Paper Company of Old Town, Maine. A list of detection parameters of interest was established after a thorough review of the site characterization monitoring (performed in the early 1990s) and the chemical characterization of the JRL leachate. Subsequent changes have been made to the facility's monitoring program based upon MEDEP and SME recommendations.

Water quality and leachate parameters, analytical method references, and practical quantitation limits are presented in Tables 4-1 and Table 4-2. Table 4-1 lists parameters for Detection Monitoring (D) for Cells 1-10. Table 4-2 lists Expansion Detection Monitoring (D, (E)) for expansion Cells 11-22.

Baseline characterization monitoring for groundwater locations consists of analyzing samples for the parameters summarized in Table 4-3.[1]

The analytical testing laboratory selected for the monitoring will utilize the practices and procedures described in Test Methods for Evaluating Solid Waste (OSWER, SW-846, Third Edition, as revised); Methods for Chemical Analysis of Water and Wastes (EMSL, U.S.EPA 600/4-79/020, revised March 1983); and Standard Methods for the Examination of Water and Wastewater (22nd Edition, 2012).

[1] Some parameters that are not detected during early rounds of baseline characterization monitoring are dropped from the later rounds with MEDEP approval.

TABLE 4-1

DETECTION MONITORING CELLS 1-10 PARAMETERS FOR ANALYSIS
JRL EMP

Water Quality Parameter	Method	PQL[1] (mg/l)[2]
Total Dissolved Solids (TDS)	SM 2540C	10
Total Suspended Solids (TSS)	SM 2540D	2.5
Total Organic Carbon (TOC)	SW9060A	2.0
BOD5[3]	SM 5210B	2
Arsenic (As)	SW6010C/3010A	0.005
Calcium (Ca)	SW6010C/3010A	0.3
Iron (Fe)	SW6010C/3010A	0.05
Magnesium (Mg)	SW6010C/3010A	0.3
Manganese (Mn)	SW6010C/3010A	0.05
Potassium (K)	SW6010C/3010A	0.3
Sodium (Na)	SW6010C/3010A	0.3
Chloride (Cl^-)	SWE300/9056A	1.0
Sulfate (SO_4)	SWE300/9056A	2.0
Sulfide[4]	HACH 8131	0.1[1]
Volatile Organic Compounds (VOCs)[5,6]	U.S.EPA 8260C	0.005-0.02
Bicarbonate Alkalinity	SM 2320B	1.5
Nitrate + Nitrite (NO^2 + NO^3)	U.S.EPA 353.2	0.05
Total Kjeldahl Nitrogen (TKN)[7]	SM 4500 NorC/NH3D-11	0.2[1]
Total Phosphorous[8]	U.S.EPA 365.3	0.04
Bromide	SW9056A	0.1
Methane[9]	U.S.EPA 8015B(MOD RSK-175)	0.02
Per- and Polyfluoroalkyl Substances (PFAS)[10]	U.S. EPA 1633	0.000016-0.002[11]
FIELD PARAMETERS		
Groundwater Elevation	Field Measurement	NA
Specific Conductance	Field Measurement	NA
Dissolved Oxygen	Field Measurement	NA
pH	Field Measurement	NA
Temperature	Field Measurement	NA
Turbidity	Field Measurement (APHA 2130)	NA
Eh	Field Measurement	NA
Monitoring Well Pumping Rate	Field Measurement	NA
Water Flow Rate[12]	Field Measurement	NA
Field Observations	Field Observations	NA

Notes:
1. Practical Quantitation Limits (PQLs) have been defined by U.S.EPA as up to 10 times the method or instrument detection limit and therefore may vary between laboratories.
2. Abbreviations: mg/l = milligrams per liter; NA = Not Applicable.
3. Surface water locations only.
4. Sulfide is analyzed in the spring leachate sample (LT-C4LR).
5. VOCs are the 47 organic constituents listed in Appendix I of 40 CFR Part 258. PQLs for VOCs are the lab method detection limits, which are reported as micrograms per liter (µg/l). Also, diethyl ether and tetrahydrofuran will be included in the reported compounds. After two rounds of characterization monitoring these compounds will only be sampled in the landfill leachate (LT-C4LR) on a routine basis.
6. During spring sample event, MW-401B, LF-UD-1, LF-UD-2, LF-UD-3A,B, LF-UD-4, LF-UD-5and6, LF-UD-6, LF-UD-7, LF-UD-8, LF-UD-9, LF-UD-10, LF-UD-12+13+14, LF-UD-18+21, LF-UD-19+20, LF-UD-20+22, LP-UD-1, and LP-UD-2 are analyzed for VOC compounds. Leachate (LT-C4LR) is analyzed for VOC compounds during all three monitoring events.
7. Monitoring wells and leachate (LT-C4LR) only.
8. Pore-water, surface water, stormwater, and underdrain samples only.
9. Supplemental program includes dissolved methane at locations MW-223B, PWS10-1, PWS10-2, and PWS10-3.
10. Leachate samples will be submitted for laboratory analysis of PFAS compounds by USEPA Method 1633 during the spring, summer, and fall sampling events.
11. Range due to commonly required dilutions for the leachate matrix.
12. Surface water, leak detection, and underdrain samples only.

Method Reference: The analytical methods selected are presented in Test Methods for Evaluating Solid Waste, OSWER, SW-846, Third Edition, as revised; Methods for Chemical Analysis of Water and Wastes, EMSL, EPA-600/4-79-020, revised March 1983; and Standard Methods for the Examination of Water and Wastewater, APHA, 22nd Edition, 2012. Equivalent and appropriate analytical methods may be substituted with Juniper Ridge Landfill approval, e.g., manual for automated and vice versa.

TABLE 4-2

DETECTION MONITORING EXPANSION CELLS 11 – 22 PARAMETERS FOR ANALYSIS
JRL EMP

Water Quality Parameter	Method	PQL[1] (mg/l)[2]
Total Dissolved Solids (TDS)	SM 2540C	10
Total Suspended Solids (TSS)	SM 2540D	2.5
Total Organic Carbon (TOC)	SW9060A	2.0
BOD5[3]	SM 5210B	2
Arsenic (As)	SW6010C/3010A	0.005
Calcium (Ca)	SW6010C/3010A	0.3
Iron (Fe)	SW6010C/3010A	0.05
Magnesium (Mg)	SW6010C/3010A	0.3
Manganese (Mn)	SW6010C/3010A	0.05
Potassium (K)	SW6010C/3010A	0.3
Sodium (Na)	SW6010C/3010A	0.3
Chloride (Cl^-)	SWE300/9056A	1.0
Copper (Cu)	SW6010C/3010A	0.003
Sulfate (SO_4)	SWE300/9056A	2.0
Sulfide[4]	HACH 8131	0.1[1]
Volatile Organic Compounds (VOCs)[5,6]	U.S.EPA 8260C	0.005-0.02
Ammonia (NH3-N)	SM 4500 NH3 B/ SM4500 NH3 C	0.5
Total Alkalinity	SM 2320B	1.5
Nitrate + Nitrite (NO^2 + NO^3)	U.S.EPA 353.2	0.05
Total Kjeldahl Nitrogen (TKN)[7]	SM 4500 NorC/NH3D-11	0.2[1]
Total Phosphorous[8]	U.S.EPA 365.3	0.04
Boron (B)	SW6010C/3010A	0.05
Bromide	SW9056A	0.1
Methane[9,10]	U.S.EPA 8015B(MOD RSK-175)	0.02
Per- and Polyfluoroalkyl Substances (PFAS)[11]	U.S. EPA 2633	0.000016-0.002[12]
FIELD PARAMETERS		
Groundwater Elevation	Field Measurement	NA
Specific Conductance	Field Measurement	NA
Dissolved Oxygen	Field Measurement	NA
pH	Field Measurement	NA
Temperature	Field Measurement	NA
Turbidity	Field Measurement (APHA 2130)	NA
Eh	Field Measurement	NA
Monitoring Well Pumping Rate	Field Measurement	NA
Water Flow Rate[13]	Field Measurement	NA
Field Observations	Field Observations	NA

Notes:
1. Practical Quantitation Limits (PQLs) have been defined by U.S.EPA as up to 10 times the method or instrument detection limit and therefore may vary between laboratories.
2. Abbreviations: mg/l = milligrams per liter; NA = Not Applicable.
3. Surface water locations only.
4. Sulfide is analyzed in the spring leachate (LT-C4LR) sample and Cells 11-22 monitoring locations.
5. VOCs are the 47 organic constituents listed in Appendix I of 40 CFR Part 258. PQLs for VOCs are the lab method detection limits which are reported as micrograms per liter (µg/l). Also, diethyl ether and tetrahydrofuran will be included in the reported compounds. After two rounds of characterization monitoring these compounds will only be sampled in the landfill leachate (LT-C4LR) on a routine basis.
6. During spring sample event, MW-401B, LF-UD-1, LF-UD-2, LF-UD-3A,B, LF-UD-4, LF-UD-5and6, LF-UD-6, LF-UD-7, LF-UD-8, LF-UD-9, LF-UD-10, LP-UD-1, and LP-UD-2 are analyzed for VOC compounds. During the summer sample event, LF-UD-12+13+14, LF-UD-18+21, LF-UD-19+20, LF-UD-20+22, are analyzed for VOC compounds. Leachate is analyzed for VOC compounds during all three monitoring events.
7. Monitoring wells and leachate (LT-C4LR) only.
8. Pore-water, surface water, stormwater, and underdrain samples only.
9. Cells 11-22 monitoring wells. Cells 11-22, Leak Detection and Underdrain locations (summer only).
10. Pore-water, MW-04-09A&B, MW-206, P-206A, MW-223B, P-04-07A&B (summer only), and P-04-11A&B (summer only).
11. Leachate samples will be submitted for laboratory analysis of PFAS compounds by USEPA Method 1633 during the spring, summer, and fall sampling events.
12. Range due to commonly required dilutions for the leachate matrix.
13. Surface water, leak detection, and underdrain samples only.

Method Reference: The analytical methods selected are presented in Test Methods for Evaluating Solid Waste, OSWER, SW-846, Third Edition, as revised; Methods for Chemical Analysis of Water and Wastes, EMSL, EPA-600/4-79-020, revised March 1983; and Standard Methods for the Examination of Water and Wastewater, APHA, 22nd Edition, 2012. Equivalent and appropriate analytical methods may be substituted with Juniper Ridge Landfill approval, e.g., manual for automated and vice versa.

TABLE 4-3

MONITORING WELL BASELINE CHARACTERIZATION ANALYTICAL PROGRAM

Water Quality Parameter	Method	PQL[1] (mg/L)
Total Dissolved Solids (TDS)	SM 2540C	10
Total Suspended Solids (TSS)	SM 2540D	2.5
Arsenic (As)	SW846/6010B/3010A	0.005
Calcium (Ca)	SW846/6010B/3010A	0.3
Boron (B) [5]	SW846/6010B/6010C	0.05
Copper (Cu)	SW846/6010B/3010A	0.003
Iron (Fe)	SW846/6010B/3010A	0.05
Magnesium (Mg)	SW846/6010B/3010A	0.3
Manganese (Mn)	SW846/6010B/3010A	0.05
Potassium (K)	SW846/6010B/3010A	0.3
Sodium (Na)	SW846/6010B/3010A	0.3
Total Organic Carbon (TOC)	SW846/9060A	2.0
Chloride (Cl)	SW846/9056	1.0
Bromide (Br)	SW846/9056	0.1
Sulfate (SO_4)	SW846/9056	1.0 to 2.0
Sulfide (S^{2-})	8131 HACH	0.1
Ammonia (NH_3)	SM 4500 NH3-B/SM 4500 NH3-C	0.5
Nitrate Plus Nitrite (NO_3-N/NO_2-N)	U.S. EPA 353.2	0.05
Total Alkalinity ($CaCO_3$)	SM 2320B	1.5
Volatile Organic Compounds (VOCs) [3]	U.S.EPA 8260B	0.0005 – 0.02
Dissolved Methane	8015mod/RSK-175	0.020
Total Kjeldahl Nitrogen (TKN)	US EPA 351.2	0.25
Total Phosphorous	U.S.EPA 365.3	0.04
Biochemical Oxygen Demand (BOD)	SM 5210B	1.0
Field Parameters		
Groundwater Elevation	Field Measurement	NA [2]
Specific Conductance	Field Measurement	NA
Dissolved Oxygen (DO)	Field Measurement	NA
pH	Field Measurement	NA
Eh	Field Measurement	NA
Temperature	Field Measurement	NA
Turbidity	Field Measurement (APHA 2130)	NA
Field Observations	Visual Observations	NA

Notes:

1 At dilution factor of unity. Some PQLs may differ for surface and stormwater analysis.

2 NA = Not Applicable.

3 VOCs are the 47 organic constituents listed in Appendix I of 40 CFR Part 258 plus diethyl ether and tetrahydrofuran. PQLs for VOCs are reported at a dilution factor of unity.

5.0 SAMPLING PROCEDURES

This section describes the protocols involved in sampling groundwater, surface water, leachate, leak detection systems, underdrains, and pore-water at the JRL.

5.1 Groundwater Sampling

Appropriately prepared sample containers will be procured prior to each sampling episode. Participating laboratories will provide the containers to the sampling personnel upon request.

Upon arrival at each monitoring location, the sampling personnel will inspect the physical condition of the monitoring well(s). The inspection will include checking the condition of the ground surface seal and the well guard pipe to ascertain any evidence of frost-heaving, cracking, or vandalism. The condition of the monitoring well will be recorded on the field data records. Periodically, the area around the well may need to be cleared of weeds or other materials to provide access for the sampling activity.

Following inspection of the sampling location, the water level in the well casing will be measured by lowering a clean electronic sounding probe into the well until contact is made with the water surface. Depth to water in the monitoring wells will be determined to the nearest 0.01 foot, referenced to the top of the polyvinyl chloride (PVC) well casing (i.e., permanently marked measurement reference point) and will be entered in the field records. In cases where water is flowing from the well casing, the water level will be noted as such. Annually during the fall sampling round, the depth to the bottom of the well will be measured after water quality sampling is completed, by lowering the water level probe to the well bottom and recording the depth. Upon removal of the water level probe, the probe will be decontaminated as described in Section 6.1.

5.1.1 Low-flow Sampling Procedure for Monitoring Wells

The low-flow sampling procedure, which uses flow rates of 100 to 200 milliliters per minute (mL/min), will be used to collect the water quality samples from monitoring wells (and other instruments serving as monitoring wells) at the JRL site. The objective of low-flow sampling is to minimize the drawdown and disturbance of water in the well to obtain a sample that is representative of the in-situ water chemistry. Low-flow groundwater sampling assessments have previously been completed for existing groundwater monitoring wells and, as groundwater monitoring wells are added to the EMP, a low-flow sampling assessment will be completed for each new location. The low-flow sampling procedure for each monitoring well was determined by implementing the assessment procedure summarized in Appendix C. The low-flow sampling criteria used at JRL are summarized in Table 5-1.

TABLE 5-1

LOW-FLOW SAMPLING CRITERIA
JRL EMP

Monitoring Well	Sampling Equipment	Well Diameter (in.)	Recommended Flow Rate (ml/min)	Results of Low-Flow Rate Sampling Assessment	Recommended Sample Collection Criteria
MW-204	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, MFP
MW-206	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
P-206A	peristaltic pump w/ dedicated tubing	¾	100	Grab	1TV, CS, MFP
MW-223A	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW-223B	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
MW-227	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
MW-301	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
MW12-303R	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW-401A	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW-401B	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW-402A	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
MW-402B	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
DP-4[1]	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, MFP
P-04-02R	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
P-04-04[2]	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
P-04-11A	peristaltic pump w/ dedicated tubing	¾	100	Std	5MR, 3MR, CS
P-04-11B	peristaltic pump w/ dedicated tubing	¾	100	Std	5MR, 3MR, CS
MW-04-09A	peristaltic pump w/ dedicated tubing	¾	100	Grab	1TV, CS, MFP
MW-04-09B	peristaltic pump w/ dedicated tubing	¾	100	Std	5MR, 3MR, CS
MW04-102	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
MW04-105	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, MFP
MW04-109R[1]	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
OW-04-07A	peristaltic pump w/ dedicated tubing	¾	200	Std	5MR, 3MR, CS
OW-04-07B	peristaltic pump w/ dedicated tubing	¾	100	Std	5MR, 3MR, CS
MW-501	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW-502	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW-503	peristaltic pump w/ dedicated tubing	1	200	Std	5MR, 3MR, CS
MW-504	peristaltic pump w/ dedicated tubing	1	200	Std	5MR, 3MR, CS
MW-505	peristaltic pump w/ dedicated tubing	1	100	Grab	1TV, CS, MFP
MW-506	bladder pump w/ dedicated tubing	¾	100	Grab	1TV, CS, MFP
MW-507	peristaltic pump w/ dedicated tubing	6 (Open Borehole)	200	Std	5MR, 3MR, CS
MW-508[1]	peristaltic pump w/ dedicated tubing	2	100	Std	5MR, 3MR, CS
MW06-01	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
MW09-901	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
OW-601A	bladder pump w/ dedicated tubing	1	100	Std	5MR, 3MR, CS
OW-601B	bladder pump w/ dedicated tubing	1	100	Std	5MR, 3MR, CS
OW-602A[3]	bladder pump w/ dedicated tubing	6 (Open Borehole)	200	Std	5MR, 3MR, CS
OW-603B	peristaltic pump w/ dedicated tubing	1	200	Std	5MR, 3MR, CS
OW-604A	peristaltic pump w/ dedicated tubing	1	200	Std	5MR, 3MR, CS
OW-605A[3]	peristaltic pump w/ dedicated tubing	6 (Open Borehole)	100	Std	5MR, 3MR, CS
OW-606A	peristaltic pump w/ dedicated tubing	6 (Open Borehole)	200	Std	5MR, 3MR, CS
OW-606B[3]	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
OW-607B	peristaltic pump w/ dedicated tubing	2	100	Std	5MR, 3MR, CS
OW-608A[3]	bladder pump w/ dedicated tubing	6 (Open Borehole)	200	Std	5MR, 3MR, CS
OW-608B	peristaltic pump w/ dedicated tubing	6 (Open Borehole)	100	Std	5MR, 3MR, CS

TABLE 5-1 (cont'd)
LOW-FLOW SAMPLING CRITERIA
JRL EMP

Monitoring Well	Sampling Equipment	Well Diameter (in.)	Recommended Flow Rate (ml/min)	Results of Low-Flow Rate Sampling Assessment	Recommended Sample Collection Procedure
OW-609B	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
OW-610A[1]	peristaltic pump w/ dedicated tubing	2	100	Std	5MR, 3MR, CS
OW-611A[3]	peristaltic pump w/ dedicated tubing	6 (Open Borehole)	200	Std	5MR, 3MR, CS
OW-612A	TBD	2	TBD	TBD	TBD
OW-612B	TBD	2	TBD	TBD	TBD
OW-613A	TBD	2	TBD	TBD	TBD
OW-613B	TBD	2	TBD	TBD	TBD
OW-614A	TBD	2	TBD	TBD	TBD
OW-614B	TBD	2	TBD	TBD	TBD
OW-615A	TBD	2	TBD	TBD	TBD
OW-615B	TBD	2	TBD	TBD	TBD
OW-616A	TBD	2	TBD	TBD	TBD
OW-616B	TBD	2	TBD	TBD	TBD
OW-617A	TBD	2	TBD	TBD	TBD
OW-617B	TBD	2	TBD	TBD	TBD
OW-06-03	peristaltic pump w/ dedicated tubing	2	100	Grab	1TV, CS, MFP
MW-08-01	peristaltic pump w/ dedicated tubing	2	200	Std	5MR, 3MR, CS
PW 08-04A	TBD	2	TBD	TBD	TBD
PW 08-04B	TBD	2	TBD	TBD	TBD

Note:
[1] Boring Log not provided in Appendix D.
[2] Screen length on P-04-04 is measured from top of PVC.
[3] Screen depths not labeled on log and based on visual observations.
[4] Std - sample collection method where water level and field parameters stabilize during well purging and sample collection is performed in accordance with the field parameter stabilization criteria.
[5] Grab – sample collection method where water level and/or field parameters do not stabilize and the sample is collected in accordance with the sample collection procedure.

Sample collection criteria designations:
5MR: 5-Minute interval field parameter readings to verify field parameter stabilization.
3MR: 3-Minute interval field parameter readings to verify field parameter stabilization.
1TV: Purge 1 tubing volume at low flow rate then collect sample.
CS: Collect sample.
MFP: Measure field parameters.

Copies of well installation diagrams for the groundwater monitoring wells are provided in Appendix D for reference. As new monitoring wells are installed, the associated well installation diagrams will be incorporated into Appendix D.

Where possible, sampling equipment for each monitoring location will consist of a peristaltic pump with dedicated tubing placed in each monitoring well. Monitoring wells with static water levels greater than 25 feet below ground surface will be sampled using a dedicated bladder pump and dedicated tubing. Equipment used to measure field parameters must be calibrated on a daily basis during use.

Placement or replacement of dedicated sampling tubing in any well will be done a minimum of 24 hours in advance of sampling. The bottom of the tubing or pump inlet will be positioned at the middle of the screened interval, or in the middle of the water column if the water table is within the well screen length.

Tubing, pumps, or measuring devices will not be placed into the water column within 24 hours of sampling or during the sampling process.

During initial well installation and development, it will be determined if the water level drawdown in the well will stabilize within a reasonable amount of time for purposes of sampling without disturbance of water in the sampling zone. Procedures are included below for wells that will stabilize and wells that will not stabilize.

Procedure for Wells Where Water Level Drawdown Stabilizes

1. Low-flow rates will be used for sampling, as specified in Table 5-1.
2. Water level measurements shall be recorded at three- or five-minute intervals as described in Table 5-1 until drawdown stabilization has been achieved. The static water level and the pumping start time must be recorded as the first reading on the second page of the Monitoring Well Sample Purging Form (see Appendix E). All subsequent field measurements will also be recorded on the Monitoring Well Sample Purging Form.
3. Until drawdown stabilizes, field parameters (i.e., pH, specific conductance, and turbidity) must be monitored and recorded at 5-minute intervals unless noted otherwise in Table 5-1.
4. Once drawdown stabilization is achieved and the field parameter measurements from three successive 5-minute intervals meet the conditions listed below, complete stabilization will be verified when three successive field parameter measurements at 3-minute intervals also meet the conditions listed below:

pH:	± 0.1 standard pH unit with respect to previous pH measurement
Specific conductance:	± 5% of previous measurement
Turbidity:	± 10% of previous measurement when turbidity is above 10 nephelometer turbidity units (NTU) ±1 NTU with respect to previous measurement when turbidity is below 10 NTU
Dissolved oxygen:	±1 mg/L when dissolved oxygen is greater than 1 mg/L; ±0.1 mg/L when dissolved oxygen is less than 1 mg/L

   Note: It is possible for the field parameters to stabilize prior to, or at the same time as, the drawdown.

5. Once complete stabilization has been achieved and a complete set of field readings has been measured (i.e., temperature, pH, specific conductance, turbidity, Eh, and dissolved oxygen), groundwater samples will be collected in appropriately preserved containers. The samples will be obtained directly from the pump discharge line. The sampling personnel will complete and attach labels to each sample container for the location of interest. Table 5-2 presents the minimum

information to be supplied on each container label. Samples will be obtained directly from the pump discharge line. The sample labeling information described in Table 5-2 will be used for all water quality samples collected at the JRL.

TABLE 5-2

SAMPLE LABEL INFORMATION
JRL EMP

Site Name
Sample Location
Sampler Name/Company
Sample Collection Date
Sample Collection Time
Analyses to be Performed
Preservative Used

6. Following completion of sampling, the monitoring well will be secured with its associated protective devices and the field instrumentation equipment will be decontaminated as described in Section 6.1.

Procedure for Wells Where Drawdown Does Not Stabilize

1. Purge one tubing volume at the flow rate specified in Table 5-1.
2. Collect samples in appropriately preserved and labeled containers as previously described; the samples will be obtained directly from the pump discharge line.
3. Measure field parameters (i.e., temperature, pH, specific conductance, turbidity, Eh, and dissolved oxygen) as soon as possible after sample collection.
4. Following completion of sampling, secure the monitoring well with protective devices and decontaminate the field instrumentation as described in Section 6.1.

The chain-of-custody (COC) procedures will be initiated following sample collection.

5.2 Surface Water Sampling Procedure

Surface water will be collected in the following manner:

1. Collect the sample by immersing the sample container not more than 1 foot below the water surface. If a stream is being sampled, the sample will be obtained from upstream of the sampler with the opening of the sampling device oriented upstream but avoiding floating debris.
2. Directly fill the appropriate sample containers from the sampling device if needed.

3. If possible, measure the following parameters in the water body directly, not in the sample container:

   - Temperature;
   - pH;
   - Specific Conductance;
   - Dissolved Oxygen;
   - Eh; and
   - Turbidity.

   If direct measurement is not possible, the parameters will be measured from water remaining in the sampling device or from another sample container. This information will be recorded in the sample data record, sample labels will be completed, and the COC procedures will be initiated.

4. Observe the surface water flow rate (i.e., still, slow, etc.).
5. Complete the Surface Water/Leachate Sample Data Record (see Appendix E).

5.3 Leachate, Leak Detection System, and Underdrain Sampling Procedure

Leachate, leak detection system, and underdrain samples will be obtained in the following manner:

- Sample Collection from Manholes and Underdrain Pipes: A peristaltic pump will be used to collect samples from manholes and underdrains. Dedicated polyethylene and silicone pump tubing will be used at each location. If the underdrain discharge point is directly accessible, a sample can be collected directly from the end of the underdrain pipe.
- Sample Collection from a Pump Station: Leachate and leak detection samples will be obtained from the sampling ports installed at the pump station for each cell.

For all leachate, leak detection, and underdrain samples, measure the following parameters in a separate sample bottle:

- Temperature;
- pH;
- Specific Conductance;
- Dissolved Oxygen;
- Eh; and
- Turbidity.

Additional field sampling protocols will be followed for the LT-C4LR sampling since it is a location where PFAS samples will be collected. The field sampling protocols for PFAS in water are provided in Appendix F.

The flow rate for the underdrain pipes will be measured by timing the filling of a container of known volume, if possible. Leachate flow rate and leak detection system flow rate is determined from flowmeters fitted with totalizers.

The field-obtained information will be recorded in the Surface Water/Leachate Sample Data Record (see Appendix E), sample labels will be completed, and the COC procedures will be initiated.

The discharge from the pump stations and flow from underdrain monitoring locations will be measured monthly for specific conductance and flow.

5.4 Procedure for Pore-Water Sampling

The pore-water samples will be collected in the following manner:

1. Decontaminate the pore-water sampler with an Alconox® and deionized water solution followed by several deionized water rinses;
2. Enter from an area downstream of the sample point and approach the sample point with caution so as to not disrupt the area where pore-water sampler will be installed;
3. Gently push the pore-water sampler approximately two feet vertically into the soil as measured for the soil surface. The inner rod of the pore-water sampler should be present in the sampler at the time of installation to maintain the structural integrity of the sampler;
4. Remove the inner rod from the sampler and connect a new piece of polyethylene tubing to the top of the sampler with a small new piece of silicone tubing;
5. With a peristaltic pump, remove water from the sampler at a rate of 100 to 200 ml/min.;
6. Monitor field parameters (i.e., temperature, conductivity, pH, turbidity, Eh, and dissolved oxygen) every three minutes until the stabilization criteria listed in Section 5.1.1 is met or the pore-water sampler runs out of water. If the pore-water sampler runs out of water, allow sufficient time for recharge and collect samples. If the stabilization criteria are met, collect samples. For a sample with turbidity over 20 NTU, the metals sample shall be filtered through a 0.45-micron high-capacity filler;
7. Install a grade stake with the sample location identification clearly marked on the side of the stake to allow for future sample collection at the same general location; and
8. Initiate COC procedures.

5.5 Standard Gas Monitoring Procedure

The landfill gas monitoring procedures described in this section are only related to the locations where water quality samples are collected. The procedures do not describe landfill gas monitoring done as part of the operations of the active gas collection system or the facility's air permit monitoring program.

Landfill gas and ambient methane concentrations will be monitored three times per year at all monitoring well, underdrain, leak detection, and leachate collection locations. Additionally, four locations just beyond the JRL property boundary will be monitored for hydrogen sulfide. Gas monitoring is conducted using a hand-held meter such as a GEM 2000 Combustible Gas Indicator or similar equipment. Figure 3-1 shows each of the landfill gas monitoring locations and the hydrogen sulfide monitoring locations. The gas meter will be calibrated to a methane standard in accordance with the manufacturer's instructions. The gas monitoring procedure shall be as follows:

1. Note the weather conditions at the time of sampling;
2. Remove the protective cap from the monitoring well, other gas monitoring locations are not capped;
3. Insert the meter's inlet tube approximately two inches into the top of the monitoring well or liquid discharge pipe. Set the operation mode of the meter to measure percent gas (methane equivalent) by volume. Measure the percent methane equivalent by volume and record the measurement on the Gas Monitoring Form (see Appendix E). Measure and record the hydrogen sulfide in parts per million (ppm) and the oxygen content in percent;
4. If the meter indicates less than 5 percent methane equivalent by volume, set the operation mode of the meter so that it measures in percent Lower Explosive Limit (LEL). Measure the percentage of the LEL for methane and record the measurement on the Gas Monitoring Form. Note the LEL for methane is 5 percent by volume or 50,000 parts per million;
5. Measurements recorded as the percentage of the LEL for methane will be converted to percent methane equivalent by volume using the following calculation:

   LEL Conversion: (%LEL/100) x 5 = % Volume;

6. Purge the instrument with fresh air in accordance with the manufacturer's instructions; and
7. Proceed with the well purging and sampling procedures specified in Section 5.0.

5.6 Sample Volume, Preservation, and Holding Times for Water Quality and Leachate Samples

Obtaining required sample volumes and observation of procedures for sample preservation and allowable holding times are necessary to yield test results that will be representative of site conditions. Table 5-3 summarizes the volume, preservation, and holding time requirements for the water and leachate samples to be collected.

TABLE 5-3

SAMPLE HANDLING, PRESERVATION, AND HOLDING TIME
WATER AND LEACHATE
JRL EMP

Parameter Group[1]	Container Volume and Composition	Preservation	Holding Time (days)
As, Ca, Fe, Mg, Mn, K, Na, Cu, B	250 ml (P)	4°C, HNO_3 to pH <2	180
TDS, TSS, SO_4, Cl^-, Bromide, Total Alkalinity, Bicarbonate Alkalinity	1,000 ml (P)	4°C	7
TOC	40 ml (G)	4°C, H_2SO_4 to pH <2	28
NO_2-N + NO_3-N	125 ml (P)	4°C, H_2SO_4 to pH <2	28
Ammonia, Total Phosphorous	250 ml (P)	4°C, H_2SO_4 to pH <2	28
Total Kjeldahl Nitrogen	125 ml (P)	4°C, H_2SO_4 to pH <2	28
BOD	500 ml (P)	4°C	1
Sulfide	250 ml (P)	4°C, NaOH, ZNAC to pH >12	7
VOCs	40 ml (G)x3	4°C, HCL, pH <2	14
Methane	20 ml (G)x2	4°C, H_2SO_4 to pH <2	14
Per- and Polyfluoroalkyl Substances (PFAS)	250 ml (P)x2	4°C	14

Notes:
1 Parameter combinations and sample volume requirements may vary between laboratories.
2 Holding times are calculated from the time of sample collection. The most restrictive holding time is presented for each parameter group.
3 G = Glass
P = Plastic

5.6.1 Sample Volume

A minimum sample volume must be obtained from each monitoring location to allow the laboratory to perform the required testing. Table 5-3 presents the minimum sample volumes and container composition required for the monitoring program.

5.6.2 Sample Preservation

Preservation of collected samples is accomplished by refrigerating the samples at 4 degrees Celsius (°C) and, in some cases, by adding acids or bases. Aqueous samples scheduled for metals analyses need not be refrigerated.

Table 5-3 summarizes preservation requirements for each sample. In most cases sample containers will arrive from the laboratory with the necessary preservative. When acidification is required, disposable pipettes will be used to introduce the preservative into the sample container. After adding the appropriate amount of preservative to the sample container, the container will be capped and gently inverted several times to mix the preservative and the sample. Samples will be spot-checked with a pH meter or pH paper to confirm that the preservation procedure is adequate. In no case will the pH meter be introduced into the sample bottle. A portion of the bottle contents will be poured into a separate clean container and the pH will be verified.

Physical preservation of the samples will be accomplished by storing the filled sample containers in covered insulated coolers constructed of impact resistant plastic. Efforts will be made to pack the coolers so that sample containers are not subject to movement or breakage (see Section 7.2).

5.6.3 Holding Times

Analytical testing of samples must be completed within specified holding times to yield representative results. Table 5-3 summarizes the maximum allowable holding time for each sample type. In preparing for each sampling episode, the sampling personnel will prepare schedules that will permit adequate laboratory notification and sample delivery to allow laboratory analysis within the allowable holding times.

5.7 Sampling Quality Control

Sampling quality control (QC) will include the proper decontamination of sampling equipment prior to use; regular calibration of field equipment to measure temperature, pH, dissolved oxygen, Eh, turbidity, and specific conductance; collection of duplicate samples for laboratory testing; and analysis of trip blanks when sampling for volatile organic compounds (VOCs).

5.7.1 Equipment Blanks

Dedicated tubing will be used at the monitoring well locations, thereby eliminating the need for equipment blanks.

5.7.2 Duplicate Samples

Duplicate samples will be collected at a rate of 10 percent during each sampling event. The duplicate sample identification will be such that the sampling location is unknown to the laboratory. The duplicate sample will be analyzed for the same parameters as its companion sample.

5.7.3 PFAS Field Blanks

PFAS field blanks will be collected during sampling events that include the collection of a PFAS sample. The field blank is prepared at the laboratory. The blank consists of one 250-mL plastic bottle filled with deionized water and one empty 250 mL plastic bottle. The deionized water is poured into the empty container at the sampling site. The filled container is handled in the same manner as the site samples, a temperature of 4°C is maintained while on-site and during shipment, and the blank is returned to the laboratory for analysis.

5.7.4 VOC Trip Blanks

VOC trip blanks are required to detect additional sources of contamination that might potentially influence VOC concentrations reported in actual samples both quantitatively and qualitatively. A trip blank

consists of a set of sample containers filled at the laboratory with laboratory demonstrated analyte-free water. The following requirements will be observed:

- Trip blanks must be handled, transported, and analyzed in the same manner as the VOC samples acquired that day, except that the sample containers themselves are not opened in the field. Rather, they just travel with the sample collector; and
- The temperature of the trip blanks must be maintained at 4°C while on-site and during shipment.

6.0 DECONTAMINATION OF EQUIPMENT

Decontamination of sampling equipment is required both before initiation of sampling and between each sample location to minimize the potential for cross-contamination of samples with the analytes of interest. When conducting decontamination activities, as well as when handling cleaned equipment prior to and during sampling, clean nitrile or PVC gloves will be worn to further reduce potential for contamination.

6.1 Field Instrumentation

Field instrumentation (i.e., pH, specific conductance, dissolved oxygen, Eh, turbidity, and temperature probes) will not be introduced into a sampling device or sample container under any circumstance. However, to minimize latent influences between sampling locations, the probes and flow-through cell will be rinsed with clean water and, when appropriate, wiped dry with clean paper towels. The electronic water level probe will be introduced into monitoring wells prior to the purging process. Upon extraction from each well, the probe and associated electronic leads will be washed with consecutive rinses of clean water.

6.2 Sampling Equipment

A peristaltic pump with dedicated tubing will be used at most well locations, thereby eliminating the need for sampling equipment decontamination. A dedicated bladder pump with dedicated tubing will be used in wells too deep to sample with a peristaltic pump, thus also eliminating the need for sampling equipment decontamination.

7.0 SAMPLE CUSTODY

Sample COC procedures will be followed during sample collection and handling activities in both the field and laboratory operations. These procedures ensure that each sample is accounted for at all times. To maintain the highest degree of control in sample handling, preprinted labels will be used so that all necessary identification information is retained with the sample. COC records will be used to maintain control over sample access during and after shipment from the location of sample collection. Additionally, proper completion of field sample logs, accession books, tracking sheets, and extraction logs by appropriate field and laboratory personnel will provide for thorough monitoring of the samples from collection through analysis and final analytical laboratory report generation.

The objective of sample identification, COC, and monitoring procedures is to ensure that:

- All samples collected for analysis are uniquely labeled for identification purposes throughout the analytical process;
- Samples are correctly analyzed for the parameters intended, and the results are traceable to the associated field records;
- Sample characteristics are preserved;
- Samples are protected from loss, damage, or tampering;
- Any alteration of samples (e.g., preservation or damage due to shipment or other processes) is documented; and
- A record of sample integrity and analytical fate is established.

Collected samples will be identified in accordance with SME's standard procedure. A copy of the sample identification procedure is in Appendix G.

7.1 Sample Monitoring Forms

The use of forms accomplishes one or more of the specific objectives of sample custody, identification, or control. Standard SME forms will be utilized as discussed in the following subsections. These forms include the COC Record, Monitoring Well Sample Purging Form, Surface Water Sample Data Record, Leachate Sample Data Record, and the Instrument Calibration Form. A copy of each form is in Appendix E.

7.1.1 Chain-of-Custody Record

The COC Record (see Appendix E) is completed in the field by the person physically in charge of sample collection. The COC Record must be completed prior to shipment of samples to the laboratory. The COC Record contains information on the date and time of sample collection, the sampler, the project name and number, the laboratory project number, the number of containers of each sample being shipped, and

an itemization of the analyses requested for each sample, together with any remarks about the sample prior to shipment. The COC Record is enclosed with the samples after it has been signed by the sampler. It is then signed each time possession of the samples changes, with the signatures of the people relinquishing and receiving the sample, as well as the time of exchange, indicated on the form.

7.1.2 Monitoring Well, Surface Water, and Leachate Monitoring Forms

The Monitoring Well Sample Purging Form, Surface Water Monitoring Form, and Leachate Monitoring Forms (see Appendix E) will be completed in the field by the person placed in charge of sample collection. These forms correlate the assigned sample bottle designation to a specific well or sample location or other distinguishing feature or attribute (e.g., duplicate sample). The forms also list pertinent sampling information that must be recorded at the time of sample collection (e.g., day and time of sampling, and pH, specific conductance, temperature, Eh, dissolved oxygen, and turbidity measurements).

7.1.3 Instrument Calibration Form

Field instrument calibration procedures will be recorded on the Instrument Calibration Form (see Appendix E) on a daily basis.

7.2 Packing and Shipping

In addition to sample collection and preservation requirements, especially the maintenance of sample temperatures at 4°C until extraction or analysis, all samples will be packed and shipped to maintain the sample container integrity and the health and safety of sample transporters.

Sample containers are generally packed in picnic coolers for shipment. Bottles will be packed tightly so that no motion is possible. Styrofoam, vermiculite, and "bubble-pack" are suitable packing materials in most cases. (High-hazard samples require different packing.) Ice is placed in double Ziploc® bags and added to the cooler, along with all paperwork in a separate Ziploc® bag. The cooler top is then taped shut. Custody seals and taping of coolers may be required for certain samples.

The standard procedures for shipping environmental samples to the analytical laboratory are as follows:

1. All shipping of environmental samples must be done via Federal Express or an equivalent overnight delivery service.
2. If prompt shipping and laboratory receipt of the samples cannot be guaranteed (e.g., a Sunday arrival), the samplers will be responsible for proper storage of the samples until suitable transportation arrangements can be made.

The laboratory must be kept informed of all field sampling activities. This communication is critical to allow the laboratory enough time to prepare for arrival of the samples. The samples are shipped to the laboratory together with the COC documents.

8.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control (QA/QC) is an integral part of this sampling and analytical program to allow assessment of the adequacy of analytical results for their intended use. QA/QC activities associated with sampling include the use of standardized collection procedures and sample data records (as described previously), calibration of field instruments, and COC procedures. Analytical QA/QC involves the use of approved analytical protocols by qualified laboratories. Analytical data quality is assessed through review of method-specified QC data, to be delivered along with the analytical results.

8.1 Data Validation

The following data validation methods will be used to verify the accuracy and precision of the reported results:

- Chain-of-Custody for each sample is continuous and included with report;
- Verification that all sample holding times were met;
- TDS/specific conductance ratio calculated. Samples outside of ratio range (i.e., 0.55 – 0.75) will be identified;
- Calculation and tabulation of relative percent differences. Values greater than (>) 10 percent reported;
- Identification of values falling outside of historical range (once 5 sampling rounds have been completed);
- Identification of parameters present in equipment blanks:
    - Not applicable: dedicated equipment used for all samples;
- Identification of parameters present in trip blanks; and
- Identification of wells whose depths have changed since construction.

8.2 Statistical Analyses

Where data are sufficient, statistical analysis of the sample data from each monitoring well will be completed and reported annually. The statistical analysis will consist of water quality data plots that can be used to identify trends in the data. Water quality parameter concentrations will be plotted that are considered potentially symptomatic of leachate presence.

9.0 REPORTING REQUIREMENTS

Monitoring data will be submitted to MEDEP within 30 days of the landfill's receipt of the evaluation of laboratory results along with the data validation calculations. This data transmittal will also include a tabulation (in electronic format) of the monthly measurements of the landfill's underdrain and leak detection systems. The monthly data will be submitted with the spring, summer, and fall sampling results.

Annually, a report summarizing the results of the environmental monitoring program; historical data summaries including analytical and field data; statistical analysis; a comparison to the Remedial Actional Guidelines (RAG) for groundwater samples or the Maine Freshwater Criterion Continuous Concentration (MFCCC) for surface water samples; an evaluation of historical changes in water levels around the site; and recommendations for any proposed EMP changes (e.g., locations, parameters, frequency, etc.) will be submitted to MEDEP. The annual report will also include responses to any MEDEP comments made on the previous year's Annual Report.

10.0 WELL ABANDONMENT PROCEDURE

Some monitoring wells and piezometers designated for sampling by this EMP will be abandoned as construction progresses for the development of the Phase I and Phase II Expansion cells. The wells and piezometers will be sealed in a manner appropriate to the geologic conditions at each location and in accordance with MEDEP Guidance for Well and Boring Abandonment.[2]

[2] MEDEP Guidance for Well and Boring Abandonment, January 7, 2009, pp. 5 and 6.

APPENDIX A

ENVIRONMENTAL MONITORING PLAN REVISION TABLE

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JUNIPER RIDGE LANDFILL FACILITY
ENVIRONMENTAL MONITORING PLAN REVISION TABLE
(UPDATED AUGUST 2025)

Date	EMP Revision	Location of Change in EMP	Page Location
November 2025	Updated EMP to account for Phase II Expansion of JRL.	Changes made throughout the entire EMP document	
April 2024	Combined EMP for Cells 1-10 and the EMP for expansion Cells 11-17 into a single document. Abandoned MW-302R as part of cell development and construction.	Changes made throughout the entire EMP document	
January 2023	Added pore-water location PWS-4 and surface water location SW-4 to the monitoring program.	Table 3-2	3-5
October 2022	Added Cell 15-17 wells to the monitoring program (MW-508, P-04-07A, P-04-07B, and OW-610A)	Tables 3-1 and 3-3	3-4 and 3-7
October 2020	Added Cell 12 wells to the monitoring program (MW-04-09A, MW-04-09B, MW-502). Former scale house and office building water supply wells abandoned during Cell 12 construction.	Tables 3-1 and 3-3	3-4 and 3-7
October 2018	Added Cell 11 wells to the monitoring program (MW-501, OW-601A, OW-601B, OW-603B, OW-604A, OW-06-03). MW-304A and MW11-207R abandoned during Cell 11 construction.	Tables 3-1 and 3-3	3-4 and 3-7
July 2016	MW-304A decommission.	Tables 3-1 and 3-3	3-4 and 3-7
April 2016	Landfill underdrain location -UD-9 added to monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7
April 2016	Casella office well and scale house well added to monitoring program to be sampled in spring only.	Tables 3-1 and 3-3	3-4 and 3-7
April 2016	Removed dissolved methane from PWS-1, PWS-3, PWS-3, and MW-223B.	Table 4-1	4-2
July 2015	Monitoring well P-04-02R installed (to replace P-04-02) and monitored.	Tables 3-1 and 3-3	3-4 and 3-7
April 2015	Removed tannin-lignins from monitoring program.	Table 4-1	4-2
April 2015	Removed nickel, cadmium, nitrate, bicarbonate, field alkalinity, and COD from monitoring program.	Table 4-1	4-2
April 2015	Added NO_2+NO_3, bicarbonate, and alkalinity to the monitoring program.	Table 4-1	4-2
April 2015	Added dissolved methane to PWS10-1, PWS10-2, and PWS10-3 to the monitoring program.	Table 4-1	4-2
October 2013	Monitoring well MW-216BR removed from program.	Tables 3-1 and 3-3	3-4 and 3-7
October 2013	Leak detection monitoring location LP-LD-1 removed from program.	Tables 3-1 and 3-3	3-4 and 3-7
July 2013	Monitoring wells MW-212 and P-04-02 removed from monitoring program.	Tables 3-1 and 3-3	3-4 and 3-7
July 2013	Monitoring location P-206A added to program.	Tables 3-1 and 3-3	3-4 and 3-7
July 2013	Frequency of MW-204, DP-4, and MW04-105 changed from tri-annual monitoring to field parameter only during the fall event.	Tables 3-1 and 3-3	3-4 and 3-7
July 2013	Surface water location SWDP-2 was removed from monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7
April 2013	Location SWDP-5 was added to monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7
January 2012	Landfill underdrain locations LF-UD-3A and B added to monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7
January 2012	Landfill underdrain locations LF-UD-5 and 6 added to monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7
November 2011	Landfill underdrain location LF-UD-7 added to monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7
February 2011	Landfill underdrain location LF-UD-6 added to monitoring program.	Tables 3-2 and 3-3	3-5 and 3-7

APPENDIX B

LEAK RESPONSE ACTION PLAN (NOVEMBER 2025)

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PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
LEAK RESPONSE ACTION PLAN
VOLUME IV

Prepared for

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November 2025

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SME
SEVEE & MAHER
ENGINEERS

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PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
LEAK RESPONSE ACTION PLAN
VOLUME I`

1.0 INTRODUCTION

NEWSME Landfill Operations, LLC (NEWSME), under contract with the Maine Bureau of General Services (BGS), operates the Juniper Ridge Landfill (JRL or landfill) in Old Town, Maine. NEWSME receives solid waste from private and public entities and places the waste into 22 continuous waste disposal cells with base areas ranging from approximately 6 to 17 acres. The cells are identified as Cells 1-22 and are located as shown on Figure 1. This document is the Leak Response Action Plan (LRAP or Plan) that will be followed for monitoring the performance of leak detection systems constructed at JRL for the landfill cells associated with the Phase I and Phase II Expansions. Table 1 lists the landfill cells by identification number and provides cell-specific information including year of construction, base size, and presence/absence of leak detection systems and underdrain systems. As of January 2025, Cells 17-22 were yet to be constructed but are treated as if in-place and functional for purposes of this Plan.

JRL has been designed, constructed, and is operated as a secure waste disposal facility. The groundwater beneath and adjacent to the landfill is separated from the waste by a protective liner system that prevents hydraulic barrier leachate movement to the environment. Each landfill cell includes a leachate collection system above the liner system that diverts leachate generated by the waste to a central storage tank for subsequent removal from the JRL site for treatment. Landfill Cells 1, 2, 3A, 3B, 4, 5, 6, 7, 8, 9, and 10 comprise the original landfill and Cells 11-17 comprise the Phase I expansion. The Phase II expansion, which is expected to be constructed beginning in 2027, will consist of Cells 18-22.

The liner system for Cell 1 consists of a 2-foot-thick layer of compacted till barrier soil (i.e., till) overlain by an 80-mil high-density polyethylene (HDPE) geomembrane. The liner for Cell 2 consists of a 2-foot-thick layer of compacted till overlain by a geosynthetic clay liner (GCL), and an 80-mil HDPE geomembrane. The liner system for Cells 3-10 consists of a 2-foot-thick layer of till barrier soil, a GCL, and an 80-mil HDPE geomembrane. The liner systems for Cells 1-10 are referred to as composite liner systems in that they feature two or more hydraulic barrier layers in direct contact with one another to limit leachate seepage into the environment.

Cells 11-17 were constructed with a primary composite liner system and an underlying secondary composite liner system (referred to as a double-composite liner system). For Cells 11-17, the primary composite liner system consists of a 1-foot-thick layer of clay barrier soil overlain by a GCL, which is overlain by an 80-mil HDPE geomembrane; the secondary composite liner system consists of 1 foot of clay barrier soil overlain by a 60-mil HDPE geomembrane. For Cells 11-17, the base of the primary composite liner system and the top of the secondary composite liner system are separated by a layer of drainage

sand and a layer of drainage geocomposite. The sand and drainage geocomposite serve as a leak detection system (LDS). The LDS for each cell is sloped to a drainage sump within that cell that collects any liquid draining from the sand. Liquid collected in the sump is removed by pumping, measured for volume, and is sampled for specific conductance on a bi-weekly basis (once every two weeks) during normal operations, as indicated in Section 4.1 of this Plan.

Cells 18-22 will use a primary liner system consisting of an 80-mil geomembrane underlain by a GCL, which is in turn underlain by a 1-foot layer of compacted clay. The secondary liner system for Cells 18-22 will consist of a 60-mil geomembrane underlain by 1-foot of compacted till in areas where the distance from the base grade to bedrock is greater than five feet and a 60-mil geomembrane with a GCL and two feet of compacted clay in areas where the distance from base grade to bedrock is less than five feet. An LDS consisting of a 12-inch-thick layer of drainage sand underlain by a drainage geocomposite will separate the primary and secondary liner systems. The leachate collection system (located on top of the primary liner system) consists of a drainage geocomposite with 12 inches of drainage overlying the drainage geocomposite.

Many of the individual cell liner systems at JRL include an underdrain layer beneath the lower-most liner system. The underdrain layer consists of a buildup of sand and gravel with embedded perforated piping that functions to intercept groundwater and allow it to drain below the overall liner system. Table 1 indicates the cells that were constructed with underdrain layers.

TABLE 1

CELL CONSTRUCTION INFORMATION

Cells	Size (acres)	Date of Construction	Leachate Collection (LC)	Liner System	Leak Detection (LD)	Underdrain	Active Years	Date of Closure	Final Cover	Permit Numbers
1	7.8	1996	Yes	Composite	No	Yes	1996 - Present	Active	Temporary Cover	S-020700-7A-A-N
2	6.7	2000	Yes	Composite	No	Yes	2000 - Present	Active	Temporary Cover	S-020700-WD-J-M
3A	4.1	2005	Yes	Composite	No	Yes	2005 - Present	Active	Temporary Cover	S-020700-WD-P-M
3B	6.1	2006	Yes	Composite	No	Yes	2006 - Present	Active	Temporary Cover	S-020700-WD-S-M
4	5.8	2008	Yes	Composite	No	Yes	2008 - Present	Active/Partial	Composite[1]	S-020700-WD-AB-M
5	7.7	2009	Yes	Composite	No	Yes	2009 - Present	Active/Partial	Composite[1]	S-020700-WD-AH-M
6	3.8	2010	Yes	Composite	No	Yes	2010 - Present	Active/Partial	Composite[1]	S-20700-WD-AO-M
7	6.6	2011	Yes	Composite	No	Yes	2011 - Present	Active	Temporary Cover	S-020700-WD-AT-M
8	7.5	2012	Yes	Composite	No	Yes	2012 - Present	Active/Partial	Composite[1]	S-020700-WD-AY-M
9	6.5	2015	Yes	Composite	No	Yes	2015 - Present	Active/Partial	Composite[1]	S-020700-WD-BD-C
10	5.4	2017	Yes	Composite	No	Yes	2017 - Present	Active/Partial	Composite[1]	S-020700-WD-BJ-C
11	9.3	2018	Yes	Double Composite[2]	Yes	No	2018 -Present	Active	Temporary Cover	S-020700-WD-BI-N
12	9.6	2020	Yes	Double Composite[2]	Yes	Yes	2020 - Present	Active	Temporary Cover	S-020700-WD-CB-C
13	7.3	2021	Yes	Double Composite	Yes	Yes	2021 - Present	Active	Temporary Cover	S-020700-WD-CL-C
14	7.6	2022	Yes	Double Composite	Yes	Yes	2022 - Present	Active	Temporary Cover	S-020700-WD-CP-C
15	6.7	2023	Yes	Double Composite[2]	Yes	No	2023 - Present	Active	Temporary Cover	S-020700-WD-CR-C
16	6.2	2024	Yes	Double Composite[2]	Yes	No	2025 - Present	Active	N/A	S-020700-WD-CU-C
17	6.8	2026 (Anticipated)	Yes	Double Composite[2]	Yes	No				
18	15.3	2027 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
19	11.2	2029 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
20	16.9	2031 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
21	7.6	2033 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
22	5.6	2035 (Anticipated)	Yes	Double Composite	Yes	Yes			NA	

Notes:

[1] A portion of these cells received final composite cover in 2023 and 2024.

[2] A portion of these cells have an augmented secondary clay barrier soil layer (i.e. an additional 12-inch layer of compacted barrier soil beneath the secondary barrier soil layer).

GCL - Geosynthetic Clay Liner.

Intermediate Cover - Either an 18-inch layer of compacted low permeability soil or a 40-mil geomembrane cover.

Final Composite Cover - (top to waste) 18-inch vegetative cover soil layer, drainage geocomposite, geomembrane, GCL, 12-inch layer of barrier soil, 6-inch drainage layer (CDD fines or drainage sand).

Composite Liner - (top to bottom) 12-inch layer of LC sand, drainage geocomposite, geomembrane, GCL, 12-inch compacted barrier soil.

Double Composite Liner - (top to bottom) 12-inch layer of LC sand, drainage geocomposite, geomembrane, GCL, 12-inch compacted barrier soil, 12-inch layer LD sand, drainage geocomposite, geomembrane, GCL, 12-inch compacted barrier soil, (12-inch augmented barrier soil layer as needed).

NOTE:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BORINGS AND TEST PIT LOCATIONS FIELD SURVEYED BY SEVEE & MAHER ENGINEERS, INC. OF CUMBERLAND, MAINE.
4. BASE GRADES REPRESENT THE PREPARED SUBGRADE SURFACE BELOW THE UNDERDRAIN OR AUGMENTED LAYER. IN LOCATIONS THAT ARE NOT IDENTIFIED TO RECEIVE UNDERDRAIN OR AUGMENTED LINER, ONE FOOT OF NATIVE SOILS SHALL REMAIN IN PLACE ABOVE THE BASE GRADE. THE BASE LINER SYSTEM SHALL BE CONSTRUCTED ON THE RESULTING GRADE ABOVE THE UNDERDRAIN, AUGMENTED LINER, OR ONE FOOT OF NATIVE SOILS.
5. CELL 17 BASE GRADES REPRESENT PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE LINER SYSTEM WITHIN THE LANDFILL LINER LIMITS. CELL 17 BASE GRADE SHOWN OUTSIDE THE LANDFILL REPRESENT THE PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE ACCESS ROAD. CELL 17 HAS NOT BEEN CONSTRUCTED AT THE TIME THESE DRAWINGS WERE PREPARED.
6. SPECIAL FLOOD HAZARD ZONE PER FEMA PANEL 23019C1926D.

EXISTING SCALE HOUSE INFRASTRUCTURE AREA
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT (TYP)
BEDROCK OUTCROP (TYP)
END OF EXISTING LEACHATE FORCE MAIN
DETENTION POND 11R
PROPOSED SOLID WASTE LIMIT (TYP)
EXISTING OVERHEAD ELECTRIC LINE (TYP)
PERMITTED TILL BORROW PIT
PERMITTED WOOD WASTE HANDLING AREA
PROPERTY LINE (TYP)
PROPOSED WOOD STORAGE LOT
SUBSURFACE WASTEWATER DISPOSAL FIELD
APPROXIMATE LOCATION OF PROPOSED PFAS TREATMENT PLANT
DETENTION POND 9
MAINTENANCE BUILDINGS
RNG TREATMENT FACILITY POND
LFG TREATMENT FACILITY
WOOD STORAGE FACILITY 2 ACRE
WATER SUPPLY WELL
GRAVEL UTILITY ACCESS ROADS (TYP)
VERNAL POOL (TYP)
LFG KNOCKOUT STRUCTURE (TYP)
CELL 12 PUMP STATION
PRIMARY ACCESS ROAD (TYP)
CELL 14 PUMP STATION
CELL 13 PUMP STATION
FORCE MAIN VAULT (TYP)
CATCH BASIN AND CULVERT (TYP)
DETENTION POND 10
1 ACRE
RENEWABLE NATURAL GAS (RNG) FACILITY
LFG FLARE LOCATION
LIMIT OF BRI WETLANDS DELINEATION (TYP) SEE NOTE 2
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT (TYP)
DETENTION POND 14
RIPRAP DITCH (TYP)
DETENTION POND 11
RIPRAP CB INLET
CELL 11 PUMP STATION
LEACHATE STORAGE TANK PUMP STATION
LEACHATE STORAGE TANK 1
PROPOSED LEACHATE STORAGE TANK 2
PROPOSED LEACHATE STORAGE TANK
PROPOSED GUARDRAIL (TYP)
24" LFG HEADER (TYP)
LFG KNOCKOUT STRUCTURE (TYP)
UTILITY MANHOLE (TYP)
DETENTION POND 6
CELL 8 PUMP STATION
EXISTING CELLS
LINER LIMIT (TYP)
(2) 24" HDPE CULVERTS
PERMANENT LANDFILL ACCESS ROAD
100-YEAR FLOOD ZONE SPECIAL FLOOD HAZARD AREA (TYP) SEE NOTE 6
DETENTION POND 13
CELL 20 PUMP STATION
PROPOSED LANDFILL BASE GRADES (TYP) SEE NOTE 4
PROPOSED CELL LIMITS (TYP)
LIMIT OF PHASE I EXPANSION LINER (TYP)
25-FOOT SETBACK FROM WOSS
FENCE (TYP)
8"x12" LEACHATE FORCEMAIN
PROPERTY LINE (TYP)
20'-WIDE GRAVEL ACCESS ROAD (TYP)
ELECTRICAL MANHOLE (TYP)
DEED RESTRICTION (TYP)
DETENTION POND 2
UNDERGROUND ELECTRIC (TYP)
CELL 19 PUMP STATION
CELL 16 PUMP STATION
EXISTING EMH (TYP)
DETENTION POND 1A
LFG KNOCKOUT STRUCTURE AND VALVES
DETENTION POND 12
CELL 17 BASE GRADES (SEE NOTE 5)
EXISTING FORCEMAIN VAULT (TYP)
CELL 15 PUMP STATION
CELL 5 PUMP STATION
CELL 4 PUMP STATION
RIPRAP DITCH (TYP)
EXISTING 24" DIA LANDFILL GAS PIPE
8" GRAVITY SEWER IS ABANDONED
25-FOOT STREAM SETBACK
WATER LOADING RACK
DETENTION POND 1

200 0 400 FEET

DWG: BASE LMN: SITE-DEV-FIG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

FIGURE 1
SITE DEVELOPMENT PLAN
PHASE II EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

I:\Nserver\cts\Casella\OldTown\Landfill\Expansion\Phase II Expansion\Acad\Plans\BASE.dwg, B_FIG 1, 11/6/2025 12:25:40 PM, sjm

2.0 OVERVIEW OF WASTE CONTAINMENTS AND LDS FLOWS

2.1 Waste Containments

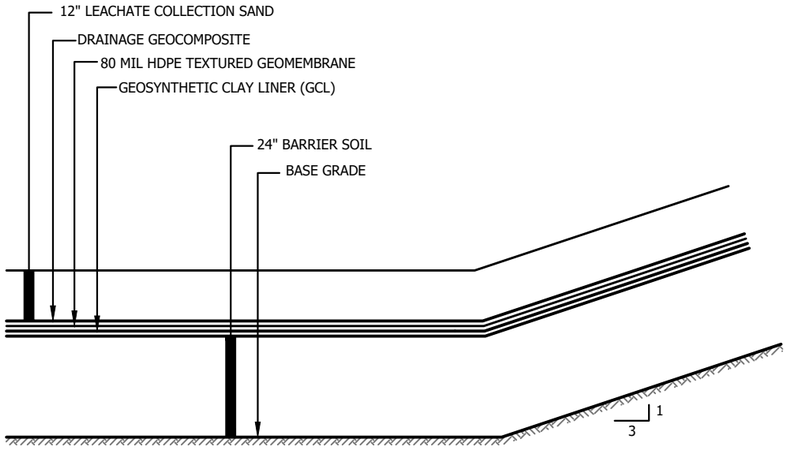
The waste containments (i.e., cells) at JRL consist of contiguous land areas separated by earthen berms such that water is laterally confined to the limits of each bermed area. The bermed areas are lined with either a composite liner system or a double-composite liner system (see Figure 2 for liner system cross-section). Table 1 indicates the type of liner system used for each cell and Figure 1 shows the location of the cells in relation to the overall landfill area. Cells constructed with double-composite liner systems include a leak detection system (LDS). The base of each LDS is purposely graded (i.e., sloped) to a low spot (i.e., sump) where liquid will accumulate. The primary purpose of the LDS is to identify and evaluate leakage from the landfill through the primary liner system. Each LDS sump is fitted with tubing that connects to a pumping station where the liquid volume removed from the LDS can be measured and sampled for analysis. Liquids are pumped from the sump(s) based on a continuous reading liquid level transducer located in the sump. When the liquid level in the sump reaches an established set high-point, the pump is actuated, and the liquid is removed from the sump until a set low-point is reached. Liquid removed from the LDS is passed through a flow/volume totalizer meter. The meter is connected to JRL's on-site SCADA system that records the volume of liquid removed and the pumping time interval. In this way, the flow rate into the LDS is calculated as the volume of liquid removed. The leakage per unit area of liner for a particular cell is calculated as the flow rate divided by the cell base area. Typical units for flow rate and flow per unit area used in this Plan are gallons per day (gpd) and gallons per acre per day (gpad). The calculated flow rate into an LDS assumes that leakage into the LDS is steady and constant, which may be misleading. Uncertainty in the LDS flow rate measurements is reduced by conducting frequent (e.g., bi-weekly) measurements of LDS indicator parameters and comparing it to leachate from the same cell. Uncertainty can be further reduced by analyzing the chemical composition of the LDS liquid for and comparing it to the chemical composition of the leachate from the same cell. LDS chemical analysis is described in the JRL Environmental Monitoring Plan (SME, 2025). The LDS pumping stations are located along the landfill perimeter as shown on Figure 3. Figure 3 also shows the approximate location of the sumps for the cells constructed with an LDS.

Many of the JRL cells include an underdrain layer that allows groundwater below the cell to drain. The underdrains consist of a 12-inch-thick layer of sand with embedded drainage piping. The piping discharges by gravity to daylight along the landfill's perimeter. The piping discharge points are accessible for sampling which is done monthly when flows are present. Most of the existing underdrain discharge points at JRL are dry.

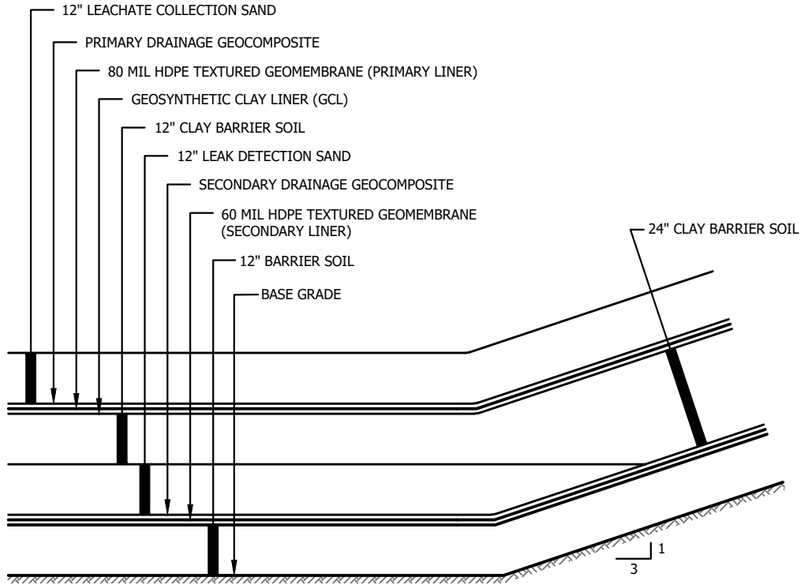
2.2 LDS Flows

Ideally, leakage through the primary liner system into the LDS will be small due to the multiple barrier layers forming the primary liner system and the minimal leachate head in the overlying leachate collection system. Leakage through the primary liner system, can be associated to the transmissivity of imperfections (i.e., pinholes) in the geomembrane and hydraulic conductivity of the GCL and soil barrier layers.

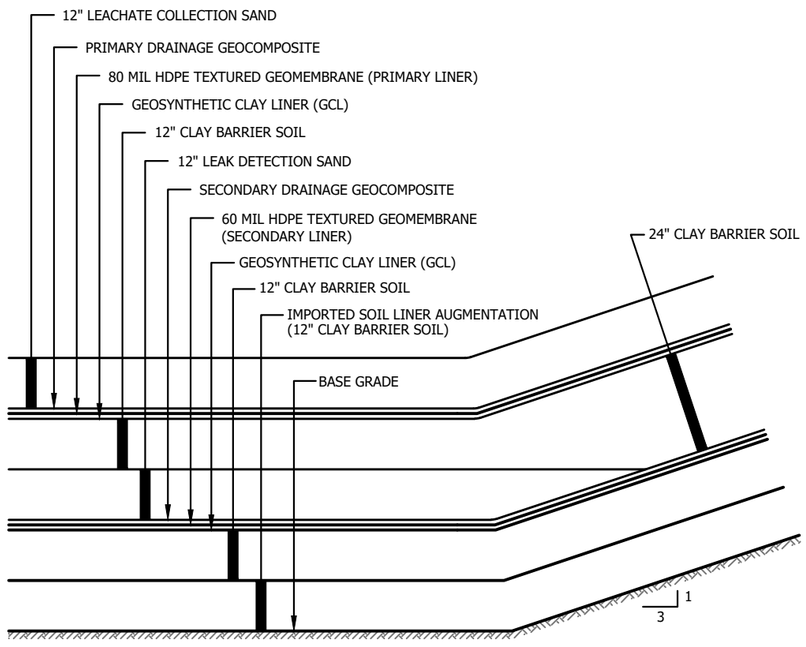
Estimates of leakage have been both theoretically and empirically evaluated by Bonaparte, Giroud, and Gross (1989); Laine (1991); and Wilson-Fahmy and Koerner (1995). Wilson-Fahmy and Koerner (1995) used a finite difference model to predict leakage rates through holes in a geomembrane when used in conjunction with a GCL. The Wilson-Fahmy and Korner findings demonstrated that the transmissivity of the geomembrane/GCL interface was a major factor in controlling the volume of leakage through a hole of given size in a geomembrane. The findings showed that for a geomembrane with a 10-mm-diameter hole overlying a GCL the calculated flow through the geomembrane ranged from $2x10^{-3}$ to $1.32x10^{-4}$ gpd, assuming the geomembrane and GCL transmissivity values were in the range of $6x10^{-12}$ m^2/sec to $2x10^{-10}$ m^2/sec, respectively. Accordingly, due to the very small flow rate associated with small imperfections in a geomembrane, if noticeable volumes of liquid are removed from an LDS leakage, then it is reasonable to expect that some larger imperfection in, or damage to, the geomembrane has occurred.



CELLS 1-10 BASE LINER SYSTEM
NTS



CELLS 11-22 BASE LINER SYSTEM
NTS



AUGMENTED LINER SYSTEM
NTS

FIGURE 2
LINER SYSTEMS
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: OM-DETAILS LMN: OM-DETAILS CTB: SME-STD.CTB JOB#: 240101 REV: 5/2/2025

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LEGEND

12	CELL IDENTIFICATION
	WETLAND DELINEATED
	PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATION
	PERMANENT LEAK DETECTION PUMP STATION
	COLLECTION SUMP
	PERMANENT LEAK DETECTION SAMPLE SUMP

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BASE GRADES IN PHASE II REPRESENT THE PREPARED SUBGRADE SURFACE BELOW THE UNDERDRAIN OR AUGMENTED LAYER. IN LOCATIONS THAT ARE NOT IDENTIFIED TO RECEIVE UNDERDRAIN OR AUGMENTED LINER, ONE FOOT OF NATIVE SOILS SHALL REMAIN IN PLACE ABOVE THE BASE GRADE. THE BASE LINER SYSTEM SHALL BE CONSTRUCTED ON THE RESULTING GRADE ABOVE THE UNDERDRAIN, AUGMENTED LINER, OR ONE FOOT OF NATIVE SOILS.
4. CELL 17 BASE GRADES REPRESENT PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE LINER SYSTEM WITHIN THE LANDFILL LINER LIMITS. CELL 17 BASE GRADE SHOWN OUTSIDE THE LANDFILL REPRESENT THE PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE ACCESS ROAD. CELL 17 HAS NOT BEEN CONSTRUCTED AT THE TIME THESE DRAWINGS WERE PREPARED

LIMIT OF BRI WETLANDS DELINEATION (TYP)
VERNAL POOL (TYP)
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT
CELL 21 LEAK DETECTION SAMPLE SUMP
LIMIT OF PHASE II AUGMENTED LINER (TYP)
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT
EXISTING OVERHEAD ELECTRIC LINE (TYP)
DETENTION POND 11R
CELL 18 PUMP STATION
CELL 14 PUMP STATION
CELL 13 PUMP STATION
CELL 12 PUMP STATION
CELL 11 PUMP STATION
PRIMARY ACCESS ROAD (TYP)
PERMITTED TILL BORROW PIT
DETENTION POND 14
DETENTION POND 13
CELL 14 LEAK DETECTION SAMPLE SUMP
CELL 22 LEAK DETECTION SAMPLE SUMP
CELL 20 PUMP STATION
LIMIT OF PHASE I EXPANSION LINER (TYP)
FENCE (TYP)
DEED RESTRICTION (TYP)
CELL 20 LEAK DETECTION SAMPLE SUMP
CELL 19 PUMP STATION
DETENTION POND 12
CELL 17 LEAK DETECTION SAMPLE SUMP
CELL 16 PUMP STATION
CELL 15 PUMP STATION

200 0 400 FEET

FIGURE 3
LEAK DETECTION PUMP STATION AND SUMPS LOCATIONS
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: OM-SITE-DEV LMN: PS-SUMP-LOCS CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 8/6/2025

\\Server\cfs\Casella\OldTownLandfillExpansion\Phase II Expansion\Acad\Figures\OM-SITE-DEV.dwg, B_FIG 3, 8/6/2025 11:33:15 AM, sjm

3.0 ACTION LEAKAGE RATES (ALR) AND LEAK DETECTION SYSTEM ACTION LEVELS (LDSAL)

3.1 Background

The term "Action Leakage Rate" (ALR) was defined by the United States Environmental Protection Agency (U.S.EPA) in proposed rules covering liner and leak detection for waste management units regulated under 40 CFR, 260, 264, 270, and 271. The term has been adopted for use with waste facilities that utilize double-liner systems where a leak detection layer exists between the primary and secondary liner. The U.S.EPA initially proposed an ALR range of 5 to 20 gpad for waste management units using a composite liner system (Federal Register, 1987). In a supplemental document supporting final rulemaking, U.S.EPA acknowledged that the 5 to 20 gpad range was not consistently achievable at many existing waste facilities that met the minimum U.S.EPA design standards for double-lined facilities (U.S.EPA, 1992). Consequently, U.S.EPA recommended an ALR of 100 gpad be used for lined landfill facilities based on (1) actual flow rate measurements in leak detection systems from several operating facilities that met U.S.EPA's minimum design requirements, and (2) a theoretical analysis of leakage into a leak detection system using a three-dimensional seepage model. In recommending the 100 gpad ALR be adopted, U.S.EPA stated "leakage rates above this value [i.e., over 100 gpad] often indicate major localized or general failure of the top liner system. Flow rates of 1,000 gpad or greater represent significant flow rates and potentially significant hole sizes [in a liner] that may be readily identified and repaired."

3.2 LDS Action Leakage Rate(s) for JRL

LDS ALRs for the Phase I Expansion were previously established based on the U.S.EPA guidance, and from available information for similar operating cells at a variety of other landfill facilities (SME, 2015). For the Phase I Expansion, two LDS ALRs were identified: ALR-I at 20 gpad and ALR-II at 100 gpad. The ALR units are defined as the volume of leakage into an LDS with respect to time, with the leakage rate units stated as gallons per acre of cell liner per day (i.e., gpad).

- ALR-I, set at 20 gpad is considered representative of a primary liner system functioning as intended. ALR-I was established and approved for the Phase I Expansion permitting process. For the Phase II Expansion at the JRL, the same ALR-1 will be used in that 20 gpad is considered a sufficiently low leakage rate to trigger an initial review of an LDS performance and increase monitoring of the LDS to form an opinion of the cause for the ALR-I exceedance. That process is outlined in more detail in Section 3.4.
- ALR-II, set at 100 gpad, is considered representative of a condition where the primary liner system has become damaged or compromised for some unknown post-construction reason and a steady flow of leachate is occurring into the LDS. ALR-II was established and approved for the Phase I Expansion. The Phase I and Phase II primary liner system have identical specifications, therefore, use of the 100 gpad is considered appropriate. In the event that an ALR-II is reached, the process is addressed in more detail in Section 3.4.

It is also worth noting that keeping the ALR values consistent for monitoring of the LDS(s) associated with the Phase I and Phase II Expansion waste cells will help minimize drawing conclusions relative to leakage and confusion with respect to implementation of mitigation measures when needed. Table 2 summarizes the ALR-I and ALR-II values for each of the cells in Phase I and Phase II.

TABLE 2

LEAK DETECTION SYSTEM ACTION LEAKAGE RATES

Cell No.	Primary Liner System Area (Acres)	LDS ALR-I (gallons per day) Based on 20 gpad ALR for Cell Area	LDS ALR-II (gallons per day) Based on 100 gpad ALR for Cell Area
11	9.3	186	930
12	9.6	192	960
13	7.2	144	720
14	7.6	266	760
15	6.7	208	670
16	6.2	124	620
17	6.8	211	680
18	15.3	1071	1530
19	11.2	224	1120
20	16.9	338	1690
21	7.6	152	760
22	5.6	112	560

3.3 Leak Detection System Response Actions

Leak detection system ALRs will be reviewed by NEWSME monthly. The ALR I will be exceeded when either of the following conditions are noted during monthly leachate evaluations:

- The calculated daily flow rate exceeds the ALR-I for all days during that month as indicated in Table 2; and
- The ALR-I is exceeded in any two-week period and recorded leachate-specific conductance during that two-week period exceeds 1,500 µS/cm (7% of mean historical leachate concentration).

If either of the above conditions are noted, NEWSME staff will report the exceedance in the JRL's monthly Status Report which is transmitted to the MEDEP and Town of Old Town. During reporting, both the conductivity of the leak detection system and the corresponding leachate collection system will be noted (results from bi-weekly sampling events). NEWSME will also contact the MEDEP to discuss appropriate response actions.

Exceedances of ALRs during the first six months of cell operation will be exempt if the conductivity is below 1,500 µS/cm. This will allow for precipitation water which entered the system during construction to be removed before ALR reporting begins.

In the event the LDS measurements exceed the ALR-II for a particular cell for any given month, NEWSME will notify MEDEP within 14 working days following review of monthly flow data. of the exceeding measurement(s) and NEWSME will schedule a meeting with MEDEP to discuss mitigation possibilities.

JRL's technical staff is responsible for collecting the monitoring data (i.e., outflows and specific conductance measurements) for the LDS(s) at the JRL, compiling and evaluating the data, and reporting the data to the MEDEP. In the event the data suggests a liner system has become compromised, a third-party technical consultant will be retained to evaluate the data, assist in determining if a leak has occurred, and make recommendations for appropriate response action(s).

3.4 Shared LDS Pump Stations

As indicated in Table 1, the LDS(s) for Cells 17, 20, 21, and 22 flow to LDS pump stations located in adjacent cells. Specifically, the LDS flows for the Phase II expansion and Cell 17 of the Phase I Expansion flow as follows:

- Cell 17 LDS flows to the Cell 16 LDS pump station;
- Southern portion of the Cell 20 LDS flows to the Cell 19 LDS pump station;
- Northern portion of the Cell 20 LDS flows to the Cell 20 LDS pump station;
- Cell 21 LDS flows to the Cell 18 LDS pump station; and
- Cell 22 LDS flows to the Cell 20 LDS pump station.

The LDS(s) for the Phase I Expansion Cells 11-15 have individual LDS pump stations that receive leakage from those specific cells; whereas, Cells 16 and 17 (of the Phase I Expansion) and all of the Phase II Expansion cells share LDS pump stations. The shared LDS pump stations address the various leachate collection system flow directions of the overlying leachate collection systems. For LDS(s) that share a pump station, the LDS piping, which transports LDS liquid (by gravity flow) to the sump of a shared pump station, first flows through a dedicated leak detection sample sump. The dedicated leak detection sample sump(s) allow discrete samples of individual LDS(s) to be obtained and measured for specific conductance and/or analyzed for the detection monitoring parameters. In this way, the LDS leakage liquid can also be compared to the leachate values for the various individual Cells. Figure 3 shows the locations of the leak detection sample sumps associated with the cells in the Phase I Expansion and Phase II Expansion.

4.0 MONITORING AND REPORTING PROCEDURES

4.1 Monitoring

To implement the LRAP, LDS leakage volume and leakage liquid specific conductance measurements will be obtained and evaluated on a bi-weekly basis (every other week). Leakage volumes will be obtained from a totalizing flow meter that is integral to the pump discharge line from each LDS pump.

The LDS liquid outflow rates from LDS(s) that share an LDS pump station, will be evaluated as a single entity once the second cell is constructed. For example, Cell 21 ALR–I of 152 gpad will be added to Cell 18 ALR–I of 1,071 gpad to create a combined ALR–I for Cells 18 and 21 combined at 1,223 gpad. Note that the specific conductance from each LDS is measured separately and, therefore, differentiation between LDS(s) of specific conductance for LDS(s) sharing a sump is not necessary.

4.2 Reporting Procedures

NEWSME will submit a summary of LDS flow and specific conductance data collected for that year with that year's JRL annual report. Recommended changes to the LRAP will be included in the annual report.

REFERENCES

Bonaparte, R., J.P. Giroud, and B.A. Gross, 1989. Rates of Leakage through Landfill Liners; Proceedings of Geosynthetics 1989,

Federal Register, 1987. Liners and Leak Detection Systems; 52 FR 20218, May 29, 1987.

Laine, D.L., 1991. Analysis of Pinhole Seam Leaks Located in Geomembrane Liners Using the Electrical Leak Location Method; Proceed. Geosynthetics 1991.

Sevee & Maher Engineers, Inc. (SME), 2024. Environmental Monitoring Plan, Juniper Ridge Landfill, Old Town, Maine.

SME, 2015. JRL Expansion Application, July 2015.

U.S. Environmental Protection Agency, January 1992 (U.S.EPA, 1992). Action Leakage Rates for Leak Detection Systems.

Wilson-Fahmy and Koerner, 1995. Leakage Rates through Holes in Geomembranes Overlying Geosynthetic Clay Liners; Proc. Geosynthetics, 1995.

APPENDIX C

LOW-FLOW GROUNDWATER SAMPLING ASSESSMENT AND SAMPLING PROCEDURE

SME
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ENGINEERS

LOW-FLOW GROUNDWATER SAMPLING ASSESSMENT AND SAMPLING PROCEDURE

OBJECTIVES

To perform both a low-flow sampling assessment and to sample each individual well at the same time the assessment is being performed.

SAMPLING PROCEDURES

The following sampling procedures should be followed for this Low Flow Assessment/ Sampling Event:

1. Obtain static water level.
2. Begin pumping the well at a flow rate of 200 ml/min. In the event the well drawdown is equal or greater than 1 foot during a five minute period, the flow rate will be reduced to 100 ml/min.
3. During the first ten minutes of pumping, the water level measurements should be taken at two minute intervals. A set of field parameters should be taken at the five and ten minute marks.
4. Both field parameters and water level measurements will then be measured at five minute intervals. These five minute readings will continue until one of the four conditions described below are met. Once one of the following four conditions are met, a complete set of field measurements will be obtained (i.e., temperature, pH, specific conductance, dissolved oxygen, and turbidity) prior to filling the sample bottles. All samples will be obtained through the peristaltic pump. None of the samples will be filtered. Once sampling is complete, obtain a bottom depth from the well (annual requirement) and lock the well.

Condition 1

Both field parameters and water levels stabilize within 30 minutes. The stabilization criteria is listed below.

Complete stabilization will be verified by three successive field parameter and water level measurements at 3-minute intervals, which meet the following criteria::

pH:	± 0.1 standard pH unit with respect to previous pH measurement
Specific conductance:	± 5% of previous measurement
Turbidity:	± 10% of previous measurement when turbidity is above 10 nephelometer turbidity units (NTU)
	± 1 NTU with respect to previous measurement when turbidity is below 10 NTU

Condition 2

A drawdown of three feet from the static water level has occurred.

Condition 3

A time period of 30 minutes has elapsed and the field parameter stabilization listed in Condition 1 has been met.

Condition 4

A time period of one hour has elapsed without field parameter or water level stabilization.

5. A note should be made that in rare cases, the water level in the well being sampled may drawdown and approach the tubing inlet. If the field sampler feels that he may not be able to obtain the appropriate sample volume from the well due to this condition, the sampler should use his best judgement and collect the water sample prior to meeting any of the four conditions listed above.

6. Sampling procedure should be documented and duplicated for all successive sampling rounds.

APPENDIX D

MONITORING WELL INSTALLATION DIAGRAMS

SME
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ENGINEERS

MW-204

GROUND SURFACE ELEVATION (FT) 1585 | DRILLER MAINE TEST BORINGS | LOGGED BY M W M

BOREHOLE DIAMETER (IN) 3.5 O.D. | ROCK CORE DIAMETER (IN) ——— | SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC (%)	% PASS #200	AFTER-BERG STABIL.	PERME-ABILITY (FT/DAY)
		TOPSOIL					
	1D		8				
	2D		36				
5	3D	BROWN SANDY GRAVELLY SILT TO SILTY SAND W/ TRACE OF COBBLES (BASAL TILL)	24				
	4D		72				
	5D		43	14			
10	6D		62				
	7D		—				
	8D		—	6	43		
15	9D	15'D					K_E = 0.029
	10D		116				
			80				
20	11D		74	10			
	12D	GRAY SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES (BASAL TILL)	45				
25							
	13D		64	11			
	14D		55				K_P = 0.025
30							
	15D		46	10			
	16D		117				
35	17D		76	9	59		
	18D		—				
40		19D	—				
	20D		—				
	21D		104	9			
45		45.0 B.O.E.*					

INSTRUMENT LOG / WATER LEVEL

- 0 – 11.0: CEMENT GROUT (TYP.)
- 11.0 – 18.8: SAND (TYP.); 5' 2" SCREEN; MW-204
- 18.8 – 21.0
- 21.0 – 27.5: BENTONITE (TYP.)
- 27.5 – 34.0: 5' 3/4" SCREEN P-204
- 34.0 – 35.0
- 35.0 – 45: CAVE (TYP.)
- 45: B.O.E.

NOTES * BOTTOM OF BORING 45.0'; DRIVE SHOE BROKE OFF

5/90

SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill	JOB NO. 9006	BORING NO. B206	
DATE COMPLETED 05 08 90	WELLS INSTALLED B206 A & B	DRILLING METHOD WASHED BORING	
GROUND SURFACE ELEVATION (FT) 201.5	DRILLER MANN TEST BORINGS	LOGGED BY KPJ	
BOREHOLE DIAMETER (IN) 0-13' 4.5 O.D. 13-70.5 3.5" O.D.	ROCK CORE DIAMETER (IN.) 2.0 I.D.	SHEET 1 OF 2	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC (%)	Pc (TSF)	ATTERBERG LIMITS	SECONDARY STRUCTURE	INSTRUMENT LOG	WATER LEVEL	DEPTH (FT)
		0.5 TOPSOIL								
	1D		11						Bentonite Pellets (Typ)	
	2D	Brown Sandy Gravelly Silt-Clay w/ Cobbles (Basal Till)	69						4.0	
5	3D		122							5
	4D		145							
	5D		160							
	6D		180	10			K_H = 0.00024		Sand (Typ)	
10	7D	Brownish Gray Sandy Gravelly Silt-Clay Trace of Cobbles (Basal Till)	167	11		LL=22 PI=6	K_V = 0.00028			10
	8D		133							
	9D		106							
15	10D		114	11	20				17.5	15
	11D		—	11	57				20.0	
20	12D	22.5	137		30					20
	13D	Gray Sandy Gravelly Silt-Clay w/ Cobbles (Basal Till)	212		62					
	14D		100	8	59					25
25	15D				50					
		Brown Silty Gravelly Sand Trace of Cobbles (Washed Till)								
	16D		—							
30	17D	32.6	130						34.0	30
	18D	Brown Gravelly Sand, Some Silt Trace of Cobbles w/ Silty Sand Layers	190		12				35.0	
35	19D		195		23					35
	20D		113	22	10		K_R = 0.59		Grout (Typ)	
	21D	41.5	122		10					
40	22D	Brown Very Silty Gravelly Sand Has Till-Like Appearance	99	17	10					40
	23D		111	17	9					
	24D		106	18	10				46.5	
45	25D	49.0	96		8					45
	26D	Black to Gray Silty Sand	110		12		$K_F \geq 9.0$			
50									5' 3/4" Slotted PVC Screen	
	27D	59.0	110	21	14				54.7	
	28D	Brown Silty	—		67					
55	29D	Brown Silty Gravelly Sand	200		26				55	55
	30D		136	8	9				57	
60	31D	(Washed Till)	237		11					60
									Continued From Pg 2	

NOTES

Revision as per letter correspond

SEVEE & MAHER ENGINEERS

5/90

PROJECT Lines Old Town (Goodell	JOB NO. 3006	BORING NO. B206	
DATE COMPLETED 05.08.90	WELLS INSTALLED P206 A & B	DRILLING METHOD Mobile B-61	
GROUND SURFACE ELEVATION (FT) 201.5	DRILLER MAINE TEST DRILLING	LOGGED BY KPN	
BOREHOLE DIAMETER (IN) 0-13' ± 8" OD; 13'±-35' 5" OD	ROCK CORE DIAMETER (IN) 2.0 ID	SHEET 2 OF 2	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC(%)	% CLASS #200	ATTERBERG LIMIT	PERMEABILITY (FT/DAY)	INSTRUMENT LOG	WATER LEVEL	DEPTH (FT)
65	32D	Brown Gravelly Sand some Silt trace of cobbles w/ silty sand layers (WASHED TILL)	182	9	10				65	65
	33D		118		11				68	
70		699								70
	1-R	RQD=100% INTERBEDDED METAGRAYWACKE AND PHYLLITE (BEDROCK)								
75	2-R	RQD: 96%								75
80	3-R	RQD: 28%								80
85	4-R	RQD=68% ... many pegmatite veins					K_f = 0.027		82.5 P-206A 5' 3/4" screen	85
90	5-R	905 B.O.E.							90.5	90
95										95

NOTES

PROJECT West Old Town Landfill	JOB NO. 2006	BORING NO. B206A	
DATE COMPLETED 05.10.90	WELLS INSTALLED MW206 PZ06 C	DRILLING METHOD WASHED BORING	
GROUND SURFACE ELEVATION (FT) 201.2	DRILLER MAINE TEST BORINGS	LOGGED BY KPN	
BOREHOLE DIAMETER (IN) 4.5 O.D.	ROCK CORE DIAMETER (IN) ———	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC(%)	% PASS #200	ATTER-BERG LIMIT	PERME-ABILITY (FT/DAY)	INSTRUMENT LOG	WATER LEVEL	DEPTH (FT)
5		BROWN SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES (BASAL TILL)					K_F=.. 0.03			5
10		11.9								10
15		BROWNISH-GRAY SANDY GRAVELLY SILT-CLAY W/ COBBLES (BASAL TILL)					K_F= 0.00096			15
20		22.0 B.O.E								20
25										25

INSTRUMENT LOG: 3.0; PZ06 5' 1/4" SLOT; 11.0; 11.6 BENTONITE (TYP); 14.1; MW206 5' 2" SCREEN; SAND (TYP); 20.0; 20.6; 22.0

NOTES

SEVEE & MAHER ENGINEERS

5/90

PROJECT West Old Town Landfill	JOB NO. 9006	BORING NO. B223 A & MW
DATE COMPLETED 09.10.90	WELLS INSTALLED mw223A	DRILLING METHOD WASHED BORING
GROUND SURFACE ELEVATION (FT) 173.5	DRILLING CONTRACTOR Maine Test Boring, Inc	LOGGED BY KPN / MWM
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) 3 25/32" O.D.	SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC (%)	% PASS #200	ATTERBERG LIMIT	PERMEABILITY (FT/DAY)
		0.5 TOPSOIL					
	1D		44				
	2D		33				
	3D	BROWN SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES AND BOULDERS (GLACIAL TILL)	47				
5	4D		51				
	5D		56	10			
10	6D		124				
	7D		65				
	8D		—				
15	9D		71	12	59		
	10D	18.6	—				
20	1R	INTERBEDDED PHYLLITE AND METAGRAYWACKE (BEDROCK) RQD = 96%					
	2R						
25	3R	RQD = 66%					K_F = 0.77
30	4R	RQD = 56%					
		33.3					
35							

INSTRUMENT LOG

- BENTONITE (TYP) 3.0
- GROUT (TYP)
- 25.0
- MW-223A 5' SCREEN
- SAND (TYP) 33.0

NOTES

PROJECT WEST OLD BRIDGTON LANDFILL	JOB NO. 30006	BORING NO. B223B DGM	
DATE COMPLETED 03-11-90	WELLS INSTALLED MW-223B	DRILLING METHOD WASHED BORING	
GROUND SURFACE ELEVATION (FT) 173.5	DRILLING CONTRACTOR MAINE TEST BORINGS, INC	LOGGED BY MWM	
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN) N/A	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC (%)	PLASTIC LIMITS	ATTERBERG LIMITS	PERMEABILITY (FT/DAY)	INSTRUMENT LOG	DEPTH (FT)
0	SEE B223A FOR SOIL SAMPLES	0.5 TOPSOIL BROWN SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES AND BOULDERS (BASAL TILL)					K_F = 0.12	BENTONITE (TYP) 2.0 SAND (TYP) MW-223B 5' SCREEN 17.6	0 5 10 15 20
17.6		17.6 B.O.E							

NOTES

SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill | JOB NO. 3006 | BORING NO. B227

DATE COMPLETED 09.17.90 | WELLS INSTALLED MW-227 | DRILLING METHOD WASHED BORING

GROUND SURFACE ELEVATION (FT) 161.0 | DRILLING CONTRACTOR MAINE TEST BORING, INC. | LOGGED BY KAN

BOREHOLE DIAMETER (IN) 3.5" O.D. | ROCK CORE DIAMETER (IN) N/A | SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC (%)	% PASS #200	ATTER-BERG LIMIT	PERME-ABILITY (FT/DAY)	INSTRUMENT LOG	DEPTH (FT)
		0.2 TOPSOIL						Grout (typ)	
5	1D	Brown Very Silty Gravelly Sand Trace of Cobbles (Basal Till)	103						5
	2D		51						
10	3D		—	11				10.2 Sand/Lave	10
		13.0						13.4	
15	4D	Gray Sandy Gravelly Silt-Clay Trace of Cobbles (Basal Till)	116	11	67		K_F = 0.00046	MW-227 5' screen 2" ϕ Sand (typ)	15
	5D	22.0 B.O.E.	60	10				20.4 Bentonite 22.0 (typ)	20
									25

NOTES

SEVEE & MAHER ENGINEERS

PROJECT WEST OLD TOWN LANDFILL JOB NO. 90006 BORING NO. MW 301

DATE COMPLETED 07 02 96	DATE WELLS INSTALLED 07-02-96	DRILLING METHOD SPIN CASING
GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR Maine Test Boring, Inc	LOGGED BY T. Schaefer / KAN
BOREHOLE DIAMETER (IN) 4½"	ROCK CORE DIAMETER (IN) 3 15/16	SHEET 1 OF 4

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	INSTRUMENT LOG	DEPTH (FT)
0				
5	6	Mottled Brown Silt, Clay, and Gravel — Fill		
10	9	Olive Clayey Silt, Trace of Gravel	3.0	
15		Brown Sandy Gravelly Silt w/ cobbles	17.0 Bentonite Chips	
20	27		21.0	
25		Gray Sandy Gravelly Silt w/ cobbles		
30				
35				
40				
45				
50				
55				
60				

NOTES

SEVEE & MAHER ENGINEERS

PROJECT WEST OLD TOWN LANDFILL JOB NO. BORING NO. MW 301

DATE COMPLETED	DATE WELLS INSTALLED	DRILLING METHOD
GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR	LOGGED BY
BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN.)	SHEET 2 OF 4

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	ROD (%)	INSTRUMENT LOG	DEPTH (FT)
70		... BOULDERS		65 BENTONITE CHIPS (TYP)	
75				73	
80		81.3 BASAL TILL			
85	1R		92	BENTONITE GROUT (TYP)	
90	2R	BEDROCK	99		
95	3R		100		
100	4R		100		
105	5R		100		
110	6R		100		
115	7R		100		

NOTES

SEVEE & MAHER ENGINEERS

5/90

PROJECT WEST OLD TOWN LANDFILL JOB NO. BORING NO. MW 301

DATE COMPLETED	DATE WELLS INSTALLED	DRILLING METHOD
GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR	LOGGED BY
BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN)	SHEET 3 OF 4

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	RQD %	Kmax cm/sec			
125	8R		100				
	9R		100				
130	10R		100	7.0 x10⁻⁷ cm/sec (146.9-182.7 TEST INTERVAL)			
135	11R		100				
140	12R		100				
145	13R		100	6.8x10⁻⁷ cm/sec (146.9-182.7 TEST INTERVAL)			
150	14R		76				
155	15R		86	6.0 x10⁻⁷ cm/sec (151.7-182.7 TEST INTERVAL)			
160	16R		94				
165	17R		100				
170	18R		100	1.2x10⁻⁶ cm/sec (TEST INTERVAL 161.5-182.7)			
175	19R		86				
180							

INSTRUMENT LOG

155.0
"00" SAND (TYP)
157.5
"0" SAND (TYP)
2" ϕ SCH 40 PVC SLOTTED NO 10 SLOT L=20 FT

DEPTH (FT) 160

NOTES

5/90

SEVEE & MAHER ENGINEERS

PROJECT WEST OLD TOWN LANDFILL JOB NO. BORING NO. MW 301

DATE COMPLETED	DATE WELLS INSTALLED	DRILLING METHOD
GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR	LOGGED BY
BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN.)	SHEET 4 OF 4

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	Rad Ck				INSTRUMENT LOG	DEPTH (FT)
185	20R	1810 B.O.E.	94					

NOTES

SEVEE & MAHER ENGINEERS

9/90

PROJECT: CASELLA - JRL DETENTION POND #5		JOB NO.: 07086	BORING NO.: B-302R
DATE STARTED: 10/01/07	DATE FINISHED: 10/01/07	DRILLING METHOD: DRIVE & WASH	
GROUND SURFACE ELEVATION (FT): 204.49	DRILLING CONTRACTOR: MTB	LOGGED BY: EJL	
BOREHOLE DIA. (IN): 41/4 in.	ROCK CORE DIA. (IN): 2 1/2	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (ft.)	RQD %	WELL LOG	DEPTH (FT)
		0.4 Dark brown silty SAND with organics				1 cuttings sand b-chips 9.4 bentonite chips 12.9 filter sand 19.5 schedule 40 #10 slot well screen L=10 ft. 29.5	
5		Brown silty c-f SAND, trace gravel, dense					5
	1D	(basil till)	136	2			
10	1R	Refusal at 7.7 ft. Drive casing to 7.4 ft. Wash to 8.0 ft. and begin coring		3.9	100		10
15	2R			5.0	88		15
		Interbedded PHYLLITE and Metagray WACKE					
20	3R			5.0	92		20
25	4R			5.0	94		25
30	5R	(bedrock)		3.0	100		30
		29.9 BOTTOM OF EXPLORATION					
35							35
40							40
45							45
50							50
55							55
60							60

NOTES: Installed 2" PVC Piezometer with 10 ft. screened interval at 29.5 ft.
Elevation MW-302R = 206.86 TPVC
Wire line system used for rock coring (HQ)

Filter Sand
Bentonite Chips
Mixture of borehole cuttings, sand, and chips

MW12-303R

SME
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PROJECT
Replacement Well
CASELLA - Juniper Ridge Landfill
West Old Town, ME

REPORT OF BORING No. MW-303R
SHEET 1 OF 2
JOB No. 12064.00
CHKD. BY

Driller: MAINE TEST BORINGS
18 Mack Lane, Hermon, ME

INSPECTOR: Brian Johnson

BORING LOCATION N 477517.1 E 927635.5 Maine State Plane

GROUND SURFACE ELEVATION 206.1 feet DATUM (Site Datum)

DATE START 9/11/2012 DATE END 9/11/2012

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 In.

AUGER: NA

HAMMER: High-speed winch and safety hammer

CASING SIZE: 4-inch OTHER: NA

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME
9/19/2012		28.72 ft BTOC		

DEPTH	WELL DETAILS (See Below)	SAMPLE NO.	SAMPLE PEN./REC	SAMPLE DEPTH (Ft.)	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	SPT N Value	STRATUM DESCRIPTION
0						Surface has topsoil and grass.		
5		S-1	2.0/2.0	5-7	19/17/25/28	Brown Silt; little coarse sand to fine gravel; trace clay; subrounded to rounded.	42	
10		S-2	1.6/2.0	10-12	17/26/31/36	Simmilar to above.	57	BROWN SANDEY SILT WITH GRAVEL AND COBBLES (TILL)
						Encountered Cobble		
15		S-3	1.8/2.0	15-17	17/29/33/41	Brown; Silt; little clay; little to trace fine sand to fine gravel; rounded to subrounded.	62	
20		S-4	1.5/1.5	20-21.5	15/67/98	Brown; Silt, little clay; little fine sand to fine gravel; trace fine gravel; rounded to subrounded.	>100	
25		S-5	1.2/1.5	25-26.5	36/126/65	Gray, black and rust colored; Coarse to medium SAND; little to some fine gravel; trace to little silt; subangular to angular.	>100	GRAY SAND, GRAVEL AND SILT WITH COBBLES (TILL)
						Cobbles encountered.		
30		S-6	0.5/1.5	30-31.5	58/93/63	Rust colored, brown and gray; Sandy GRAVEL; little sand and silt; trace clay; angular.	>100	
						Cobbles encountered.		

PIEZOMETER DETAILS
Measuring Pt. from Grade
Flush-Mount
Solid Riser
Cave
Bentonite Seal
Sand Pack
Well Screen

GRANULAR SOILS

Blows/Ft	Rel. Density
0 - 4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
>50	Very Dense

COHESIVE SOILS

Blows/Ft	Rel. Density	Approx Su. (psf)
<2	Very Soft	0-250
2-4	Soft	250-500
4-8	Med. Stiff	500-1000
8-15	Stiff	1000-2000
15-30	Very Stiff	2000-4000
>30	Hard	>4000

MODIFIED BERMISTER SYSTEM

Descriptive Term	Portion of Total
Trace	0% - 10%
Little	10% - 20%
Some	20% - 35%
Adjective (e.g., clayey)	35% - 49%

Well Details
Screen: 40.4 to 30.4 ft bgs
Sand: 41.5 to 28.3 ft bgs
Chips: 28.3 to 19 and 11 to 1 ft bgs
Cuttings: 19 to 11 ft bgs
Stickup = 2.9 feet

NOTES: 1) This well was installed to replace MW-303, which was damaged in the summer of 2012.

BORING No. MW-303R

P:\Casella\OldTownLandfill\GeneralSiteInfo\SSI\Boring Log\2012\MW-303R.xls

MW12-303R

SME
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PROJECT
Replacement Well
CASELLA - Juniper Ridge Landfill
West Old Town, ME

REPORT OF BORING No. MW-303R
SHEET 2 OF 2
JOB No. 12064.00
CHKD. BY

Driller: MAINE TEST BORINGS
18 Mack Lane, Hermon, ME

INSPECTOR: Brian Johnson

BORING LOCATION See Page 1

GROUND SURFACE ELEVATION See Page 1

DATE START 9/11/2012 DATE END 9/11/2012

SAMPLER: UNLESS OTHERWISE NOTED, SAMPLER CONSISTS OF A 2" SPLIT SPOON DRIVEN USING A 140 lb. HAMMER FALLING 30 In.

AUGER NA

HAMMER:

CASING SIZE: OTHER:

GROUNDWATER READINGS

DATE	TIME	WATER	CASING	STABILIZATION TIME
See Pg 1				

DEPTH	WELL DETAILS (See Pg 1)	SAMPLE NO.	PEN./ REC	DEPTH (Ft.)	BLOWS/6"	SAMPLE DESCRIPTION	SPT N Value	STRATUM DESCRIPTION
32								
35		S-7	1.5/2.0	35-37	53/48/50/61	Mixed- Brown and Black; Medium SAND; SILT and Gravelly Zones;; angular.	98	BROWN AND BLACK (MIXED) SANDY SILTY GRAVEL (TILL)
40		S-8	0.8/1.1	40-41.1	16/100/50(0.1")	Brown Fine to Medium SAND.	NA	SAND
						Roller coned to 41.5 feet		INTERPRETED AS BEDROCK
45						BOTTOM OF EXPLORATION AT 41.5 feet BGS		
50								
55								
60								

PIEZOMETER DETAILS
Measuring Pt. from Grade
Flush-Mount
Solid Riser
Cave
Bentonite Seal
Sand Pack
Well Screen

GRANULAR SOILS

Blows/Ft	Rel. Density
0 - 4	Very Loose
4-10	Loose
10-30	Medium Dens
30-50	Dense
>50	Very Dense

COHESIVE SOILS

Blows/Ft	Rel. Density	Approx Su. (psf)
<2	Very Soft	0-250
2-4	Soft	250-500
4-8	Med. Stiff	500-1000
8-15	Stiff	1000-2000
15-30	Very Stiff	2000-4000
>30	Hard	>4000

MODIFIED BERMISTER SYSTEM

Descriptive Term	Portion of Total
Trace	0% - 10%
Little	10% - 20%
Some	20% - 35%
Adjective (e.g., clayey)	35% - 49%

Well Details
See Page 1

NOTES: 1) This well was installed to replace MW-303, which was damaged in the summer of 2012.

BORING No. MW-303R

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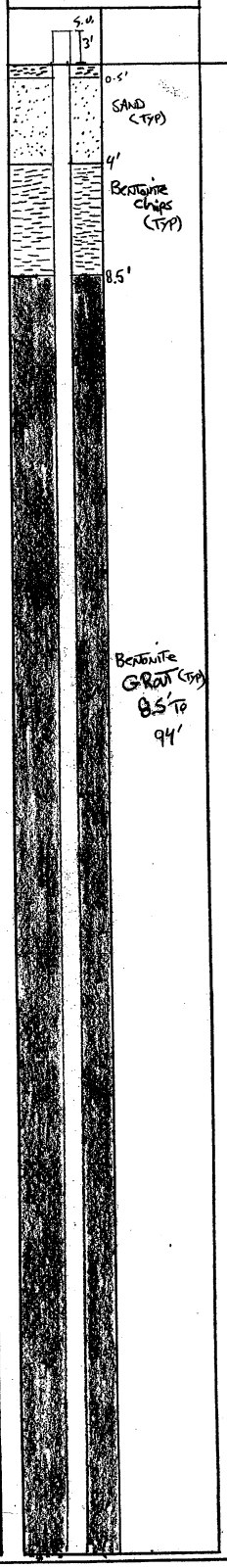
PROJECT West Old Town Land Fill Expansion	JOB NO. 03076.09	BORING NO. 401A	
DATE COMPLETED 7/13/04	DATE WELLS INSTALLED 7/12/04	DRILLING METHOD Wash Rotary	
GROUND SURFACE ELEVATION (FT) 153.8'	DRILLING CONTRACTOR MTTS	LOGGED BY T. Riley	
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) 2.5"	SHEET 1 OF 2	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD	% Passing #200 Screen	Water Content %
0		0-0.5' Topsoil				
	1D	Mottled silty very fine SAND w/ trace of clay	18			
3.5'						
5	2D	Brown silty fine to medium SAND w/ little gravel and trace of cobbles	25			
10'						
10	3D	Brown fine to medium SAND w/ little silt, course sand and gravel, trace of cobbles.	50-0.1'		27.7%	11.9%
3'		Becomes increased clay color silts.				
15.5'	4D	Clayey silt w/ very fine sand and some cobbles	115			
15'		Boulder				
21'						
25	5D	Gray clayie silty fine to medium SAND with little gravel and cobbles	68			
30	6D		56			
35'						
35	7D	Becomes increased clay content.	48			
40	8D		50-0.4'			
45	9D		50-0.2'			
50	10D		50-0.4'			
55	11D	56' Gray clayey silt, with some gravel and cobbles	50-0.3'		62.3%	11.1%
60		BASAL TILL				

INSTRUMENT LOG



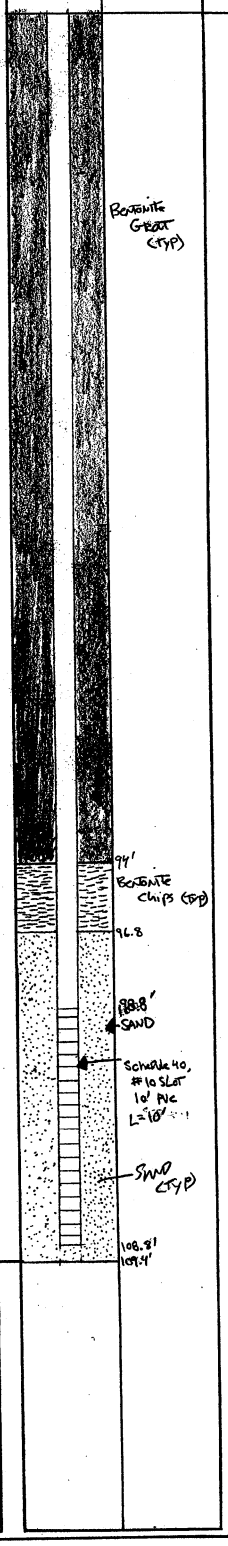
NOTES

SEVEE & MAHER ENGINEERS

PROJECT West old Town Expansion	JOB NO. 0307609	BORING NO. 401A
DATE COMPLETED 7/13/04	DATE WELLS INSTALLED 7/12/04	DRILLING METHOD Wash Rotary
GROUND SURFACE ELEVATION (FT) 153.8'	DRILLING CONTRACTOR MTB	LOGGED BY T. Riley
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) 2.5"	SHEET 2 OF 2

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD
60	12D	Gray clayey SILT w/ some gravel and cobbles.	56-0.1'	
65	65'		90-0.5'	
	13D			
	14D	Brown gravelly SILT, ... and trace cobbles.	NA	
70				
75	15D		NA 50-0.2'	
	16D			
		78.5' BASAL TILL		
80	Rock core	no sample recovered		
	1R			0%
85	2R			48%
90	3R			86%
95	4R			62%
100	5R			30%
105	6R			0%
	7R			50%
110		109.4' Bedrock B.O.E.		

INSTRUMENT LOG



NOTES

SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill Expansion	JOB NO. 03076.09	BORING NO. 401B
DATE COMPLETED 7/13/04	DATE WELLS INSTALLED 7/13/04	DRILLING METHOD Wash-Rotary
GROUND SURFACE ELEVATION (FT) 154.6'	DRILLING CONTRACTOR M.T.B	LOGGED BY T. Riley
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) N/A"	SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	INSTRUMENT LOG	DEPTH (FT)
0		See Log 401A for Stratigraphy.	S.U. 2' — Sand and Bentonite Chips (Typ) — 4' — Bentonite Chips (Typ) — 8' — 10' — Sand (Typ) — 2" Schedule 40 #10 Slot PVC L=10' — 20' 20.5'	0
5				5
10				10
15				15
20		20.5' B.O.E. Basal Till		20
25				25

NOTES

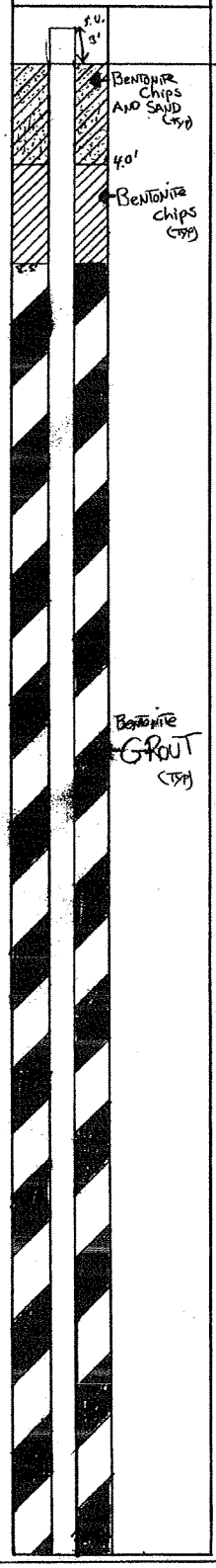
5/90

SEVEE & MAHER ENGINEERS

PROJECT	WEST OLDTOWN LANDFILL EXPANSION	JOB NO. 03676.09	BORING NO. 402A
DATE COMPLETED 6/29/04	DATE WELLS INSTALLED 6/28/04	DRILLING METHOD WASH-ROTARY	
GROUND SURFACE ELEVATION (FT) 149.5'	DRILLING CONTRACTOR MTB	LOGGED BY T. Riley / JES	
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) 2.5"	SHEET 1 OF 2	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD	% Passing #200 Screen	Water Content %
0	1D	0.3' TOP SOIL Mottled clayey SILTY FINE SAND	10			
5	2D	5.5' — — — — Gray SILTY SANDY CLAY (MARINE CLAY)	14		86.9%	21.9%
10	3D	11' MARINE SEDIMENTS.	50-0.2'			
15	4D	BROWN GRAVELY SANDY SILT WITH A TRACE of COBBLES. — — ...Becoming gray with a TRACE of clay.	50-0.1'			
20	5D	20' — — — —	53			
25	6D	Gray GRAVELY SANDY clayey SILT. TRACE of COBBLES.	50-0.1'			
30	7D		50-0.2'			
35	8D		78			
40	9D		92			
45	10D	45' — — — — ...Becoming, TRACE of clay (0.9' thick cobble)	60-0.2'			
50						
55	11D		106		65.5%	11.0%
60		BASAL TILL				

INSTRUMENT LOG

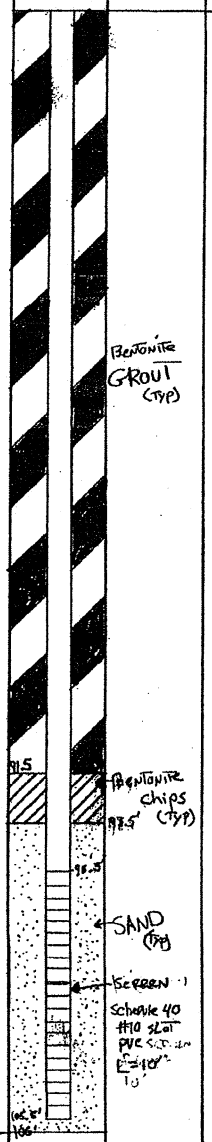


NOTES

PROJECT West Old Town Landfill Expansion	JOB NO. 03076.09	BORING NO. 402A	
DATE COMPLETED 6/29/04	DATE WELLS INSTALLED 6/29/04	DRILLING METHOD Wash - Rotary	
GROUND SURFACE ELEVATION (FT) 147.5'	DRILLING CONTRACTOR MTB	LOGGED BY TCR / JES	
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) 2.5"	SHEET 2 OF 2	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD	% < #200	K cm/sec
60	12D	From Above... Gray Gravelly Sandy Clayey Silt. Trace of Cobbles. Trace of Clay	50-0.1'			
65	13D		50-0.1'			
70	14D	(BASALTIC)	100-0.4'		59%	9.6×10^{-4}
		76.5 1' Thick Boulder				
75	15D	Basaltic Till	100-0.3'			
	3R			63%		
80	4R			76%		
85	5R			10%		
90	6R			60%		
95	7R			56%		
100	8R			80%		
105	9R			92%		
		106' Bedrock B.O.E.				
110						

INSTRUMENT LOG



DEPTH (FT) 60 65 70 75 80 85 90 95 100 105 110

NOTES

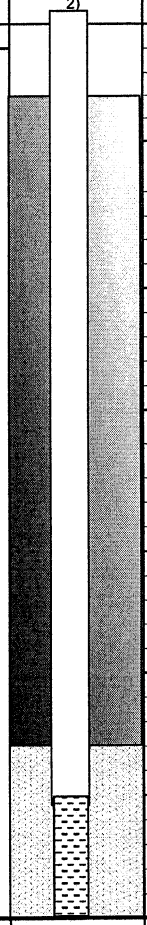
SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill Expansion	JOB NO. 03076.09	BORING NO. 402B
DATE COMPLETED 6/29/04	DATE WELLS INSTALLED 6/29/04	DRILLING METHOD Wash-Rotary
GROUND SURFACE ELEVATION (FT) 149.8'	DRILLING CONTRACTOR MTB	LOGGED BY T. Riley
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) 2.5"	SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	INSTRUMENT LOG	DEPTH (FT)
0		See LOG 402A for STRATIGRAPHY.	S.U. 3.1'	0
5			Bentonite Chips (TYP)	5
10			SAND (TYP)	10
15			SCREEN Schedule 40 #10 SLOT PVC L=10'	15
20		22.5' BASAL TILL	22 22.5'	20
25		B.O.E.		25

NOTES

PROJECT: A JRL Landfill, Old Town, ME		JOB NO.: 15093.00		**Boring ID: P-04-02R**
DATE STARTED: 07/09/2015	DATE FINISHED: 07/09/2015	DRILLING METHOD: 4-inch casing		
GROUND SURFACE ELEVATION:		DRILLING CONTRACTOR: NewEngland Boring Contractors		LOGGED BY: Tom S.
BOREHOLE DIA. (IN): 4-inches	ROCK CORE DIA. (IN): NA			SHEET 1 OF 1

DEPTH (FT)	DRILLING DESCRIPTION	Notes	Piezometer Detail (See Note 2)	DEPTH (FT)
	This is a replacement of P-04-02. See P-04-02 for soil conditions. P-04-02R was installed adjacent to P-04-02. P-04-02 was abandoned, see Note 1.			3 28 30 35
5 10 15 20 25 30 35				
	BOTTOM OF BORING AT 35 feet			
40 45				

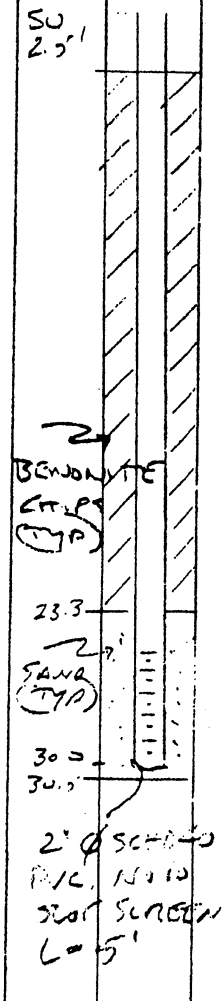
NOTES: Piezometer is located approximately 5 feet north of the original P-04-02 location.

2. Piezometer construction (completed 7/9/2015), bottom up: drilled to approximately 35 ft bgs; sand 35 to 28 ft bgs; bentonite chips 28 to 3 ft bgs; 2-inch diameter PVC screen 35 - 30 ft; 2-inch PVC riser pipe to 30 to 2.87 ft above ground surface. Water measured at 14.89 ft below the top of PVC on 7/15/2015.

PROJECT VERTICAL LANDFILL EXP	JOB NO. 03076	BORING NO. P04
DATE COMPLETED 03/02/04	DATE WELLS INSTALLED 03/02/04	DRILLING METHOD DRIVE & WASH
GROUND SURFACE ELEVATION (FT) SEE PLAN	DRILLING CONTRACTOR ME TEST	LOGGED BY KPN
BOREHOLE DIAMETER (IN) 4 1/2 OD	ROCK CORE DIAMETER (IN.) N/A	SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	PID ppm
0			
5		BROWN SILTY GRAVELLY SAND TRACE OF COBBLES	
10			
14.0			
15		... BECOMING GRAY AND FINER	
20			
25			
30			
30.5		B.O.E.	
35			

INSTRUMENT LOG



NOTES

VERY MINIMAL WASH WATER LOSS MUD TUB DOWN (1-3 GAL WASH AT TUB AT SLOT ESTIMATE 10-15 GAL. MOSTLY BOREHOLE DISPLACEMENT

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 1 OF 2 HOLE NO. P-04-11
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-B	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS
09/08/04 7:15am Water @ 1.2', Hole Depth=10.9';
09/09/04 7:30am Water @ 3.8', Hole depth= 39.5'

	CASING	SAMPLER	CORE BARREL	DATE 09/07/04 Start	DATE 09/09/04 Finish
TYPE	HW	SS	HQ		
SIZE I.D.	4"	1 3/8"	2.5"		
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"		SURFACE ELEVATION	

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
Auger											0.2	Topsoil
"	1D	2"	24"		2.0	1	3	2	2		2.0	Brown Fine Sandy Silt
"												
"	2D	2"	17"		3.4	6	27	50				
62												Brown Silty F/M Sand,
15	3D	2"	14"		5.2	28	70	50			5.2	w/Little Coarse Sand, w/Trace of Gravel
28												
34	4D	2"	17"		7.4	35	60	50				
25	5D	2"	2"		8.2	50						
52												
15	6D	2"	23"		10.9	38	40	52	50			Brown Silty F/M Sand,
18												w/Some Coarse Sand & Gravel,
23												w/Trace of Cobbles
27	7D	2"	24"		14.0	20	45	45	52		14.0	
30	D	2"	0"	0"	14.0	25						
29	8D	2"	10"		15.8	38	50					
40												
31												Brown Silty F/M Sand,
92	9D	2"	8"		18.7	30	50					w/Some Coarse Sand, Gravel & Cobbles,
54												w/Trace of Clay
25											20.5	
22	10D	2"	23"		21.9	24	47	58	50			Brown Silty F/M Sand,
25											22.0	w/Little Coarse Sand, Gravel & Cobbles
25	11D	2"	24"		24.0	20	40	53	46			
18												
17	12D	2"	24"		26.0	20	35	35	40			Brown Silty Fine Sand,
18												w/Fine Sandy Silt & F/M Sand Layers
29	13D	2"	22"		27.8	22	48	68	50		28.0	
78											29.0	Brown Silty Fine Sand w/Little Gravel
122	14D	2"	16"		29.3	38	42	50				
53												
45	15D	2"	12"		32.0	32	70					
48	D	2"	0"	0"	33.0	25						Brown Silty Gravelly Sand w/Some Cobbles
105												
190	16D	2"	6"		34.5	75					36.0	
68												
45	17D	2"	6"		36.5	80						Olive Silty Cobbley Gravelly Sand
165												
25												
58	18D	2"	6"		39.5	85						

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R =ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

REMARKS:
Washed ahead from 5.0' to 28.0' and from 30.0' to 50.0'

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 2 OF 2 HOLE NO. P-04-11
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-B	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS
09/08/04 7:15am Water @ 1.2', Hole Depth=10.9';
09/09/04 7:30am Water @ 3.8', Hole depth= 39.5'

	CASING	SAMPLER	CORE BARREL	DATE 09/07/04 Start	DATE 09/09/04 Finish
TYPE	HW	SS	HQ		
SIZE I.D.	4"	1 3/8"	2.5"		
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"		SURFACE ELEVATION	

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
35												
45	19D	2"	12"		41.5	40	78					
80												
60	20D	2"	6"		43.5	110						
80												
40	D	2"	24"	0"	45.2	100						Olive Silty Cobbley Gravelly Sand
58	22D	2"	7"		46.6	60	50					
80												
42	23D	2"	6"		48.5	85						
45												
	24D	2"	6"		50.5	90/					50.5	
												Bottom of Boring @ 50.5'
												Caved @ 50.0'
												Piezometer Installed @ 49.5'
												Piezometer Installed @ 10.0'

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R =ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

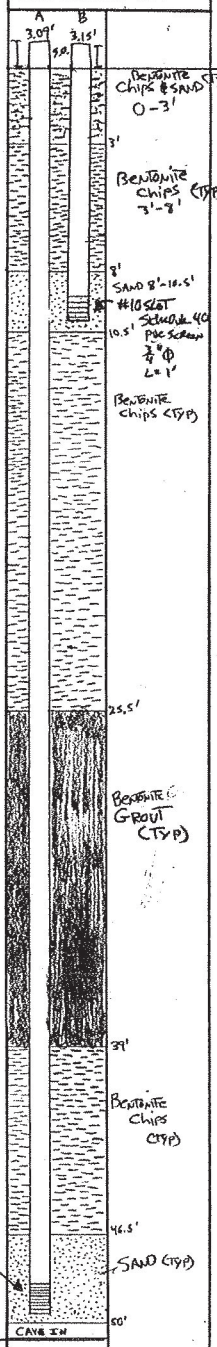
REMARKS:
Washed ahead from 5.0' to 28.0' and from 30.0' to 50.0'

HOLE NO. P-04-11

PROJECT West Old Town Landfill Expansion	JOB NO. 03076.09	BORING NO. P-04-11	Pezometers A+B
DATE COMPLETED 9/9/04	DATE WELLS INSTALLED 9/9/04	DRILLING METHOD Wash Rotary	
GROUND SURFACE ELEVATION (FT) 1040'	DRILLING CONTRACTOR M.T.B	LOGGED BY T. Riley / JCS	
BOREHOLE DIAMETER (IN) 4.5" O.D.	ROCK CORE DIAMETER (IN.) N/A	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	% Passing #200 Screen	Water Content %
0	1D	0-0.2' TOPSOIL Brown Sandy Silt	4		
2	2D	Brown Silt / Clay w/ Little Coarse Sand and a Trace of Gravel.	50/0.4'		
5	3D		60/0.2'	55.1%	13.2%
	4D		50/3.4'		
			50/0.2'		
10	6D		60/3.4'		
	7D		97		
15	8D		50/0.3'		
	9D	... becoming clayey	50/0.2'		
20	10D		50/0.4'		
22	11D	Brown Silt / Clay w/ Fine Sandy Silt and Fine to Medium Sand Layers.	99		
25	12D		75	50.3%	20.6%
	13D		50/0.3'		
29	14D		50/0.3'		
30	15D	Brown Silt gravely Sand with some Cobbles.	102		
	16D		75/0.5'		
35	17D		80/0.5'		
36	18D	Very Tough Olive Silty Cobbley Gravely Sand.	85/0.6'		
40	19D		118	32.9%	10.4%
	20D		110/0.5'		
45	21D		100/0.2'		
	22D		50/0.1'		
	23D		85/0.5'		
50	24D	50.5' B.O.E. (Basal Till)	90/0.5'		
55					
60					

INSTRUMENT LOG



#10 Slot Schedule 40 PVC Screen 3/4" ϕ L=1'

NOTES

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 1 OF 2 HOLE NO. P-04-09
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-A	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS

	CASING	SAMPLER	CORE BARREL	DATE 08/02/04 Start	DATE 08/03/04 Finish
TYPE	HW	SS	NQ2	SURFACE ELEVATIC	
SIZE I.D.	4"	1 3/8"	2"		
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"			

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
Auger											0.3	Topsoil
"	1D	2"	24"		2.0	1	2	2	10			
"												
"	2D	2"	24"		4.0	14	35	33	40			
25												
3	3D	2"	24"		6.0	12	17	23	28			
5												
9	4D	2"	17"		7.4	29	45	50				
17												
22	5D	2"	24"		10.0	21	30	51	48			Olive Silty Fine Sand, w/Little Coarse Sand & Gravel, w/Trace of Cobbles
2												
7	6D	2"	24"		12.0	17	34	47	40			
27												
52	7D	2"	24"		14.0	21	28	29	37			
135												
14	8D	2"	17"		15.4	25	33	50				
16												
14	9D	2"	20"		17.7	14	18	33	50		18.0	
20	10D	2"	11"		18.9	22	50				18.9	Gray Fine Sandy Silt w/Trace of Gravel
50											19.9	Boulder
Spun	11D	2"	10"		20.8	30	50					
Casing												
"	12D	2"	11"		22.9	35	50					Gray Fine Sandy Silt w/Some Gravel & Cobbles
"												
"											25.0	
"	13D	2"	8"		25.7	35	50					
"												
"												Gray Silty Very Fine Sand w/Little M/C Sand, Some Gravel & Cobbles
"	14D	2"	6"		28.5	125						
"												
"	D	2"	2"	0"	30.2	50						
"	15D	2"	7"		31.6	55	50				31.6	
	1R	3"	3.0'	3.0'	35.1	100%						Rock
	2R	3"	4.9'	4.9'	40.0	100%						

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R = ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

REMARKS:
4" Casing refusal @ 19.2', Boulder from 18.9' to 19.9', Went open hole to 25.0', some cave in, Changed over to 3" casing & spun 3" casing to 28.0', pulled 4" casing out

HOLE NO. P-04-09

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 2 OF 2 HOLE NO. P-04-09
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-A	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS

	CASING	SAMPLER	CORE BARREL	DATE 08/02/04 Start	DATE 08/03/04 Finish
TYPE	HW	SS	NQ2		
SIZE I.D.	4"	1 3/8"	2"		
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"			

SURFACE ELEVATION

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
	3R	3"	5.0'	5.0'	45.0	100%						Rock
	R	3"	2.0'	0.0'	47.0	0%	Very	Hard	Rock		47.0	
												Bottom of Boring @ 47.0'
												Piezometer Installed @ 39.0'
												Piezometer Installed @ 15.0'

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R = ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
XX DRILLER-VISUALLY
SOIL TECHNICIAN-VISUALLY
LABORATORY TESTS

REMARKS:
4" Casing refusal @ 19.2', Boulder from 18.9' to 19.9', Went open hole to 25.0', some cave in, Changed over to 3" casing & spun 3" casing to 28.0', pulled 4" casing out

HOLE NO. P-04-09

BEDROCK CORE LOG

PROJECT West old Town Landfill — BORING NO. P-04-09 — PAGE 1 OF 1

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" — ELEVATION (FT) INTERVAL _____ — DEPTH (FT) INTERVAL 31.6-45'

AZIMUTH — — INCLINATION 90° — LOGGED BY M. Scully (NAME) — 1/3/05 (DATE)

BREAKS IN CORE: MEASURED BREAKS OR PARTINGS ACROSS CORE; CHIPS, CAVITY, LOST CORE; MEASURED HIGH-ANGLE JOINT (JT = JOINT); D = CORE BROKEN BY DRILLER; M = CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING; SL - SLIGHT; MOD - MODERATE; SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
31		—	0	0		31.6': Top of Bedrock - rolleveone no recovery to 32'.
33	80° - minor FeOx " " " 80° " " "	75° -80°	94	70	R1	32'-40': Interbedded black sulfidic phyllite & med. gray siltstone/graywacke - same as P-04-10. - thin Qtz-Ca veinlets common.
	D 75° w. FeOx					
35	D w. minor FeOx 5°	70° -75°	100	82	R2	
37	80° - w FeOx + silt 70° D					
39	75° w. FeOx 75° w. FeOx					40': Rock changes to med. gray massive-bedded, fine grained meta-graywacke - as P-04-07
41		65- 75°	100	100	R3	
43	25° D - on Qtz vein					
	20° D					
45						45': End of Core: TD?

5/90

SEVEE & MAHER ENGINEERS

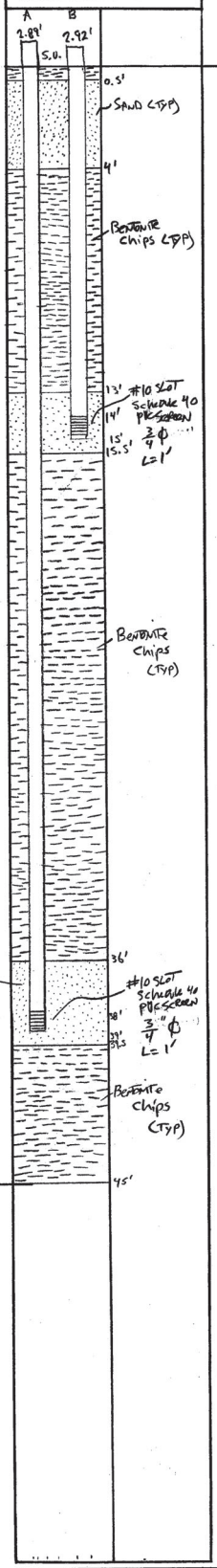
PROJECT	JOB NO.	BORING NO.
West Old Town Landfill Expansion	03076.09	P-04-09

DATE COMPLETED	DATE WELLS INSTALLED	DRILLING METHOD
8/8/04	8/5/04	Wash-Rotary

GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR	LOGGED BY
167.0'	M.T.B.	T. Riley

BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN.)	SHEET
4.5" O.D. / 3.5" O.D. in Rock.	2"	1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD	% Passing #200 Screen	Water Content %
0	1D	0-0.5' Topsoil	12			
	2D		73			
5	3D	Olive Silty Fine SAND with Little Gravel, Course Sand and A Trace of Cobbles.	51		46% 51.4%	11.4%
	4D		50-0.4'			
	5D		99			
10	6D		87			
	7D		66			
15	8D		50-0.4'			
	9D		50-0.2'			
	10D	19'	50-0.4'			
20		20' Boulder				
	11D	Gray Fine Sandy SILT with some Gravel and Cobbles	50-0.3'			
	12D		50-0.4'			
25	13D		50-0.2'			
	14D	Gray Silty Very Fine Sand w/ Little Medium To Coarse Sand and some gravel and Cobbles	125-0.5'		46.8%	13.0%
30	15D	31.6' BASAL TILL	55'-0.1'			
		Rotary Core, No Sample				
35	1R			70%		
	2R			82%		
40	3R			100%		
45		45' Bedrock B.O.E.				
50						
55						
60						



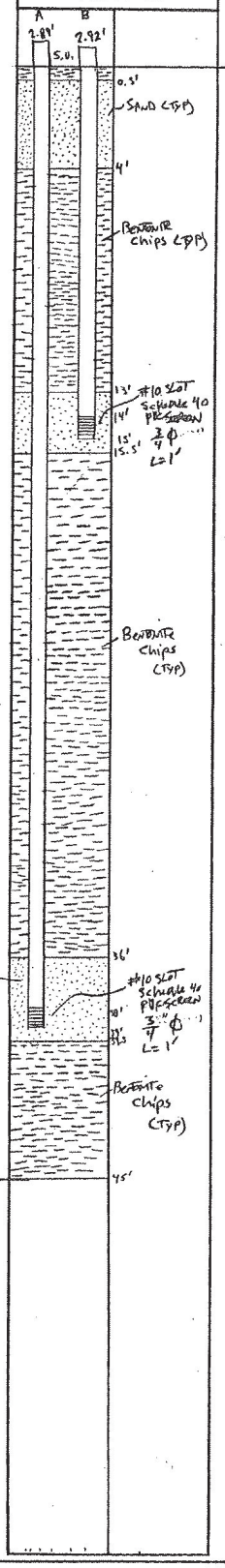
NOTES

SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill Expansion	JOB NO. 03076.09	BORING NO. P-04-09	
DATE COMPLETED 8/5/04	DATE WELLS INSTALLED 8/5/04	DRILLING METHOD Wash-Rotary	
GROUND SURFACE ELEVATION (FT) 167.0'	DRILLING CONTRACTOR M.T.B	LOGGED BY T. Riley / JES	
BOREHOLE DIAMETER (IN) 4.5" O.D. / 3.5" O.D. in Rock.	ROCK CORE DIAMETER (IN.) 2"	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD	% Passing #200 Screen	Water Content %
0	1D	0-0.3' Topsoil	12			
	2D		73			
5	3D	Olive Silty Fine Sand with Little Gravel, Coarse Sand and a Trace of Cobbles.	51		51.4%	11.4%
	4D		50/6.4'			
	5D		99			
10	6D		87			
	7D		66			
15	8D		50/0.4'			
	9D		50/0.2'			
	10D	19.9'	50/0.4'			
20		20' Boulder				
	11D		50/0.3'			
	12D	Gray Fine Sandy SILT / CLAY with some Gravel and Cobbles	50/0.4'			
25	13D		50/0.2'			
	14D	VERY Gray Silty Very Fine Sand w/ Little Medium to Coarse Sand and some Gravel and Cobbles	125/2.5'		46.9%	13.0%
30	15D	31.6' (BASAL TILL)	55/0.1'			
	1R	INTACT BEDDED PHYLLITE, SILTSTONE, METAGRAYWACKE		50%		
35	2R			50%		
40	3R	MISTA - GRAY WACKE		100%		
45		45' (Bedrock) B.O.E.				
50						
55						
60						

INSTRUMENT LOG



$K_f = 9.7 \times 10^{-6}$ cm/s

NOTES

PROJECT West Old Town Landfill	JOB NO. 04119.00	BORING NO. B-04-102	MW-04-102
DATE COMPLETED 12/29/04	DATE WELLS INSTALLED 12/29/04	DRILLING METHOD Auger + Rotary Wash	
GROUND SURFACE ELEVATION (FT) 167.68'	DRILLING CONTRACTOR M.T.B	LOGGED BY T. Riley	
BOREHOLE DIAMETER (IN) 4.5"	ROCK CORE DIAMETER (IN.) N/A	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	DRILLING METHOD	DRILLING No.	INSTRUMENT LOG	DEPTH (FT)
0					2.64' STICK UP	0
0.5'	1D 2.5'	Brown silty fine sand w/ little coarse sand, gravel & cobbles	Auger	25	Bentonite chips & sand	
5	2D 6.2'			57-50/0.2'	Bentonite chips	5
			Rotary wash		4'	
10'	3D 10.7'			55-50/0.2'	10' #16 slot 2" pvc screen L=5' sand 9' to 16'	11
13'		Grey fine sandy silt w/ coarse sand & gravel Trace of clay			15' 16'	
15	4D 16.2'			50-50/0.2'	Bentonite chips (typ)	17
19'		Grey clayie sandy silt w/ coarse sand + gravel	Open Hole	36		20
20'	5D 22.1'					
22.5		Grey fine sandy silt w/ coarse sand + gravel. Trace of clay				
23'	6D 25'			64	4.5"	25
25		Bor. 25'				

NOTES

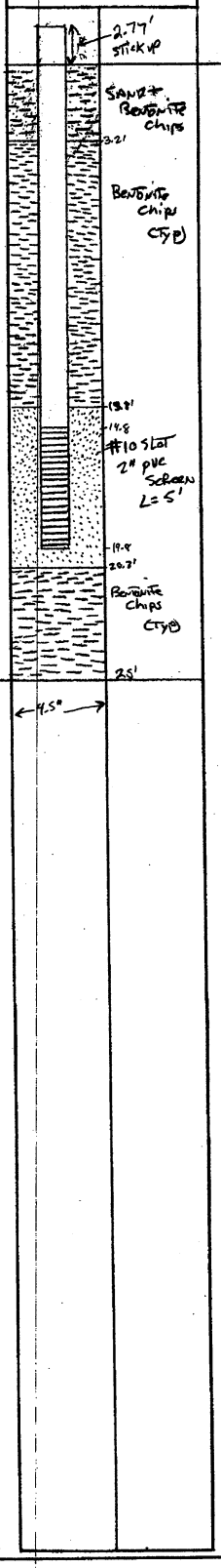
5/90

SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill	JOB NO. 04/17.00	BORING NO. B-04-105	MW-04-105
DATE COMPLETED 12/21/04	DATE WELLS INSTALLED 12/21/04	DRILLING METHOD Auger + Rotary wash	
GROUND SURFACE ELEVATION (FT) 162.86'	DRILLING CONTRACTOR M.T.B.	LOGGED BY T. Riley	
BOREHOLE DIAMETER (IN) 4.5"	ROCK CORE DIAMETER (IN.) N/A	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	Drilling Sequence
0	1D	Brown silty fine to medium sand w/ little course sand + gravel	5	Auger
4.5'				
5	2D	Mottled clayie sandy silt	20	Rotary wash
8'				
10	3D	Brown fine to medium sand w/ little silt, course sand, and gravel, trace of cobbles.	42	
14'				
15	4D	Becoming - and a trace of silt.	90	
20	5D	20.3'	105-0.5'	Open Hole
		Olive clayie silt w/ fine to medium sand and some course sand, gravel and a trace of cobbles.		
25	6D	25' B.O.E	98	

INSTRUMENT LOG



DEPTH (FT)

NOTES

SEVEE & MAHER ENGINEERS

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 1 OF 3 HOLE NO. P-04-07 ~~P-04-03~~
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-A	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS

	CASING	SAMPLER	CORE BARREL	DATE 07/22/04 Start	DATE 07/28/04 Finish
TYPE	HW	SS	NQ2		
SIZE I.D.	4"	1 3/8"	2"		
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"		SURFACE ELEVATION	

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
Auger											0.2	Topsoil
"	1D	2"	24"	22"	2.0	3	3	9	20		0.5	Gray Brown Fine Sandy Silt
"												Mottled Silty Fine Sand,
"	2D	2"	24"		4.0	28	46	32	32		3.0	w/Little Coarse Sand & Gravel
130	3D	2"	10"		4.8	24	50					Olive Silty Fine Sand
Spun											4.0	w/Little Coarse Sand, Gravel & Cobbles
Casing												Olive Silty Fine Sand,
											4.8	w/Little Coarse Sand & Gravel
	1R	3"	4.5'	4.5'	11.5	100%						
	2R	3"	5.0'	5.0'	16.5	100%						
	3R	3"	5.0'	5.0'	21.5	100%						Rock
	4R	3"	5.0'	5.0'	26.5	100%						
	5R	3"	5.0'	5.0'	31.5	100%						
	6R	3"	5.0'	5.0'	36.5	100%						

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R = ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

REMARKS:
Washed ahead from 4.0' to 7.0';
Artesian Pressure @ 25.0'

HOLE NO. P-04-03

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 2 OF 3 HOLE NO. P-04-07 ~~P-04-03~~
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-A	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS

	CASING	SAMPLER	CORE BARREL	DATE 07/22/04 Start	DATE 07/28/04 Finish
TYPE	HW	SS	NQ2	SURFACE ELEVATION	
SIZE I.D.	4"	1 3/8"	2"		
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"			

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
	7R	3"	5.0'	5.0'	41.5	100%						
	8R	3"	5.0'	4.0'	46.5	80.%						
	9R	3"	4.2'	4.7'	50.7	111.9%						
	10R	3"	4.3'	5.0'	55.0	116.3%						
	11R	3"	3.2'	3.2'	58.2	100%						Rock
	12R	3"	5.0'	5.0'	63.2	100%						
	13R	3"	5.0'	4.8'	68.2	96%						
	14R	3"	5.0'	5.2'	73.2	104%						
	15R	3"	4.5'	4.5'	77.7	100%						

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R = ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

REMARKS:
Washed ahead from 4.0' to 7.0';
Artesian Pressure @ 25.0'

HOLE NO. P-04-03

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 3 OF 3 HOLE NO. P-04-07 ~~P-04-03~~
DRILLER Tom Schaefer	PROJECT NAME West Old Town Landfill, 03076.09	LINE & STATION
M.T.B. JOB NUMBER 04-095-A	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BARREL	DATE 07/22/04 Start	DATE 07/28/04 Finish
	TYPE	HW	SS	NQ2	SURFACE ELEVATION	
	SIZE I.D.	4"	1 3/8"	2"		
	HAMMER WT.	300#	140#			
	HAMMER FALL	16"	30"			

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
	16R	3"	5.0'	5.0'	82.7	100%						
	17R	3"	5.0'	5.0'	87.7	100%						
	18R	3"	5.0'	4.8'	92.7	96%						Rock
	19R	3"	4.8'	5.0'	97.5	104%						
	20R	3"	5.0'	4.9'	102.5	98%						
	21R	3"	5.0'	4.8'	107.5	96%					107.5	
												Bottom of Boring @ 107.5' Piezometer Installed @ 83.0' Piezometer Installed @ 25.4'

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R = ROCK CORE
V = VANE TEST

SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

REMARKS:
Washed ahead from 4.0' to 7.0';
Artesian Pressure @ 25.0'

HOLE NO. P-04-03

BEDROCK CORE LOG

PROJECT West Old Town Land Fill — BORING NO. P-04-07 — PAGE 1 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" — ELEVATION (FT) INTERVAL _____ — DEPTH (FT) INTERVAL 4.8'-107.5'

AZIMUTH – — INCLINATION 90° — LOGGED BY M. Scully (NAME) — 12/30/04 (DATE)

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT = JOINT)
D CORE BROKEN BY DRILLER
M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED-WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	BREAKS IN CORE	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
4							4.8' - Top of Bedrock
6		Rollerconed No recovery	-	0	-	X	Rollerconed to 7.0' no recovery
8	2° D		88° -90°	100	100	R1	7'-25.5': Rock is interbedded dark gray to black sulfidic, carbonaceous shale/phyllite and light to medium gray siltstone. - weathered fracture surfaces have abundant FeOx staining. - Black phyllite beds occassionally have abundant disseminated pyrite. - Bedding is nearly vertical
10	D						
12			88° -90°	100	100	R2	
14	10° w. FeOx stain						
16	D No stain						
18	10° w. FeOx Stain 20° " "		80 -90°	100	88		17'-23': several thin white quartz-Ca veinlets. weathered fractures have small cavities due to dissolution of calcite.

BEDROCK CORE LOG

PROJECT West Old Town Land Fill BORING NO. P-04-07 PAGE 2 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) INTERVAL _____ DEPTH (FT) INTERVAL _____

AZIMUTH — INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE: MEASURED BREAKS OR PARTINGS ACROSS CORE; CHIPS, CAVITY, LOST CORE; MEASURED HIGH-ANGLE JOINT (JT = JOINT); D CORE BROKEN BY DRILLER; M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING; SL - SLIGHT; MOD - MODERATE; SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	BREAKS IN CORE / CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
18						
	35° D	80°			R3	
		-90°	100	88		
20	40° D					
	15° D					
22	50° - Stained					
	5° "					
	50° "					
→	20° - Rubbly core - stained	80°				23.3-23.7': Fracture zone - rubbly + FeOx - stained core.
24		-90°	96	50	R4	24.1-25.2': "
→	Rubbly core - stained w. FeOx					
	20° FeOx					
26	20° D					25.5' Rock shows abrupt change to medium gray, fine to medium grained meta-graywacke
	D					- rock is generally hard and competent
28						- whitish Qtz+Ca veins are common at various angles.
	40° D		100	100	R5	
30						
	10° D					
	D					
32						31.8-32.2': Qtz-Ca vein

BEDROCK CORE LOG

PROJECT West Old Town Landfill BORING NO. P-04-07 PAGE 3 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) INTERVAL _____ DEPTH (FT) INTERVAL _____

AZIMUTH — INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE

- MEASURED BREAKS OR PARTINGS ACROSS CORE
- CHIPS, CAVITY, LOST CORE
- MEASURED HIGH-ANGLE JOINT (JT = JOINT)
- D — CORE BROKEN BY DRILLER
- M — CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
32	D 20° stained	80° -90°	98	86	R6	
34	10° weathered Rubbly - weathered 70° - on contact					35.3': Thin layer of black phyllite at ~ 80°
36	D					
38		80° -90°	100	90	R7	37'-40': several thin, whitish Qtz-ca veins.
40	5° D D					
42	75° - FeOx stained	85° -90°	100	93	R8	
44	5° D D					
46	25° - FeOx stained					

BEDROCK CORE LOG

PROJECT West Old Town Landfill BORING NO. P-04-07 PAGE 4 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) _____ DEPTH (FT) _____
INTERVAL INTERVAL

AZIMUTH - INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE
- MEASURED BREAKS OR PARTINGS ACROSS CORE
- CHIPS, CAVITY, LOST CORE
- MEASURED HIGH-ANGLE JOINT (JT = JOINT)
- D CORE BROKEN BY DRILLER
- M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
46	15° D 5° 50° clean	85° -90°	100	87	R9	
48	5° D D - clean					
50		80° -90°	100	90	R10	
52	20° D 20° FeOx stain					
54	Rubbly - weathered to reddish-brown "					54.2' - 55.3': Rock is rubbly and bleached to a medium reddish brown.
56	10° 5° w. FeOx Stain	85° -90°	81	67	R11	
58	- Rubble - D					
60	22° 40° > w. FeOx Stain	85° -90°				

BEDROCK CORE LOG

PROJECT West Old Town Land Fill BORING NO. P-04-07 PAGE 5 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) INTERVAL _____ DEPTH (FT) INTERVAL _____

AZIMUTH - INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE
- MEASURED BREAKS OR PARTINGS ACROSS CORE
- CHIPS, CAVITY, LOST CORE
- MEASURED HIGH-ANGLE JOINT (JT = JOINT)
- D CORE BROKEN BY DRILLER
- M CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
60	0° 20° staining	85° -90°	96	82	R12	60'- Rock begins to show a fragmental texture + has some layers and lenses of black phyllite.
62	D					
64	70° FeOx stain.	80° -90°	98	84	R13	
66	5° - FeOx.					
68	D					
70	D 85° D	80° -90°	102	100	R14	
72	D 20° D					
74						

BEDROCK CORE LOG

PROJECT West Old Town Landfill BORING NO. P-04-07 PAGE 6 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) INTERVAL _____ DEPTH (FT) INTERVAL _____

AZIMUTH - INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE
- MEASURED BREAKS OR PARTINGS ACROSS CORE
- CHIPS, CAVITY, LOST CORE
- MEASURED HIGH-ANGLE JOINT (JT = JOINT)
- D: CORE BROKEN BY DRILLER
- M: CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
74						
	5° stained, Rubbly	85°				
76	70° FeOx	-90°	96	75	R15	
	10° FeOx					
	D					
	D					
78	15° D					
	50° stained					
	25° "					
80		85°	98	78	R16	
	5° FeOx	-90°				
82						
	D					
	5° D					
84						
	10° D					
		85°		96%		
86		-90°	100		R17	
88						

BEDROCK CORE LOG

PROJECT West Old Town Landfill BORING NO. P-04-07 PAGE 7 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) INTERVAL _____ DEPTH (FT) INTERVAL _____

AZIMUTH - INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE
- MEASURED BREAKS OR PARTINGS ACROSS CORE
- CHIPS, CAVITY, LOST CORE
- MEASURED HIGH-ANGLE JOINT (JT = JOINT)
- D: CORE BROKEN BY DRILLER
- M: CORE PARTED ALONG MICA CONCENTRATION

WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
88	20° D					
90		85°-90°	100	100	R18	
	30° D					
92	20° D					
	D					
94		85°-90°	100	100	R19	
96	D					
98		85°-90°	100	100	R20	
100	15° D					
102						

BEDROCK CORE LOG

PROJECT West Old Town Landfill BORING NO. P-04-07 PAGE 8 OF 8

JOB NO. _____ DRILLER _____

CORE DIAMETER (IN.) 2" ELEVATION (FT) INTERVAL _____ DEPTH (FT) INTERVAL _____

AZIMUTH - INCLINATION 90° LOGGED BY M. Scully (NAME) 12/30/04 (DATE)

BREAKS IN CORE

MEASURED BREAKS OR PARTINGS ACROSS CORE
CHIPS, CAVITY, LOST CORE
MEASURED HIGH-ANGLE JOINT (JT = JOINT)
D CORE BROKEN BY DRILLER
M CORE PARTED ALONG MICA CONCENTRATION

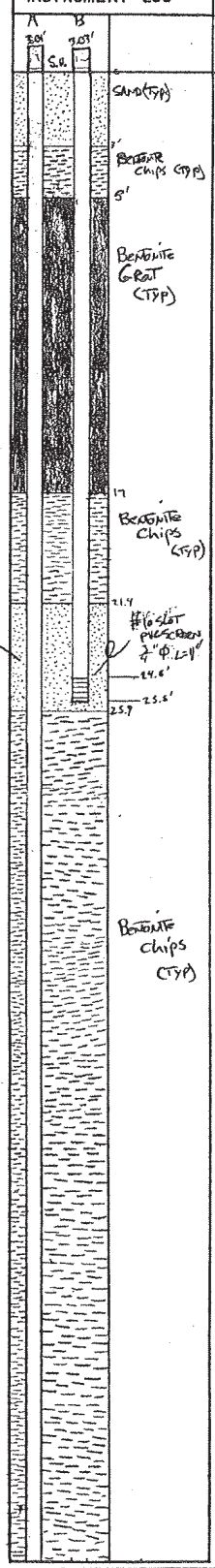
WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

DIP: DIP OF LAYERING, TEXTURE, FOLIATION, BEDDING, ETC.

DEPTH	CONDITION OF CORE, WX, ETC.	DIP	RECOVERY (%)	RQD (%)	GRAPHIC LOG	ROCK TYPE, GRAIN SIZE, COLOR, TEXTURE, ETC.
102	75° - on Qtz-Ca vein					
		85°				
104		90°	95	100	R21	
106	20° D					
						107.5': TD
108						

PROJECT West Old Town Landfill Extension	JOB NO. 03076.09	BORING NO. P-04-07	Piezometers A & B
DATE COMPLETED 7/29/04	DATE WELLS INSTALLED 7/28/04	DRILLING METHOD Wash-Rotary	
GROUND SURFACE ELEVATION (FT) 174.1'	DRILLING CONTRACTOR M.T.B	LOGGED BY T.Riley / JLS	
BOREHOLE DIAMETER (IN) 4.5" O.D / 3.5" OD in Rock	ROCK CORE DIAMETER (IN.) 2"		SHEET 1 OF 2

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	RQD	% Passing #200 Screen	Water Content %
0	1D	0-2' TOPSOIL Grey Brown Fine Sandy Silt 2' MOTTLED Silty Fine Sand with little coarse Sand and Gravel	29		60.2%	11.6%
	2D	MOTTLED BROWN SILT 4' ... increased Gravel CONTENT (BASAL TILL)	64			
5	3D	5' Silty Fine Sand w/ little coarse Sand + Gravel 4.8'	50/0.3'		60%	11.4%
		Roller Cone. - No Sample.				
10	1R			100%		
	2R	DARK GRAY PHYLLITE AND GRAY SILTSTONE ... WX		100%		
15	3R			88%		
20	4R	... FRACTURE ZONE 25.5'		20%		
25	5R	GRAY META-GRAYWACKE		100%		
30	6R			86%		
35	7R	... OCCASIONAL PHYLLITE LAYERS		90%		
40	8R			93%		
45	9R			87%		
50	10R			90%		
55	11R	... WX ZONE		67%		
60		(Bedrock)				



NOTES

PROJECT	JOB NO.	BORING NO.
West Old Town Landfill Extension	03076.09	P-04-07

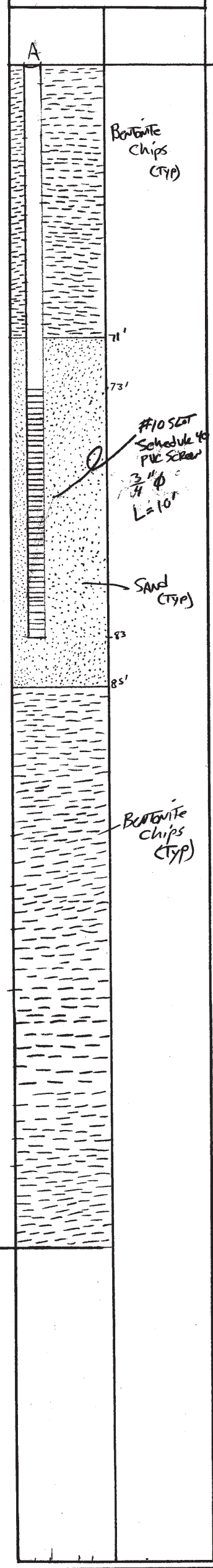
DATE COMPLETED	DATE WELLS INSTALLED	DRILLING METHOD
7/29/04	7/28/04	Wash-Retnry

GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR	LOGGED BY
174.1'	M.T.B	T. Riley

BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN.)	SHEET
4.5" O.D. / 3.5" O.D. in Rock	2"	2 OF 2

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	RQD
60			
	12R		82%
65	13R		84%
70	14R		100%
75	15R		75%
80	16R		78%
85	17R		96%
90	18R		100%
95	19R		100%
100	20R		100%
105	21R		100%
		107.5' Bedrock B.O.E.	

INSTRUMENT LOG



DEPTH (FT)

NOTES

SEVEE & MAHER ENGINEERS

PROJECT: JUNIPER RIDGE LANDFILL EXPANSION	JOB NO.: 18018.00		BORING NO.: MW-501
DATE STARTED: 3/27/2018	DATE FINISHED: 3/29/2018	DRILLING METHOD: DRIVE & WASH	
GROUND SURFACE ELEVATION (FT): 163.19	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY:NMT
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 2 (NQ)		SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
						A	
		Brown fine sandy SILT					
	1E		2,3,4,6	19			
5							5
	2E	Same as above	10,17,26,22	17			
		5-6.3					
		Becoming gray, silty sand					
10		with cobble					10
	3E	10-10.7	27,27,21,24	0			
15							15
	4E	Gray, silty sand with cobble	10,14,49,38	14.5			
20							20
	5E	Gray silty sand with cobble	10,13,17,19	12.5			
		Refusal at 22 ft.					
		Began rock coring at 22.8 ft.					
25							25
30							30
35							35
						-	
						-	
						-	
40						-	40
						-	
						-	
						-	
45		BOB at 45 ft.				-	

NOTES: MW-501 --10 ft slotted screen set from 45 to 35 ft. TPVC elevation = 166.19

Well is flowing on 4/3/2018.

PROJECT: JUNIPER RIDGE LANDFILL CELL 12	JOB NO.: 19063.00		BORING NO.: MW-502
DATE STARTED: 10/24/2019	DATE FINISHED: 10/25/2019	DRILLING METHOD: DRIVE & WASH	
GROUND SURFACE ELEVATION (FT):	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY:RNF
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)		SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
5				5
10				10
		Refusal at 14 ft.		
15	Run 1	14' - 19'		15
20	Run 2	19--24'		20
25	Run 3	24'-29'		25
30	Run 4	29'-34'		30
35	Run 5	34'-39'		35
40	Run 6	39'-44'		40
45	Run 7	44'-48'		
50		BOB at 48 ft.		

NOTES: 5 ft slotted screen set from 38 to 43 ft.

PROJECT: JUNIPER RIDGE LANDFILL	JOB NO.: 20750		BORING NO.: MW-503
DATE STARTED: 12/9/20	DATE FINISHED: 12/11/20	DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT): 160.7	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: RNF
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)		SHEET 1 OF 1

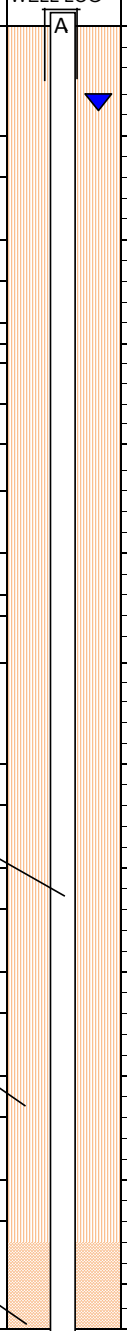
DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5	1A	Silty sand with some small stones, some moisture	9, 10, 18, 15	14			5
10	2A	Silty sand with some small stone	10, 22, 15, 17	15			10
15	3A	Silty sand with some small stone	12, 10, 11, 18	24			15
20	4A	Clay silt with some sand and small stones	26, 26, 28, 19	18			20
25	5A	Grey gravel	28, 32, 38, 55	12	1" Schedule 40 PVC Riser		25
30	6A	Clay silt with some sand and small stones	12, 14, 19, 24	14			30
35							35
40							40
45							45
50	Run 1	46 - 48'. Bedrock at 46'. RQD = 71%					50
55	Run 2	48' - 53'. RQD = 77%.			Bentonite Chips		55
60	Run 3	53' -58'. RQD = 87%			Bentonite Pellets		60
65	Run 4	58' - 63'. RQD = 48%			Top of Screen @ 60.0'	-- -- -- -- -- -- -- -- -- --	65
70	Run 5	63 - 65'. Bedrock at 46'; Saple did not meet soundess requirmetns and RQD not calcuated.			Sand		70
	Run 6	65' - 69'; RQD = 60%			1" Schedule 40 PVC		
	Run 4	69' -72'. RQD = 94%			Bottom of Screen @ 70.0' Bottom of Boring @ 72.0'		

NOTES: 1" PVC Well

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750			BORING NO.: MW-504
DATE STARTED: 11/9/20	DATE FINISHED: 11/12/20		DRILLING METHOD: Drive & Wash		
GROUND SURFACE ELEVATION (FT):	172.6	DRILLING CONTRACTOR: N.E.B.C.			LOGGED BY: BAM
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)				SHEET 1 OF 2

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)	
5					
	1A	Silty sand with some gravel (<0.5"), some moisture	7, 10, 17, 20	24	
10					
		Boulder			
	2A	Silt, sand, fragmented rock	25, 35, 59, 40	24	
15					
	3A		21, 20, 30, 30	24	
20					
	4A		14, 30, 47, 60	24	
25					
	5A	Brown Sand with silt, trace gravel	17, 37, 33, 45	18.5	
30	6A	Brown Sand with silt, some gravel	38, 70	9	
35					
	7A	Brown Sand with silt, some gravel (~1")	50, 52	9.5	
40					1" Schedule 40 PVC Riser
	8A	Brown Sand with silt, some gravel	27, 50 / 0.3	9	
45		Boulder			
	9A	Olive silt with sand, gravel, some clay	50 / 0.4	5	
50					Bentonite Chips
	10A	Olive silt with some sand, trace clay, trace gravel	50, 55 / 0.2	10	
55					
	11A	Olive silt with trace sand, clay at tip	65, 50 / 0.2	11.25	
60	Run 1	57' - 62'; Bedrock at 57'; RQD = 100%		60	Bentonite Pellets

WELL LOG



DEPTH (FT)
5
10
15
20
25
30
35
40
45
50
55
60

PROJECT: JUNIPER RIDGE LANDFILL			JOB NO.: 20750			BORING NO.: MW-504
DATE STARTED: 11/9/20		DATE FINISHED: 11/12/20			DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):		172.6	DRILLING CONTRACTOR: N.E.B.C.			LOGGED BY: BAM
BOREHOLE DIA. (IN): 4.5 (HW)		ROCK CORE DIA. (IN): 3.88 (HQ)				SHEET 1 OF 2
65	Run 2	62' - 67'; RQD = 100%.		60		65
70	Run 3	67' - 72'; RQD = 95%.		57	**Sand** Top of Screen @ 71.5'	70
75	Run 4	72' - 77'; RQD = 92%.		60	**1" Schedule 40 PVC Slotted Screen**	75
80	Run 5	77' - 82'; RQD = 100%.			Bottom of Screen @ 81.5'	80
85					Bottom of Boring @ 82.0'	85

NOTES: 1" PVC Well

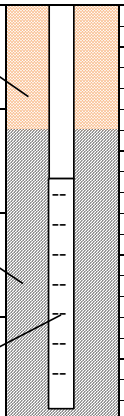
PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750			BORING NO.: MW-505
DATE STARTED: 11/18/20	DATE FINISHED:			DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):	197.0	DRILLING CONTRACTOR: N.E.B.C.			LOGGED BY: BAM
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)				SHEET 1 OF 2

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
						A	
5							5
	1A	Brown sand with silt and organics	20, 50 / 0.2	8.5			
10							10
	2A	Dark gray/olive sand with silt	22, 22, 23, 23	22.5			
15							15
	3A	Brown silty sand wth trace gravel	14, 18, 18, 34	18			
20							20
	4A	Brown silty sand with some gravel, trace clay	10, 11, 50 / 0.1	11			
25							25
	5A	Brown sand with some silt, trace gravel	12, 12, 15, 16	13			
30							30
	6A	Light brown silt with clay, trace gravel	19, 27, 50 / 0.4	11.5			
35					1" Schedule 40 PVC Riser		35
	7A	Olive silt with sand, some gravel	32, 57, 54, 50	16.5			
40							40
	8A	Brown silt with sand, some gravel	67, 50 / 0.3	8			
45							45
	9A	Brown silt with sand, some gravel	50 / 0.3	3			
50					Bentonite Chips		50
	10A	Gravel	50 / 0.2	3			
55							55
	11A	Gray silt with clay, trace gravel	75 / 0.4	7.5			
60	Run 1	58.5 - 63.5'. Bedrock 58.5 - 59.5', Silt 59.5' - 61', Bedrock 61'. Mechanical fracture at 61.75'		56.5			60

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: MW-505
DATE STARTED: 11/18/20	DATE FINISHED:		DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):	197.0	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: BAM
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)			SHEET 1 OF 2

65	Run 2	63.5 - 68.5'. Mechanical fracture at 65.5'		54	**Bentonite Pellets**	65
70	Run 3	68.5 - 73.5'		56.5	Top of Sand @ 69.5' Top of Screen @ 72.2'	70
75	Run 4	73.5 - 78.5'. Bedrock with natural fractures throughout		42	**Sand**	75
80	Run 5	78.5 - 83.0'. Bedrock with natural fractures throughout		60	**1" Schedule 40 PVC Slotted Screen** Bottom of Screen @ 82.2'	80
85					Bottom of Boring @ 82.5'	85

NOTES: 1" PVC Well



PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: MW-506
DATE STARTED: 12/3/20	DATE FINISHED: 12/7/20		DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):	195.8	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: RNF
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)			SHEET 1 OF 1

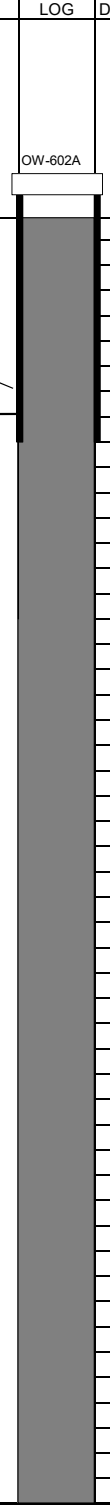
DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5						A	5
	1A	Silty sand with some small stones, some moisture	7, 8, 8, 13	24			
10							10
		Cobbles					
	2A	Silty sand with some small stone	14, 23, 24, 50 / 0.2	20			
15							15
	3A	Clay silt with some sand and small stones	10, 12, 12, 18	24			
20					1" Schedule 40 PVC Riser		20
	4A	Clay silt with some sand and small stones	6, 8, 8, 12	24			
25							25
	5A	Clay silt with some sand and small stones	5, 5, 7, 10	24			
30							30
	6A	Clay silt with some sand and small stones	7, 15, 20, 32	24			
35		Boulder					35
	7A	Clay silt with some sand and small stones	19, 25, 31, 60	24			
40		Cobbles					40
	8A	Clay silt with some sand and small stones	20, 32, 36, 45	24			
45					Bentonite Chips		45
	9A	Clay silt with some sand and small stones	14, 25, 50 / 0.4	17			
50	Run 1	47 - 52'. Bedrock at 47'. RQD = 92%			Top of Screen @ 50.0'		50
							CONFIRM TOP OF SAN
55	Run 2	52 -57'. RQD = 98%			1" Schedule 40 PVC Slotted Screen		55
					Sand		
60	Run 3	57 - 62'. RQD = 92%			Bottom of Screen @ 60.0'		60
					Bottom of Boring @ 62.0'		
65							65

NOTES: 1" PVC Well

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **MW-507**
DATE STARTED: 12/13/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 174.72 Site Datum	**TOP OF CASING ELEVATION (FT):** 176.83 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 1 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders
25		Dirty fracture zone 28' 30 GPM
		light brown soft phyllite
50		
75		Bedrock
100		Gray/White Phyllite
125		



NOTES:

Monitoring Point Elevation for MW-507= 176.83 ft (top of DI casing)

Water level measured on 1/2/2018: 3.8 ft-below monitoring point, 173.03 ft

Water level measured on 1/11/2018: 3.88 ft-below monitoring point, 172.95 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **MW-507**
DATE STARTED: 12/13/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 174.72 Site Datum	**TOP OF CASING ELEVATION (FT):** 176.83 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 2 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
125		Bedrock		125
150		Gray/White Phyllite		150
175				175
200				200
		Bottom of boring at 220.0 ft		
225				225
250				250

NOTES:

Monitoring Point Elevation for MW-507= 176.83 ft (top of DI casing)

Water level measured on 1/2/2018: 3.8 ft-below monitoring point, 173.03 ft

Water level measured on 1/11/2018: 3.88 ft-below monitoring point, 172.95 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

MAINE TEST BORINGS, INC. BREWER, MAINE 04412	CLIENT Sevee & Maher Engineering, Inc.	SHEET 1 OF 1 HOLE NO. MW06-01
DRILLER Darrel McKeen	PROJECT NAME Landfill	LINE & STATION
M.T.B. JOB NUMBER 06-044	LOCATION Old Town, ME	OFFSET

GROUND WATER OBSERVATIONS

	CASING	SAMPLER	CORE BARREL	DATE 2/28/06 Start	DATE 2/28/06 Finish
TYPE	HW	SS		SURFACE ELEVATIC	
SIZE I.D.	4"	1 3/8"			
HAMMER WT.	300#	140#			
HAMMER FALL	16"	30"			

CASING BLOWS PER FOOT	SAMPLE NO.	O.D.	PEN.	REC.	DEPTH @ BOT.	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	18-24	VANE READING	DEPTH	STRATUM DESCRIPTION
Auger											0.3	Topsoil
"											2.0	Brown Silty Sand w/Trace of Cobbles
"												
"	1D	2"	24"		4.0	4	5	8	18			Gray Brown Sandy Clayey Silt w/Trace of Gravel
"												
"	2D	2"	12"		6.0	45	50				6.0	
"											6.5	Cobble
"												
"												
"												
30												Gray Brown Sandy Clayey Silt w/Trace of Gravel
100	3D	2"	24"		12.0	24	27	63	30			
95											13.0	
80												
85												
90												
90	4D	2"	24"		17.0	13	11	11	12			Brown Gravelly Sand w/Trace of Silt
85												
80												
80												
	5D	2"	24"		22.0	19	17	16	17		22.0	
												Bottom of Boring @ 22.0'
												2" PVC Well Installed @ 20.0'

SAMPLES
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3½" SHELBY TUBE
R = ROCK CORE
V = VANE TEST

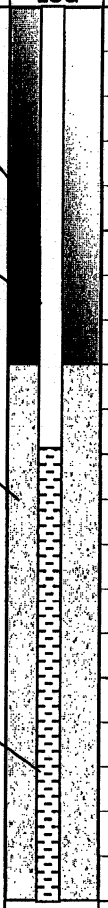
SOIL CLASSIFIED BY:
[XX] DRILLER-VISUALLY
[ ] SOIL TECHNICIAN-VISUALLY
[ ] LABORATORY TESTS

REMARKS:
Washed ahead from 10.0' to 15.0'

HOLE NO. MW06-01

PROJECT: WOTL Expansion		**JOB NO.:** 05055.00	**BORING NO.:** MW06-01A
DATE STARTED: 2-28-06	**DATE FINISHED:** 3-1-06	**DRILLING METHOD:** Auger (0-5 ft) Drive & Wash (5-20 ft)	
GROUND SURFACE ELEVATION (FT): 163.3	**DRILLING CONTRACTOR:** Maine Test Borings		**LOGGED BY:** JAB /JGS
BOREHOLE DIA. (IN): 4	**ROCK CORE DIA. (IN):** NA		**SHEET 1 OF 1**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	Blows/ .5'	Recovery (%)
		0.3 ft Topsoil		
	D-1	(BASAL TILL)	4-5-8-18	100
5				
	D-2		45-50	100
10				
	D-3		24-27-63-30	10
		Brown gravelly silt transitioning to silty gravel transitioning to silty sand with trace of cobble		
15				
	D-4		13-11-11-12	12
20				
	D-5	22 ft BOE (COBBLE ZONE)	15-11-16-17	90



DEPTH (FT)
5
10
15
20

NOTES:

Artesian flow through casing @ 15'

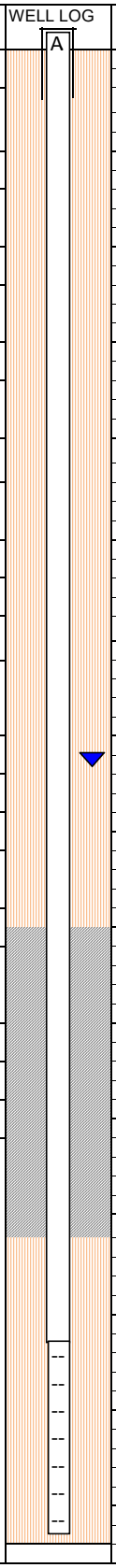
PROJECT JRL WQL REPLACEMENT	JOB NO.	BORING NO. MW09-901	
DATE COMPLETED 11-9-09	DATE WELLS INSTALLED 11-9-09	DRILLING METHOD	
GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR MTB	LOGGED BY PLM	
BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN.) N/A	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION		INSTRUMENT LOG	DEPTH (FT)
			AUGER TO 5.0'		
5		BROWN CLAY (SILTY) 0-10'		CHIPS TO SURFACE	5
10		BROWN TILL/ COBBLES 10-20'		TOP SAND 14' TOP SCREEN 15'	10
15					15
20		GREY TILL 20-25' NO SAND PRESENT		BOT SCREEN 20'	20
25		GREY TILL 25-31' NO SAND PRESENT			25
30			31'- SPOON REFUSAL		30
35					35

NOTES

PROJECT: JUNIPER RIDGE LANDFILL EXPANSION		JOB NO.: 18018.00		BORING NO.: OW-601 A
DATE STARTED: 3/15/2018	DATE FINISHED: 3/20/2018A		DRILLING METHOD: SPIN & WASH	
GROUND SURFACE ELEVATION (FT): 214.89		DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY:NMT
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 2 (NQ)			SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)
			35,28,18,19	15
	1A	Brown fine sandy SILT		
5				
	2A	5-6.2	33,73,50/.2	10
10				
	3A	Olive sandy SILT, little gravel	16,25,5,7	19.5
15				
	4A		22,25,27,36	5
20				
	5A	Gray sandy SILT, little gravel	12,30,50	21.5
25		20-21.5		
	6A	25-25.5	26	3
		Granular dense silty sand (till) w/ areas of cobble and sand		
30	7A		26,25,19,50	13
35				
	8A	35.5-36.4	44,50	5
40				
	9A	40-41.7	18,22,50	6
45				
	10A	Gray sandy SILT, with gravel	14,31,23,31	12.5
50				
	11A		25,31,38,19	16
55	12A		21,37,13,13	12.5
		Refusal at 56.8 ft.		
60		Begin Rock Coring at 56.8 ft.		
65				
70				
75				
		BOB at 76.6 ft.		



DEPTH (FT)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75

NOTES: OW-601A --10 ft slotted screen set from 76.6 to 66.6 ft. TPVC elevation = 217.94

Water level on 4/4/2018.

PROJECT: JUNIPER RIDGE LANDFILL EXPANSION		JOB NO.: 18018.00		BORING NO.: OW-601B
DATE STARTED: 3/29/2018	DATE FINISHED: 4/3/2018		DRILLING METHOD: SPIN & WASH	
GROUND SURFACE ELEVATION (FT): 214.5		DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY:NMT
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 2 (NQ)			SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)	WELL LOG	DEPTH (FT)
			35,28,18,19	15	B	
	1A	Brown fine sandy SILT				
5						5
	2A	5-6.2	33,73,50/.2	10		
10						10
	3A	Olive sandy SILT, little gravel	16,25,5,7	19.5		
15						15
	4A		22,25,27,36	5		
20						20
	5A	Gray sandy SILT, little gravel	12,30,50	21.5		
25		20-21.5				25
	6A	25-25.5 Granular dense silty sand (till) w/ areas of cobble and sand	26	3		
30	7A		26,25,19,50	13		30
35						35
	8A	35.5-36.4	44,50	5		
40			18,22,50	6		40
	9A	40-41.7				
45						45
	10A	Gray sandy SILT, with gravel	14,31,23,31	12.5		
50						50
	11A		25,31,38,19	16		
55	12A		21,37,13,13	12.5		55
60		Refusal at 56.8 ft. BOB at 56.2 ft.				60

NOTES: OW-601B --10 ft slotted screen set from 56.2 to 46.2 ft. TPVC elevation = 217.5

Water level on 4/4/2018.

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **OW-602A**
DATE STARTED: 12/11/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 211.69 Site Datum	**TOP OF CASING ELEVATION (FT):** 213.17 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 1 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
			OW-602A	
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders	6" Dia. Black Steel Casing	0
25		increasing hardness…		25
50		light brown soft phyllite		50
75		increasing hardness…		75
100		Bedrock		100
125		light brown soft phyllite at 105', 20 GPM		125

NOTES:

Monitoring Point Elevation for OW-602A= 213.17 ft (top of DI casing)

Water level measured on 1/2/2018: 34.40 ft-below monitoring point, 178.77 ft

Water level measured on 1/11/2018: 34.55 ft-below monitoring point, 178.62 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **OW-602A**
DATE STARTED: 12/11/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 211.69 Site Datum	**TOP OF CASING ELEVATION (FT):** 213.17 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 2 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
125				125
		Fracture at 140, 100 GPM		
		Bedrock		
150				150
		160'-220', Gray/white phyllite		
175				175
200				200
225				225
		Bottom of boring at 240.0 ft		
		After development flow = 100 gpm		
250				250

NOTES:

Monitoring Point Elevation for OW-602A= 213.17 ft (top of DI casing)

Water level measured on 1/2/2018: 34.40 ft-below monitoring point, 178.77 ft

Water level measured on 1/11/2018: 34.55 ft-below monitoring point, 178.62 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

PROJECT: JUNIPER RIDGE LANDFILL EXPANSION	JOB NO.: 18018.00		BORING NO.: OW-603B
DATE STARTED: 3/21/2018	DATE FINISHED: 3/21/2018	DRILLING METHOD: DRIVE & WASH	
GROUND SURFACE ELEVATION (FT): 205.07	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY:NMT
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): N/A		SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
		Brown fine sandy SILT				B	
	1B		12,18,15,16	23			
5							5
	2B	Same as above	12,19,19,25	24			
10							10
	3B	Grayish brown and sandy SILT with cobble	20,20,22,32	19			
15							15
	4B	Grayish Brown, sandy SILT, trace of clay with cobble	22,34,38,32	17.5			
20							20
	5B	Granular dense silty sand (till) w/ areas of cobble and sand	17,27,30,49	15			
25		Weathered Bedrock 25-26.2					25
	6B		14,46,50	13			
30		Refusal at 26.2 ft. BOB at 26.2 ft.					30
35							35
40							40

NOTES: OW-603B --10 ft slotted screen set from 26.2 to 16.2 ft. TPVC elevation = 208.07

Water Level on 4/3/2018.

PROJECT: JUNIPER RIDGE LANDFILL EXPANSION	JOB NO.: 18018.00		BORING NO.: OW-604A
DATE STARTED: 3/22/2018	DATE FINISHED: 3/27/2018	DRILLING METHOD: DRIVE & WASH	
GROUND SURFACE ELEVATION (FT): 195.8		DRILLING CONTRACTOR: N.E.B.C.	LOGGED BY:NMT
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 2 (NQ)		SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
		Brown fine sandy SILT				A	
	1D		29,25,41,38	19.5			
5							5
	2D	Olive sandy SILT	20,30,50	15.5			
		5-6.3 trace of gravel					
		Gray sandy SILT with gravel					
10		10-10.7					10
	3D		35,50	0.3			
		Refusal at 10.7 ft.					
		Began rock coring at 12.5 ft.					
15							15
20							20
25							25
30							30
		BOB at 32.5 ft.					
35							35
40							40

NOTES: OW-604A --10 ft slotted screen set from 32.5 to 22.5 ft. TPVC elevation = 198.8

Water level on 4/3/20118.

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine		**JOB NO.:** 18018.00	**BORING NO. OW-605A**
DATE STARTED: 12/12/2017		**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 184.71 Site Datum	**Top of Casing Elevation (FT):** 186.76 Site Datum		**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"			**SHEET 1 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
			OW-605A	
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders	6" Dia. Black Iron Steel Casing	0
30				30
60		Gray/White Phyllite Dirty fracture zone 83' 4 GPM		60
90				90
120		Bedrock		120
150				150

NOTES:

Monitoring Point Elevation for OW-605A = 186.76 ft-Site Datum (top of DI casing)

Water level measured on 1/02/2018: 25.5 ft-below monitoring point, 161.26 ft

Water level measured on 1/11/2018: 25.35 ft-below monitoring point, 161.41 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine		**JOB NO.:** 18018.00	**BORING NO. OW-605A**
DATE STARTED: 12/12/2017		**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 184.71 Site Datum	**Top of Casing Elevation (FT):** 186.76 Site Datum		**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"			**SHEET 2 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
150		100'-160', Gray/white phyllite		150
		Bedrock		
180		light brown soft phyllite		180
210				210
240				240
		Bottom of boring at 260.0 ft		
270				270
300				300

NOTES:

Monitoring Point Elevation for OW-605A = 186.76 ft-Site Datum (top of DI casing)

Water level measured on 1/02/2018: 25.5 ft-below monitoring point, 161.26 ft

Water level measured on 1/11/2018: 25.35 ft-below monitoring point, 161.41 ft

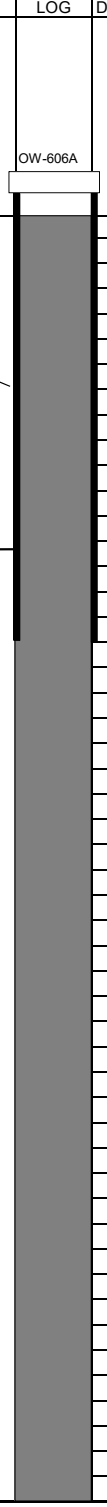
Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **OW-606A**
DATE STARTED: 12/14/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 156.98 Site Datum	**TOP OF CASING ELEVATION (FT):** 159.62 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 1 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders
25		
50		light brown soft phyllite Fracture at 48', 4 GPM increasing hardness… Gray/White Phyllite
75		
100		Bedrock
125		



NOTES:

Monitoring Point Elevation for OW-606A= 159.62 ft (top of DI casing)

Water level measured on 1/2/2018: Flowing, 159.62+ ft

Water level measured on 1/11/2018: Flowing, 159.62+ ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **OW-606A**
DATE STARTED: 12/11/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 211.69 Site Datum	**TOP OF CASING ELEVATION (FT):** 213.17 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 2 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
125		Bedrock		125
150		light brown soft phyllite at 158', 40 GPM		150
175				175
200				200
225		Gray/White Phyllite		225
		Bottom of boring at 240.0 ft After development flow = 100 gpm		
250				250

NOTES:
Monitoring Point Elevation for OW-606A= 159.62 ft (top of DI casing)
Water level measured on 1/2/2018: Flowing, 159.62+ ft
Water level measured on 1/11/2018: Flowing, 159.62+ ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: OW-606B
DATE STARTED: 12/8/20	DATE FINISHED: 12/8/20		DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):	162.9	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: RNF
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)			SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
					2" Schedule 40 PVC Riser	A	
					Bentonite Chips		
5							5
	1A	Silty sand with some small stone	7, 15, 17, 20	12			CONFIRM TOP OF SAN
					Top of Screen @ 7.0'	--	
10					2" Schedule 40 PVC Slotted Screen	--	10
	2A	Silty sand with some small stone	9, 15, 18, 22	20		--	
	3A	Bedrock at 12 ft. Rollacone Cuttings 12.2 ft - 13.7 ft			Bottom of Screen @ 12.7' Bottom of Boring @ 13.7'		
15					Sand		15

NOTES: 2" PVC Well
Augur refusal at 12.2'

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: OW-607B
DATE STARTED: 11/13/20	DATE FINISHED: 11/16/20		DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):	172.2	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: BAM
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): N/A			SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5						A	5
	1A	Brown sand, some organics, trace gravel	25, 40, 38, 36	18			
10							10
	2A	Light brown sand with silt, some gravel	24, 20, 17, 22	14.5	2" Schedule 40 PVC Riser		
15		Boulder					15
	3A	Light brown sand with silt, some gravel throughout	37, 55, 55, 47	18			
20							20
	4A	Light brown sand with silt, gravel in top 0.5'	16, 32, 30, 34	20			
25							25
	5A	Light brown sand with silt, some clay, trace gravel	6, 13, 21, 48	17.5			
30							30
	6A	Olive silty sand, some dark brown strains, trace gravel	32, 55, 50, 50 / 0.1	14			
35					Bentonite Chips		35
	7A	Olive silty sand, some gravel	45, 50 / 0.1	8			
40							40
	8A	Gravel with some olive silty sand	50 / 0.3	6.5	Top of Screen @ 41.0'		
45					Sand		45
	9A	Gravel with some olive silt, trace clay	50 / 0.3	7	2" Schedule 40 PVC Slotted Screen		
50							50
	10A	Gray silt with clay, some gravel	50 / 0.4	8.5	Bottom of Screen @ 51.0'		
		Bedrock at 53'			Bottom of Boring @ 53.0'		
55							55
60							60

NOTES: 2" PVC Well

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine		**JOB NO.:** 18018.00	**BORING NO. OW-608A**
DATE STARTED: 12/15/2017		**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 196.07 Site Datum	**Top of Casing Elevation (FT):** 196.61 Site Datum		**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"			**SHEET 1 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
			OW-608A	
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders	6" Dia. Black Iron Steel Casing	0
30				30
60		Gray/White Phyllite		60
		light brown soft phyllite		
		Gray/White Phyllite		
90		Bedrock		90
120				120
150		light brown soft phyllite at 148', 100+ GPM		150

NOTES:

Monitoring Point Elevation for OW-608A = 196.61 ft-Site Datum (top of DI casing)

Water level measured on 1/02/2018: 33.5 ft-below monitoring point, 163.11 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine		**JOB NO.:** 18018.00	**BORING NO. OW-608A**
DATE STARTED: 12/15/2017		**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 196.07 Site Datum	**Top of Casing Elevation (FT):** 196.61 Site Datum		**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"			**SHEET 2 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
150		Bedrock		150
180		Gray/White Phyllite		180
210				210
240				240
		Bottom of boring at 260.0 ft		
270				270
300				300

NOTES:

Monitoring Point Elevation for OW-608A = 196.61 ft-Site Datum (top of DI casing)

Water level measured on 1/02/2018: 33.5 ft-below monitoring point, 163.11 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: OW-608B
DATE STARTED: 12/15/2020	DATE FINISHED: 12/16/2020	DRILLING METHOD:		Drive & Wash
GROUND SURFACE ELEVATION (FT):	198.4	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: DPW
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): N/A			SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5						A	5
	1A	Brown/Olive Sand with some silt and organics	23	18			
10					2" Schedule 40 PVC Riser		10
	2A	Brown/Olive Sand, Silt, Some Stone	36	19			
15							15
	3A	Brown/Olive Sand Silt, Some Stone	42	21			
20							20
	4A	Brown/Olive Silt, Sand, and Stone	40	19			
25		NOTE: Sizeable Boulder at 24.9'					25
	5A	Brown/Olive Silt, Sand, More Sand then previous samples	46	23	Bentonite Chips		
30							30
	6A	Brown/Olive/Gray Sand, Silt, Clay, More prominent stone.	42	11.5			
35		NOTE: Sizeable Boulder at 32'			Top of Screen @ 33.5'		35
	7A	Olive/Green/Gray Sand, Silt, Clay, Some Stone.	44.5	25	Sand		
40					2" Schedule 40 PVC Slotted Screen		40
	8A	Olive/Green/Gray Sand, Silt, Clay, Some Stone.	36	9			
45					Bottom of Screen @ 43.5' Bottom of Boring @ 44.0'		45

NOTES: 2" PVC Well

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750			BORING NO.: OW-609B
DATE STARTED: 12/2/20	DATE FINISHED: 12/3/20		DRILLING METHOD: Drive & Wash		
GROUND SURFACE ELEVATION (FT):	209.9	DRILLING CONTRACTOR: N.E.B.C.			LOGGED BY: RNF
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)				SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5						A	5
	1A	Silty sand, some moisture	7, 10, 17, 20	24			
10					2" Schedule 40 PVC Riser		10
	2A	Silt, sand, fragmented rock	16, 29, 24, 21	12			
15		Boulder					15
	3A	Silt, sand, some clay	10, 12, 12, 21	18			
20							20
	4A	Grey silty clay	7, 7, 7, 9	18			
25							25
	5A	Grey silty clay	11, 14, 15, 20	24			
30							30
	6A	Grey glacial till	18, 16, 27, 42	18			
35					Bentonite Chips		35
	7A	Grey glacial till	13, 19, 20, 31	24			
40					Top of Screen @ 39'	--	40
	8A	Grey glacial till	13, 50 / 0.1	7.2		--	
45					2" Schedule 40 PVC Slotted Screen	--	45
	9A	Grey glacial till, some stones	11, 18, 22, 28	24	Sand	--	
50					Bottom of Screen @ 49'	--	50
	10A	Weathered Rock	50, 50, 30, 50	3.6	Bottom of Boring @ 51'		
55							55

NOTES:

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine	**JOB NO.:** 18018.00	**BORING NO.** **OW-611A**
DATE STARTED: 12/13/2017	**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 183.07 Site Datum	**TOP OF CASING ELEVATION (FT):** 185.15 Site Datum	**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"		**SHEET 1 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
			OW-611A	
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders	6" Dia. Black Steel Casing	0
25		Dirty fracture zone 28' 28 GPM		25
		Gray/White Phyllite		
50		Bedrock		50
75		Dirty fracture zone 82' 88+ GPM		75
100		Gray/White Phyllite		100
125				125

NOTES:

Monitoring Point Elevation for OW-611A= 185.15 ft (top of DI casing)

Water level measured on 1/2/2018: 9.7 ft-below monitoring point, 175.45 ft

Water level measured on 1/11/2018: 9.85 ft-below monitoring point, 175.3 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

WELL INSTALLATION LOG

PROJECT: Juniper Ridge Landfill, Old Town, Maine		**JOB NO.:** 18018.00	**BORING NO.** **OW-611A**
DATE STARTED: 12/13/2017		**DRILLING METHOD:** Air Rotary w/ 6" dia. casing	
GROUND SURFACE ELEVATION (FT): 183.07 Site Datum	**TOP OF CASING ELEVATION (FT):** 185.15 Site Datum		**LOGGED BY:** Sevee & Maher
BOREHOLE DIA.: Soil 8.75", Rock 6"			**SHEET 2 OF 2**

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	WELL LOG	DEPTH (FT)
125		Bedrock		125
150		Gray/White Phyllite		150
175				175
200				200
		Bottom of boring at 220.0 ft		
225				225
250				250

NOTES:

Monitoring Point Elevation for OW-611A= 185.15 ft (top of DI casing)

Water level measured on 1/2/2018: 9.7 ft-below monitoring point, 175.45 ft

Water level measured on 1/11/2018: 9.85 ft-below monitoring point, 175.3 ft

Soil Key

- Fill
- Marine Clay
- Submarine Sand & Gravel
- Ablation Till
- Basal Till
- Bedrock

PROJECT: JUNIPER RIDGE LANDFILL EXPANSION	JOB NO.: 18018.00		BORING NO.: OW-06-03
DATE STARTED: 3/22/2018	DATE FINISHED: 3/22/2018	DRILLING METHOD: DRIVE & WASH	
GROUND SURFACE ELEVATION (FT): 203.04	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY:NMT
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): N/A		SHEET 1 OF 1

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
		Brown fine sandy SILT				B	
	1C		2,2,6,10	14			
5							5
	2C	Gray sandy SILT trace of gravel	7,10,8,9	20			
10							10
	N/A		3,5,7,8	0			
15							15
	3C	Grayish brown silty sand with cobble	11,5,6,16	15			
20							20
	4C	20.5-22.5 Granular dense silty sand (till) w/ areas of cobble and sand	20,54,34,33	14.5			
25		BOB 23 ft.					25
30							30
35							35
40							40

NOTES: OW-06-03 --10 ft slotted screen set from 23 to 13 ft. TPVC elevation = 206.04

Water level on 4/3/2018.

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: MW-08-01
DATE STARTED: 11/17/20	DATE FINISHED: 11/17/20		DRILLING METHOD: N/A	
GROUND SURFACE ELEVATION (FT):	173.1	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: BAM
BOREHOLE DIA. (IN): 6 (HW)	ROCK CORE DIA. (IN): N/A			SHEET 1 OF 3

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
10						A	10
20							20
30							30
40							40
50					2" Schedule 40 PVC Riser		50
60					Bentonite Chips		60
70							70
80					Bentonite Pellets		80
90							90
100							100
110							110
120					Top of Screen @ 117.0'	--	120
130					2" Schedule 40 PVC Slotted Screen Bottom of Screen @ 127.0'	-- --	130

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: MW-08-01
DATE STARTED: 11/17/20	DATE FINISHED: 11/17/20	DRILLING METHOD: N/A		
GROUND SURFACE ELEVATION (FT):	173.1	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: BAM
BOREHOLE DIA. (IN): 6 (HW)	ROCK CORE DIA. (IN): N/A			SHEET 1 OF 3

					Sand		
140							140
150							150
160							160
170							170
180							180
190							190
200							200
210							210
220							220
230							230
240							240
250							250

PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750		BORING NO.: MW-08-01
DATE STARTED: 11/17/20	DATE FINISHED: 11/17/20	DRILLING METHOD: N/A		
GROUND SURFACE ELEVATION (FT):	173.1	DRILLING CONTRACTOR: N.E.B.C.		LOGGED BY: BAM
BOREHOLE DIA. (IN): 6 (HW)	ROCK CORE DIA. (IN): N/A			SHEET 1 OF 3

260					Bottom of Boring @ 259.7'		260
270							270

NOTES: 2" PVC Well, installed in existing PW-08-01

APPENDIX E

SAMPLE MONITORING FORMS

SME
SEVEE & MAHER
ENGINEERS

SME
SEVEE & MAHER
ENGINEERS

ANNUAL CONDUCTIVITY MEASUREMENTS
JUNIPER RIDGE, OLD TOWN, MAINE

	Date	Time	Water Level (TPVC)	Well Depth (TPVC)	Conductivity (µmhos/cm)	Sampling Equipment Used
P-206A						Geotech
DP-4						Geotech
MW04-101						Geotech
MW04-102						Geotech
MW04-104						Geotech
MW04-105						Geotech
MW04-109R						Geotech
MW12-303R						Geotech
MW-204						Geotech
MW-223A						Geotech
MW-223B						Geotech
MW-227						Geotech
MW-301						Geotech
MW-401A						Geotech
MW-401B						Geotech
MW-402A						Geotech
MW-402B						Geotech
MW-216BR						Geotech
MW09-901						Geotech
P-04-02R						Geotech
P-04-04						Geotech
P-201A						Bailer
P-201B						Bailer
P-201C						Bailer
P-201D						Bailer
P-201E						Bailer
P-202A						Geotech
P-202B						Geotech
P-206A						Bailer
P-209A						Bailer
P-209B						Bailer
P-209C						Bailer
P-211A						Geotech
P-211B						Geotech
P-220A						Bailer
P-220B						Bailer

Sampler Name _____

SME
SEVEE & MAHER
ENGINEERS

GAS VENT MONITORING
JUNIPER RIDGE LANDFILL, OLD TOWN, MAINE

PROJECT NO. **WEATHER:** _____

DATE: _____ **CALIBRATION GAS:** See Attached Calibration Sheet

METER ID:

Vent ID Number	Time of Reading	Methane Equivalent		Methane Equiv. Ambient		H_2S ppm	H_2S Ambient ppm	O_2	CO_2	Comments
		% LEL	% Vol	% LEL	% Vol					
MW04-102										
MW04-105										
MW04-109R										
MW–204										
MW–206										
MW – 223A										
MW – 223B										
MW – 227										
MW – 301										
MW – 303R										
MW – 401A										
MW – 401B										
MW – 402A										
MW – 402B										
MW09-901										
DP-4										
P-206A										
P-04-04										
P-04-02R										
MW-06-01										
MW-501										
OW-06-03										
OW-601A										
OW-601B										
OW-602A										
OW-603B										
OW-604A										

Vent ID Number	Time of Reading	Methane Equivalent	Methane Equiv. Ambient	H_2S ppm	H_2S Ambient ppm	O_2	CO_2	Comments
		% LEL	% Vol	% LEL	% Vol			
LF-UD								
LP-UD								
LP-LD								
LT-C4LR								
West Property Line A								
West Property Line B								
South Property Line								

LEL CONVERSION: (% LEL/100) X 5 = % VOLUME

SAMPLER SIGNATURE: _____

NOTES:

Ambient readings for % LEL and H_2S should be taken next to the sample site prior to the reading taken at the sample site.

ATTENTION: If your % Methane reading equals 0, please write 0.1US as your reading

US – Not detected above the minimal reporting limit determined by interpreted instrument specification.

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FIELD INSTRUMENT CALIBRATION
DAILY OPERATING LOG

CLIENT:	DATE:
PROJECT SITE:	JOB NUMBER:

METER SET	INSTRUMENT	MODEL ID NUMBER	UNIT ID NUMBER	STANDARDS USED FOR CALIBRATION *	WAS CALIBRATION SUCCESSFULLY COMPLETED? (If yes, place ✓ in appropriate area) (For ORP, place results of calibration in appropriate box)		MIDDAY STANDARD(S) CHECK * (Check off appropriate standard if meter is in calibration)		OPERATOR INITIALS
							Standard	Reading	
A	pH	YSI PRO PLUS	SME001	4.01 7.00 _____	4 ____ reading _____ 7 ____ reading _____ 10 ____ reading _____		_____ 7.00 _____	_____ _____ _____	
	Specific Conductivity	YSI PRO PLUS	SME001	_____ Microsiemens	_____ reading _____		____ Microsiemens	_____	
	DO	YSI PRO PLUS	SME001	100% ZERO Oxygen solution	_____ 100% reading _____ _____ ZERO reading _____		100%	_____	
	ORP	YSI PRO PLUS	SME001	240 mV ORP Solution	_____ 240 mV	Reading _____	240 mV ORP	_____	
	Turbidity	LaMotte 2020we	SME001	1 NTU 10 NTU	___ 1 NTU Reading_____	___ 10 NTU Reading _____	___ 1 NTU ___ 10 NTU	_____	
B	pH	YSI PRO PLUS	SME002	4.01 7.00 _____	4 ____ Reading _____ 7 ____ Reading _____ 10 ____ Reading _____		_____ _____ _____	_____ _____ _____	
	Specific Conductivity	YSI PRO PLUS	SME002	_____ Microsiemens	_____ Reading _____		____ Microsiemens	_____	
	DO	YSI PRO PLUS	SME002	100% ZERO Oxygen solution	_____ 100% Reading _____ _____ ZERO Reading _____		100%	_____	
	ORP	YSI PRO PLUS	SME002	240 mV ORP Solution	_____ 240 mV	Reading _____	240 mV ORP	_____	
	Turbidity	LaMotte 2020we	SME002	1 NTU 10 NTU	___ 1 NTU Reading_____	___ 10 NTU Reading _____	___ 1 NTU ___ 10 NTU	_____	

* Calibration of meters is completed once daily before work starts – a standards check for pH, conductivity, and turbidity should be completed midway through each day or if a particular field value falls outside of historic ranges.

ADDITIONAL NOTES: _____

_____

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MONITORING WELL – SAMPLE PURGING
JUNIPER RIDGE LANDFILL, OLD TOWN, MAINE

PROJECT: _____	**PROJECT NO.:** 144021 _____ **DATE:** _____
SAMPLE LOCATION ID: _____	**ACTIVITY**
	START TIME: _____ **END TIME:** _____

WELL DEPTH: _____ FT	☐ Measured ☐ Historical	☐ Top of Well ☐ Top of Casing	CASING STICK-UP (FROM GROUND) _____ F CASING/ WELL DIFF_____

WATER DEPTH: _____ FT	**WELL MATERIAL** ☐ PVC ☐ SS ☐ _____	**WELL LOCKED** ☐ Yes ☐ No	**WELL DIAMETER** ☐ 2" ☐ 6" ☐ 4" ☐ _____"	**WATER LEVEL EQUIPMENT USED** ☐ Elect. Cond. Probe ☐ Float Activated ☐ Press Activated ☐ _____

HEIGHT OF WATER COL _____ FT	☐ 0.16 GAL/FT (2") ☐ 0.65 GAL/FT (4")	☐ 1.50 GAL/FT (6") ☐ _____ GAL/FT (_____ in.)	_____ GAL/VOL _____ TOTAL GAL. PURGED

PURGING/SAMPLING EQUIPMENT USED:

Check if used for PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP _____
☐	☐	SUBMERSIBLE PUMP _____
☐	☐	BAILER _____
☐	☐	PVC/SILICON TUBING _____
☐	☐	TEFLON/SILICON TUB. _____
☐	☐	AIR LIFT _____
☐	☐	HAND PUMP _____
☐	☐	IN-LINE FILTER _____
☐	☐	PRESS/VAC FILTER _____

DECONTAMINATION FLUIDS USED:
(check all that apply at that location)

- ☐ ETHYL ALCOHOL
- ☐ DEIONIZED WATER
- ☐ TSP SOLUTION
- ☐ HEXANE
- ☐ HN03/D.I. WATER SOLUTION
- ☐ POTABLE WATER
- ☐ NONE
- OTHER _____
- OTHER _____

PURGE VOLUME	@ _____ GAL	@ _____ GAL	@ _____ GAL	@ _____ GAL	@ _____ GAL	SAMPLE OBSERVATIONS
TEMPERATURE (°C)						☐ TURBID
pH units						☐ COLORED
SPECIFIC CONDUCTANCE (μmhos/cm)						☐ CLOUDY
OXIDATION REDUCTION (+/- mV)						☐ CLEAR
DISSOLVED OXYGEN (PPM)						☐ ODOR
TURBIDITY						ORP OFFSET: _____mV

LAB SAMPLE ID _____ DUPLICATE ID _____

NOTES:

SAMPLED BY: _____

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Elapsed Time (min)	**Liters Pumped**	**Flow Rate** (mL/min)	**WL TPVC** (FT)	**WL Top of Casing** (FT)	**Turbidity** (1)	**pH** (2)	**Specific Cond.** (3)	**Temp ° C** (4)	**DO** (5)	**ORP** (6)	**Comments**
Unit ID No.:											
Model ID:											

NOTES:

1 TURBIDITY (NTU)
2 pH (STD UNITS)
3 SPECIFIC CONDUCTANCE (µmhos/cm @25°C)
4 TEMPERATURE
5 DISSOLVED OXYGEN (mg/L)
6 UNADJUSTED OXIDATION REDUCTION POTENTIAL (+/- mV)

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SAMPLE DATA RECORD
SURFACE WATER

SITE ID: JRL

SAMPLE LOCATION: SW-1

SAMPLE ID: _____

SAMPLE DATE: _____

SAMPLE TIME: _____

SAMPLER: _____

WATER BODY SAMPLED: Bog Stream

COLLECTION METHOD: Grab

DECONTAMINATED: ☒ YES ☐ NO

DEPTH AT SAMPLE SITE: _____

DEPTH OF SAMPLE: _____

FLOW RATE/VELOCITY: _____

INSTRUMENTS CALIBRATED (date): _____

DUPLICATE SAMPLE COLLECTED: ☐ Yes ☐ No **IF YES, SAMPLE ID:** _____

SAMPLE BOTTLES FILLED (ID): *See Chain of Custody*

SAMPLE APPEARANCE / ODOR: _____

TEMPERATURE: _____ °C

ORP: _____ mV

ORP OFFSET: _____ mV

pH: _____ SU

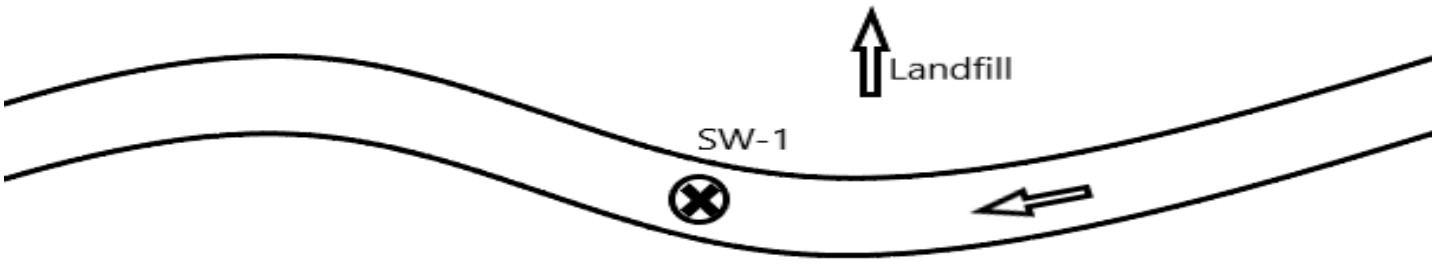
SPECIFIC CONDUCTANCE: _____ µmhos/cm

DISSOLVED OXYGEN: _____ mg/L

TURBIDITY: _____ NTU

NOTES:

LOCATION SKETCH:



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SAMPLE DATA RECORD
SURFACE WATER / LEACHATE

SITE ID: _____ **SAMPLE DATE:** _____

SAMPLE LOCATION: _____ **SAMPLE TIME:** _____

SAMPLE ID: _____ **SAMPLER:** _____

WATER BODY/STRUCTURE SAMPLED: _____ **DEPTH AT SAMPLE SITE:** _____

COLLECTION METHOD: _____ **DEPTH OF SAMPLE:** _____

DECONTAMINATED: ☐ YES ☐ NO **FLOW RATE/VELOCITY:** _____

INSTRUMENTS CALIBRATED (date): _____

DUPLICATE SAMPLE COLLECTED: ☐ Yes ☐ No **IF YES, SAMPLE ID:** _____

SAMPLE BOTTLES FILLED (ID): *See Chain of Custody*

SAMPLE APPEARANCE / ODOR: _____

TEMPERATURE: _____ °C

ORP: _____ mV

ORP OFFSET: _____ mV

pH:_____ SU

SPECIFIC CONDUCTANCE: _____ µmhos/cm

DISSOLVED OXYGEN: _____ mg/L

TURBIDITY: _____ NTU

TOTAL ALKALINITY: _____ (# of drops) x

_____ (mg/L per drop) =

_____ mg/L

NOTES:

LOCATION SKETCH:

CHAIN–OF–CUSTODY RECORD

PAGE ____ OF ____

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CLIENT:	PROJECT NAME:	PROJECT/ P.O. #:
REPORT TO:	ADDRESS:	
INVOICE TO:	ADDRESS:	
SAMPLED BY: (PRINT)	SAMPLER SIGNATURE:	

FILTERED (Y/N)
PRESERVED
ANALYSIS REQUIRED

LEGEND FOR PRESERVATIVE
1 – 4° CELSIUS
2 – HCL
3 – HNO_3
4 – H_2SO_4
5 – $Na_2SO_3 + H_2SO_4$
6 – NaOH

ITEM NO.	SAMPLE IDENTIFICATION	DATE	TIME	COMPOSITE OR GRAB	W–WATER L–LIQUID S–SOLID	TOTAL NUMBER OF CONTAINERS	REMARKS	LAB SAMPLE #
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:

D:\FORM\ACAD\SME11 REV.7/13/2009

A CHAIN OF CUSTODY IS REQUESTED WITH EACH SET OF SAMPLES

APPENDIX F

PFAS SAMPLING PROTOCOL

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FIELD SAMPLING PROTOCOLS FOR PER- AND POLYFLUROALKYL SUBSTANCES (PFAS) IN WATER

SEVEE & MAHER ENGINEERS, INC.

Updated September 2025

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LIST OF APPENDICES

APPENDIX A PFAS PROTOCOL CHECKLIST

FIELD SAMPLING PROTOCOLS FOR
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) IN WATER

1.0 PURPOSE

The following details Sevee & Maher Engineers, Inc.'s (SME) sampling procedures for per- and polyfluoroalkyl substances (PFAS) in water. This guidance document is based on the Drinking Water Field Sampling Protocols from the Maine Drinking Water Program, which in turn is based on United States Environmental Protection Agency (U.S.EPA) Method 537 and the Department of the Navy's 2015 standard operating procedure: *Testing for Perfluorinated Compounds (PFCs) in Drinking Water*.

The potential for PFAS to be present in common consumer products and in equipment typically used to collect groundwater, surface water, and drinking water samples coupled with regulatory and health advisory levels in the part per trillion range means that special handling and care must be taken when collecting samples for PFAS analysis to avoid sample contamination.

2.0 SCOPE

This sampling protocol applies to SME's qualified personnel who collect or otherwise handle water samples for analysis of PFAS. This protocol is reviewed and understood by SME's field technicians prior to implementation of field sampling activities. Sampling procedures in site specific Environmental Monitoring Plans (EMPs) or similar documents that are applicable to a specific sampling scope must also be followed in any PFAS sampling event.

3.0 SAMPLING METHODOLOGY AND EQUIPMENT

3.1 Sampling Methodology

3.1.1 Preparation

Prior to sampling and at each sample location, the sample handler will wash their hands and don nitrile gloves. PFAS contamination during sampling can occur from a number of common sources, such as food packaging and certain foods and beverages. Proper hand washing and wearing nitrile gloves will aid in minimizing this type of accidental contamination of the samples.

3.1.2 Sample Containers

Each sample requires a set of containers to comply with the method as indicated below.

Container Count, Container Type, Preservative

- 2 Sampling Containers - Empty 275 mL container prepreserved with Trizma®
- 1 Field Blank Sample Container – Empty 275 mL container prepreserved with Trizma® for the Field Blank sample.
- 1 full Field Blank Container – A 275 mL sample for the field blank is prepared at the lab and included in the cooler that contains the empty containers for the sample and field blank.
- Acceptable container materials are specified in Section 3.1.4.

3.1.3 Sample Collection

Fill the sampling container to the neck. Sample containers do not need to be headspace free. Instead fill the container to the neck so as to avoid losing any of the Trizma® preservative.

Water Supply Sample Collection (by Faucet)

- Before sampling of a water supply by faucet, remove the faucet aerator and inspect for any materials that could contaminate the sample (e.g., Teflon® tubing).
- Note the presence of any sources of potential PFAS contamination on the Sample Data Record Sheet.
- Discuss with Client the ability to remove materials that could have PFAS and note any actions to remove the materials on the Sample Data Record.
- Run water for 5 minutes then slow water to flow such that the stream diameter is the diameter of a pencil. This step is done to avoid splashing.

- Carefully remove the cap of the container and prevent contamination by holding the cap in the gloved hand or by placing the cap top side down on a clean nitrile glove.
- Fill sample containers to neck of container (as previously described) being careful not to overfill the container. Do NOT rinse the container as that will result in the loss of the Trizma® preservative.
- Close container securely and invert 5 times.

Other Types of Field Program Sample Collection

- Note the presence of any sources of potential PFAS contamination surrounding the sampling location on the Sample Data Record Sheet.
- Discuss with Client the ability to remove materials that could have PFAS and note any actions to remove the materials on the Sample Data Record.
- Follow sample collection procedures identified in site specific EMPs for other types of sampling locations (e.g., monitoring wells, surface water, springs, leachate).
- Before sampling of a groundwater monitoring point, make sure appropriate tubing (e.g., HDPE) has been installed a minimum of 24 hours prior to sampling (or as specified in the EMP).
- At the time of sample collection, carefully remove the cap of the container and prevent contamination by holding the cap in the gloved hand or by placing the cap top side down on a clean nitrile glove.
- Fill sample containers to neck of container (as previously described) being careful not to overfill the container. Do NOT rinse the container as that will result in the loss of the Trizma® preservative.
- Close container securely and invert 5 times.

Field Blank Sample Collection

- Locate the Reagent Water container from the bottle order. The Reagent Water container is prefilled with PFAS-free water and preserved with Trizma®.
- Locate the empty container labeled “Field Blank.”
- Open both containers being careful to remove the cap on the empty container and prevent it from potential contamination by holding the cap in the gloved hand, or by placing the cap top side down on a clean nitrile glove.
- Transfer contents of the Reagent Water container into the Field Blank container.
- Close container securely and invert 5 times.

Both the empty Reagent Water container and the filled Field Blank container must be returned to the laboratory in the same container with the samples taken.

3.1.4 Specific Steps taken to avoid PFAS Contamination

SME takes measures to avoid sample contamination. These measures are outlined below and in Table 1.

- Disposable nitrile gloves are worn at all times. A new pair of nitrile gloves is donned prior to the following activities at each sample location:
  - Decontamination of re-usable sampling equipment;
  - Prior to contact with sample bottles or water containers;
  - Handling of any quality assurance/quality control samples including field blanks and equipment blanks;
  - After the handling of any non-dedicated sampling equipment, contact with non-decontaminated surfaces, or when judged necessary by field personnel.
- Samples are collected in polypropylene or HDPE bottles fitted with an unlined (no Teflon®), polypropylene HDPE screw cap.
- **AFTER** the caps have been placed back on each sample container, container labels are completed using ballpoint pen (NO MARKERS) and applied to sample containers. Labels can be prepared and affixed to the bottle prior to sample collection provided the labels do not have a coating containing PFAS.
- Glass containers are not used due to the potential loss of analyte through adsorption.
- Groundwater, surface water, or drinking water samples are not be filtered since the glass fiber on the filter can potentially absorb PFAS.
- Sample bottles are pre-treated with the preservation agent Trizma®. Bottles are not rinsed when collecting the sample.
- Samples are placed in individual Zip-lock® baggies with ice-filled Zip-lock® plastic bags in a cooler for transport and then refrigerated until analysis.
- Field sampling during wet weather conditions is done while wearing appropriate clothing that does not pose a risk for cross-contamination. Synthetic gear that has been treated with water-repellant finishes containing PFAS is avoided. Instead rain gear made from polyurethane and wax-coated materials is encouraged.
- Cosmetics, moisturizers, hand cream, or other related products are not used as part personal cleaning/showering on the morning of a sampling event, as these products may contain surfactants and represent a potential source of PFAS.
- Only approved sunblocks and insect repellants are used on-site or products that consist of 100% natural ingredients.

- SME does not bring food or drink to sample staging areas aside from permitted bottled water and hydration fluids (see Table 1)

3.1.5 Documentation

Complete the PFAS protocol checklist provided in Appendix A for inclusion with field form documentation.

Ensure that the Chain-of-Custody and all labels on containers contain required information. Place sample, Field Blank and empty Reagent Blank containers in ice filled cooler and return to the laboratory. Cool samples and keep at 4°C ±2. Hold time is 14 days.

3.2 Equipment

SME takes steps to ensure that sampling equipment does not contaminate samples. The following steps are followed and are outlined in Table 1.

- Teflon®-containing materials (e.g., Teflon® tubing, bailers, tape, plumbing 24 paste, or other Teflon® materials) are not used since Teflon® contains fluorinated compounds. Samples are not stored in containers made of LDPE materials, instead they are stored in HDPE or polypropylene containers.
- Field samplers do not use equipment with plastic coatings and glued materials such as waterproof field books, plastic clipboards, binders, or spiral hard cover notebooks. Instead, field reports are documented on loose paper on Masonite or aluminum clipboards.
- Post-It Notes are not allowed on project sites.
- Sharpies® or markers are not used on sample bottles or at the site. Ballpoint pens are used to document field activities, label sample containers, and prepare the Chain of Custody.
- Chemical (blue) ice packs are not used for the storage of samples.
- Field clothing made of natural fibers (preferably cotton) is worn by field sampling crews. Field clothing is laundered without using fabric softener. Since new clothing may contain PFAS related treatments, new clothing is not worn while sampling or sample handling. Before being used in the field new clothing is worn and washed a minimum of 6 times from time of purchase.
- Clothing or boots containing Gore-Tex is not used because it contains a PFAS membrane.
- Coated Tyvek® clothing is not worn since it contains fluorinated compounds, however uncoated Tyvek does not contain fluorinated compounds and is allowed.

TABLE 1[1]

Prohibited Items	Acceptable Items
Field Equipment	
Teflon® containing materials. Aluminum foil and items containing fluoropolymers (PTFE, PVDF, PCFTE, ETFE, FEP)	HDPE materials, polypropylene and stainless-steel materials.
Teflon® and LDPE tubing	Silicon or HDPE tubing
Excel Purity Paste, Vibra-Tite thread sealant and TFW Multipurpose thread sealant	Gasoils NT NON-PTFE sealant Bentonite
Waterproof field books. Water resistant sample bottle labels	Loose paper (non-waterproof). Paper sample labels covered with clear packing tape
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum or Masonite field clipboards
Post-It notes, Sharpies	Pens
Chemical (blue) ice packs	Regular Ice
Equipment with Viton Components (needs to be evaluated on a case by case basis, viton contains PTFE but may be acceptable if used in gaskets or o-rings that are sealed away and will not come into contact with sample or sampling equipment	
Field Clothing and PPE	
New or water resistant, waterproof, or stain treated clothing, clothing laundered with fabric softeners, clothing containing Gore-Tex.	Well-laundered clothing, defined as clothing that has been washed 6 or more times after purchase, made of synthetic or natural fibers (preferable cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore-Tex	Boots made with polyurethane and PVC
No cosmetics, moisturizers, hand cream or other related products as part of personal cleaning/showering routine on the morning of sampling	Sunscreens- Alba Organics Natural Sunscreen, Yes to Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are “free” or “natural” Insect Repellants – Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics Sunscreen and Insect Repellant – Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion
Waterproof or resistant rain gear	Polyurethane, vinyl, wax or rubber-coated rain gear. Gazebo tent that is only touched or moved prior to and following sampling activities.
Sample Containers	
LDPE, glass containers or passive diffusion bags	HDPE (any media) or polypropylene (only U.S.EPA Method 537)
Teflon® -lined caps	Lined or unlined HDPE or polypropylene caps
Equipment Decontamination	
Decon 90	Alconox and/or Liquinox
Water from an on-site well	Potable water from municipal drinking water supply (if tested as PFAS-free)
Food Considerations	
All food and drink, with exceptions noted on the right.	Bottled water and hydration drinks (i.e., Gatorade and Powerade) to be brought and consumed only in the staging areas.

[1] Based on Maine Department of Environmental Protection (MEDEP SOP No RWM-DR-014)

APPENDIX A

PFAS PROTOCOL CHECKLIST

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PFAS protocol checklist

☐ Nitrile powderless gloves

☐ Sample area clear of possible PFAS contaminants

☐ All surfaces touching sample bottle are PFAS free

☐ No contact with inside of sample bottle and bottle cap

☐ Sample bottle kept sealed and only opened during sample collection

☐ New gloves used before sample bottles touched and filled

☐ Label attached after bottles are filled / use ball point pen

☐ Field blank taken prior to sample collected / new gloves used

☐ use ice in Ziploc bag for sample preservation

☐ Each sample has its own cooler

☐ Decontamination with PFAS free water when material used across multiple locations

☐ PFAS free clothing and footwear worn

☐ No bug repellent or cosmetics used containing PFAS

Field Clothing and Personal Protective Equipment

• Do not wear clothing or boots containing Gore-Tex®.

• Wear new nitrile gloves.

• Wet weather gear should be made of polyurethane and polyvinylchloride (PVC) only.

• Wear safety boots made from polyurethane and PVC.

• Do not use materials containing Tyvek® or polytetrafluoroethylene (PTFE), also known as Teflon®.

• Do not use fabric softener on clothing to be worn in field.

• Do not use cosmetics, moisturizers, hand cream, or other related products the morning of sampling.

• Do not use prohibited sunscreen or insect repellant. See Do's and Don'ts table below for more information.

Food Considerations

• No food or drink allowed on-site with exception of bottled water.

Field Equipment

• Must not contain Teflon® (aka PTFE) or low-density polyethylene (LDPE) materials.

• All sampling materials must be made from stainless steel, high-density polyethylene (HDPE), acetate, silicone, or polypropylene.

• No waterproof field books can be used.

• No plastic clipboards, binders, or spiral hard cover notebooks can be used.

• Sharpies® and permanent markers not allowed; regular ball point pens are acceptable.

• Keep PFAS samples in separate cooler, away from sampling containers that may contain PFAS

• Coolers filled with regular ice only - Do not use chemical (blue) ice packs.

Sample Containers

• All sample containers must be polypropylene.

• Caps must be unlined polypropylene (no Teflon®-lined caps)

Equipment Decontamination

• Have "PFAS-free" water on-site for decontamination of sample equipment. No other water sources are to be used.

• Only Alconox® and Liquinox® can be used as decontamination materials.

APPENDIX G

IDENTIFICATION OF ENVIRONMENTAL SAMPLES

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IDENTIFICATION OF ENVIRONMENTAL SAMPLES

PURPOSE

To uniquely and systematically identify the source of environmental samples within a designated site, especially those destined for chemical analysis. The structure of the identification system is selected to be compatible with computerized database management.

SCOPE

This procedure should be utilized whenever environmental samples are collected for either physical or chemical analysis.

PROCEDURE

The sample identification system consists of 9 alphanumeric characters in four information groups:

SAMPLE IDENTIFICATION EXAMPLE

12-345-6-789

-- --- - ---

GW-101-1-0A6

Type	GW (see type codes below)
Horizontal Locator	101 (corresponds to boring, well ID or other location)
Vertical Locator	A (A = deepest well in a cluster)
Serial Code	0A6 (computer generated unique serial code)

If only one character is needed in a multi-character field, the character should be right-justified, and the leading spaces filled with an X for alphanumeric fields or zeros (0) for numeric fields.

Type: The two-character sample type code identifies the general source type and media of the sample. The physical location coordinates are addressed in the horizontal and vertical codes.

Standard sample type codes are:

GW - groundwater	SL - sludge
SW - surface water	SD - sediment
WW - wastewater	WT - waste
DW - drinking water	WP - wipe
WS - water supply	AA - ambient air, grab sample
LT - leachate	LA - ambient air, long-term sample
PC - primary clarifier effluent	SG - soil gas
SC - secondary clarifier effluent	LV - landfill vent gas
DF - drilling fluid	TP - test pit
BS - blank, sampler	SS - surface soil
BB - blank, bailer	SB - soil boring
BU - blank, tubing	RC - rock core
BL - blank, lot	DC - drum cuttings
BF - blank, filtration	TE - treated effluent
BT - blank, trip	RI - raw influent
BP - blank, pump	RW - raw water

Horizontal Locator: Also known as the "sampling point," this code locates the sampling/exploration on the surface of the site (x, y coordinates). The horizontal locator allows designation of a variety of samples (e.g. AA, SS, SB, MW) all from the same point on site. Two approaches may be used:

(1) a number sequence for the exploration (e.g. MW-010). For wells and borings it is important to note that a boring #10 which subsequently has a monitoring well installed has the same horizontal locator, #10.

(2) use of a grid system. If a sampling program utilizes a grid system, as surface soil sampling often does, it is recommended that the grid system be used for all horizontal locations. A three-character grid system allows about 2,600 locations (A00 through Z99).

Vertical Locator: The vertical locator is primarily used for water samples taken from monitoring well clusters. The convention used is a capital letter where "A" represents the deepest well in the cluster. "B" and "C" would represent progressively less deep wells in the same cluster. Soil samples will not use the vertical locator in the sample ID. Depths for soil samples are recorded as field data and this space contains an X.

Serial Code: The sample serial code is generated by the computer sample tracking program when a planned sample is entered into the database. The serial code is unique for each sample on a given site. The serial code is made up of numeric characters [0-9] and alphanumeric characters [A-J] and is a

sequential numbering using a base 20 numeric system. The first sample entered into the tracking program receives the code “001”, the tenth sample “00A”, the twentieth sample “010” and so on. In this way over 8,000 unique sample codes can be generated in the three character group. Sample codes are never reissued even if a sample has been dropped from the plan. The last 1,000 serial codes are reserved for contingency samples, that is those samples which are not planned but are collected due to some technical decision made in the field.

APPENDIX J

GAS MANAGEMENT OPERATIONS AND MAINTENANCE MANUAL

SME
SEVEE & MAHER
ENGINEERS

SANBORN HEAD

Operations and Maintenance Manual

Landfill Gas Management System
Juniper Ridge Landfill
Old Town, Maine

Prepared for
NEWSME Landfill Operations, LLC
Old Town, Maine

Prepared by
Sanborn, Head & Associates, Inc.

File No. 2536.40
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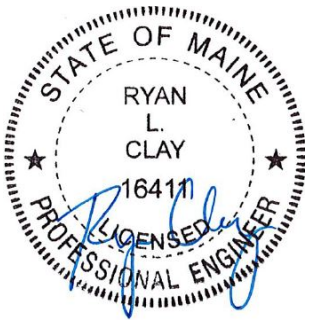

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1.0 INTRODUCTION

This manual describes operations and maintenance procedures related to the landfill gas (LFG) management system at the Juniper Ridge Landfill (JRL) in Old Town, Maine. The landfill is owned by the State of Maine and managed by the Bureau of General Services; however, the facility, and landfill gas, is operated by NEWSME Landfill Operations, LLC (NEWSME). The objectives of the landfill gas management system are to: (i) control odors emanating from the landfill; and (ii) to comply with the federal and state requirements regarding landfill gas emissions.

Currently, JRL has an active landfill gas management system installed in all constructed landfill cells that have reached the necessary grade to initiate installation.

Individuals designated to operate and maintain the landfill gas management system are properly trained with respect to the potential hazards of landfill gas and the proper operating procedures for the site-specific equipment. This manual is a general guide and is not intended to be a substitute for proper hands-on training in operations, regulatory requirements, and site-specific safety activities that may be required by various local, state, and/or federal agencies.

Landfill operations staff should become familiar with the properties of landfill gas and related hazards discussed below, and should receive proper training, which may include lockout/tag out procedures as well as electrical and pneumatic safety procedures.

2.0 CHARACTERISTICS OF LANDFILL GAS AND POTENTIAL HAZARDS

2.1 Landfill Gas Characteristics

Landfill gas is generated when anaerobic bacteria consume organic matter in waste. Landfill gas is composed of methane, carbon dioxide, oxygen, nitrogen, water vapor and trace amounts of hydrogen, ethane, hydrogen sulfide, and volatile organic compounds (VOCs). Oxygen and nitrogen are typically present because of air entrained in the landfill (air is approximately 21 percent oxygen and 79 percent nitrogen). Air entrainment in landfills occurs during placement of waste, from atmospheric weather effects, because of landfill gas management system operations, or from diffusion into the landfill. Typical ranges of constituent concentrations in landfill gas are presented in Table 1.

Important landfill gas characteristics are provided below.

- Landfill gas primarily consists of methane (up to approximately 50 percent) and carbon dioxide (up to approximately 40 percent).

- Landfill gas has relatively high moisture content; cooling generally results in the formation of condensate.

- Landfill gas is flammable and potentially explosive under the right combination of methane and oxygen, plus an ignition source. See below for more information on the flammable concentration range of methane.

- Landfill gas may migrate through surrounding soils, within open conduits, or in trench backfill material.
- Landfill gas may accumulate in confined spaces.
- Landfill gas has a specific gravity that is usually close to that of air.
- Within the landfill, the typical temperature range for landfill gas is 16 degrees (°) to 66° Celsius (C) (60° to 150° Fahrenheit (F)).
- Component gases (methane, carbon dioxide, water vapor, and others) tend to stay together, but may separate through soil and liquid contact.
- Secondary constituents (trace gases) may cause nuisance odors, environmental pollution, and may create a health risk.

The flammable range of methane is approximately 5 to 15 percent (by volume) in air. The lower limit of 5 percent is referred to as the Lower Explosive Limit (LEL); the upper limit of 15 percent is referred to as the Upper Explosive Limit (UEL). The specific gravity of methane and carbon dioxide are 0.55 and 1.52, respectively. However, the specific gravity of landfill gas is close to that of air, and it should not be assumed that methane gas would rise. The landfill gas mixture may be lighter or heavier than air and its behavior will be dictated by its overall composition.

Methane and carbon dioxide are odorless gasses. However, landfill gas has its own characteristic odor due to the presence of trace compounds in the gas. Some of the most significant examples of the classes of odor causing trace constituents include esters, phenols, organic acids, solvents, and sulfur compounds (including mercaptans). However, landfill gas may not always exhibit an identifiable odor because the odor carrying trace components may be stripped off because of movement through cover or adjacent soil, or if sulfur exceeded 100 ppm.

Landfill gas levels can be monitored using various meters. At a minimum, LEL, percent methane, percent oxygen, and parts per million (ppm) hydrogen sulfide should be measured at any location where there is potential for landfill gas to be present and where personnel could be exposed to landfill gas, including landfill sideriser buildings.

Personnel should take immediate action to evacuate the area, if monitoring results indicate:

- The LEL is 50 percent or higher (2.5 percent methane by volume);
- The concentration of oxygen is lower than 19.5 percent; or
- The concentration of hydrogen sulfide (H_2S) is more than 5 parts per million (ppm).

2.2 Potential Hazards to Personnel

Landfill operations staff should be familiar with the following types of hazards related to the presence of landfill gas and landfill gas condensate, and the appropriate and safe procedures to identify and avoid them.

Methane is a colorless, odorless, flammable, and potentially explosive gas that may be emitted into the atmosphere as landfill gas together with other volatile trace gases. Landfill gas, which may contain other gases, may migrate through soil and bedrock into surrounding areas or contact groundwater where it may adversely affect the environment. Landfill gas may travel long distances underground and accumulate underneath and in structures and confined or enclosed spaces creating a potential explosion hazard. Carbon dioxide, the other major component of landfill gas, is colorless, odorless, and non-combustible.

2.2.1 Respiratory Hazards

Methane and carbon dioxide are asphyxiates. A potential hazard posed by landfill gas is oxygen deficiency, which may cause asphyxiation. As landfill gas builds up it displaces air, hence reducing the amount of oxygen that can be inhaled by a person. An oxygen deficient atmosphere exists when the oxygen comprises 19.5 percent or less of the air. It is imperative that confined space regulations and procedures be followed before personnel enter confined spaces or locations where an oxygen deficient atmosphere could exist. Under certain circumstances, special "permitted entry" requirements apply.

Potentially lethal concentrations of H_2S may be present in landfill gas at JRL. Personnel must always be alert for the presence of H_2S. H_2S is a colorless, toxic, flammable gas, which at low concentrations has an offensive odor similar to that of rotten eggs. Sense of smell can be lost within 2 to 15 minutes of exposure to H_2S; therefore sense of smell is NOT adequate for indicating the continuing presence of H_2S or for warning of hazardous concentrations. The effects of inhalation depend on the concentration of H_2S and the duration of exposure. Exposure at high concentrations can quickly lead to death. Atmospheres containing concentrations of H_2S greater than 100 ppm are considered immediately dangerous to life and health (IDLH)[1] and are expected to be non-detectable by odor due to olfactory fatigue.

Air monitoring should be performed prior to entering areas expected to contain LFG or hazardous atmospheres. If significant concentrations of LFG constituents are present, the space should be ventilated to acceptable levels. Ventilation should be confirmed while personnel are working in the area or structure. If the gas cannot be removed, appropriate respiratory protection, necessary personal protective equipment (PPE), and rescue and communication equipment should be used before entering the area.

Other volatile organic components of landfill gas may also pose respiratory hazards.

2.2.2 Explosive Atmosphere

Landfill gas tends to migrate and may accumulate in confined spaces. The occurrence and accumulation of methane is sometimes transient. The presence of slight amounts of methane, less than the LEL, is an indication that more may accumulate under other conditions if corrective action is not taken. If methane is detected at concentrations greater than 15 percent (100 percent of the UEL) by volume, then there is the potential for an explosive methane-air "front" that could be formed nearby by dilution.

[1] https://www.osha.gov/Publications/hydrogen_sulfide.html

Personnel should take the following precautions.

- Avoid any possible source of ignition when working on the landfill gas management system. Sources of ignition may include cell phones (on or off), battery-powered watches, flashlights, non-intrinsically safe equipment, etc. **Smoking is prohibited when working on or near the landfill gas system components**.

- Avoid wearing synthetic clothing, such as polyester, as these materials are extremely flammable; natural fibers such as cotton and wool are recommended. **Wearing synthetic clothing can be fatal in a methane gas flash fire.**

2.2.3 Potential for Landfill Fire

If large quantities of air are introduced into the landfill in a localized area, through either natural occurrence or overly aggressive operation of the landfill gas extraction system, then poorly supported combustion of the buried waste may occur and carbon monoxide may be detected. Subsurface fires produce temperatures of several hundred degrees Fahrenheit within the landfill and typically results from short-circuiting air intrusion into:

- The landfill/cover soil interface;
- Cracks, breaks, or buried imperfections in the cover/cap;
- Breaks in buried collection piping and extraction wells; or
- Backfill surrounding collection system components (e.g., from the filter or gravel pack of an extraction well or the gravel backfill around a sump).

Preventing the introduction of air into the landfill by proper operation of the landfill gas extraction system and maintenance of the landfill cover is the best course of action.

2.2.4 Landfill Gas Condensate

Landfill gas condensate may contain trace chemicals and may be biologically active. Appropriate protective gloves, safety glasses, chemical resistant gloves and other splash protection equipment should be used when working with landfill gas condensate. Operating personnel should avoid direct skin contact.

Condensate is odorous, and may release VOCs. Careful control during condensate handling and disposal is necessary to limit release of odors.

The vapors emanating from condensate storage tanks may be flammable.

3.0 SYSTEM COMPONENTS AND MONITORING PROGRAM

3.1 Introduction

The primary objectives of the landfill gas management system are to: (i) control odors emanating from the landfill; and (ii) comply with the federal, state, and local requirements regarding landfill gas emissions. Further, the landfill gas management system should be operated to maintain

anaerobic conditions within the landfill, thereby limiting the intrusion of air into the waste. To meet these objectives, the system components should be monitored on a routine basis.

The landfill gas management systems at JRL are installed in phases as each landfill cell is developed and filled. Due to the waste stream mix at JRL (comprised of Wastewater Treatment Plant sludge, wastewater sludge, construction and demolition debris (CDD) residuals, Front End Processing Residuals (FEPR), and other special wastes) Hydrogen Sulfide (H_2S) tends to be generated rather quickly (within three months of initial waste placement within a cell). Due to the odor issues associated with rapid LFG generation, LFG is managed using horizontal collection trenches constructed in the waste as the cell is developed. Landfill gas extracted from the landfill is conveyed to the Thiopaq sulfur removal system and then to a blower/flare station for landfill gas treatment. As the outer slopes of the cells are filled to final grades, vertical extraction wells are installed in accordance with the final landfill gas plan approved by the Maine Department of Environmental Protection (MEDEP). The active landfill gas extraction system will continue to operate at the landfill, extracting landfill gas from the horizontal trenches and vertical extraction wells installed in areas where final grades are achieved.

Included with this manual are figures that illustrate the proposed landfill gas infrastructure associated with the constructed cells at the facility.

A description of the various components of the landfill gas management system is provided below. Where applicable, the monitoring requirements for the various components are also discussed below and summarized in Table 2.

3.2 Gas Collection Trenches

Gas collection trenches are installed at discrete locations in the waste mass to provide interim landfill gas collection coverage during filling of the landfill, prior to reaching final grade. The first series of trenches in an area of new waste fill will be excavated into the waste mass after approximately 20 feet of waste has been placed in the cell. Additional trenches are constructed at about 40-foot vertical increments thereafter. The trenches are spaced horizontally about 100 feet apart with typically 3 to 4 trenches per 40-foot lift (dependent upon overall cell width). The constructed trench will consist of a stone filled excavation with a perforated 6-inch diameter SDR-17 HDPE conveyance pipe. The trench will be installed at a minimum 2 percent slope and will drain away from the gas collection wellhead and back into the landfill via the perforations in the pipe. If necessary, collection trench risers will be extended by welding on additional lengths of HDPE pipe as filling progresses. Wellheads will be installed to extract LFG from the collection trenches.

3.3 Condensate Traps and Knockouts

Landfill gas condensate is managed primarily with condensate traps constructed inside the limit of waste containment, and with condensate knockout structures/pump stations constructed outside the limit of waste containment.

Condensate traps are typically constructed at low points along landfill gas conveyance pipes. The traps are designed to allow condensate to drain into the waste mass or to discharge to the

primary leachate collection system. Each trap consists of a U-shaped tube filled with liquid to provide a seal against the vacuum in the system. To maintain a seal, the liquid column in the trap must be at least as high as the maximum vacuum obtainable in that portion of the system.

Condensate knockout structures are constructed to remove condensate from landfill gas conveyance pipe located outside the limit of waste containment. Condensate collected in a knockout structure is pumped to either the nearest primary leachate collection system sideriser cleanout pipe or to a leachate storage tank on site. A condensate knockout structure at JRL is a Class 1 Division 1 Group D classified space and is considered to be a confined space with entry by permit only.

3.4 Wellhead Assemblies

The wellhead assemblies are generally installed at each horizontal collection trench and on the vertical extraction wells. The wellheads provide a means to control landfill gas flow and a means to collect monitoring data. The wellhead assemblies include a gate valve, flexible hose, fittings, and sample ports that are designed to allow for:

- Differential settlement between the landfill gas transmission pipe and the wellhead assembly;
- Sampling of the gas in the wellhead;
- Measurement of the gas flow rate;
- Measurement of the gas temperature;
- Control of the gas flow rate; and
- Access to the well from the top for equipment or measurements.

Wellheads are monitored on a monthly basis (as part of the LFG monitoring program) to observe their general condition, with particular attention to the condition of the flexible hose between the wellhead and the transmission pipe. Well bore seals should also be inspected and adjusted, if necessary, to create an adequate seal. Additional data to be gathered includes:

- Valve position (percent open);
- Gas flow rate;
- Static pressure;
- Percent methane;
- Percent carbon dioxide;
- Percent oxygen; and
- Gas temperature.

3.5 Sulfur Removal System

JRL operates a Thiopaq® sulfur removal system as part of the gas control system to remove total reduced sulfur (TRS) compounds, primarily H_2S, from the LFG prior to combustion. JRL maintains the flexibility to operate other temporary or additional TRS control equipment, such as Sulfatreat, for cases of scrubber downtime or temporary surges in LFG flow or TRS concentration.

The sulfur removal system is monitored to maintain the concentration of H_2S exiting the system to 1,000 ppmv or less. Using colorimetric tubes, the H_2S concentration must be measured at the inlet and outlet of the sulfur removal system on two days every week, with at least two days between sampling. On the two weekly sampling days (e.g., Monday and Friday), JRL must collect two rounds of samples at least four hours apart.

JRL also collects monthly samples from the inlet (three samples) and outlet of the Thiopaq System (three samples) to estimate sulfur dioxide (SO_2) emissions using an approved method such as laboratory analysis. OM procedures for the Thiopaq® sulfur removal system are detailed in a OM manual provided by the manufacturer and are separate from this document. The Compliance Assurance Monitoring (CAM) Plan for the Thiopaq® sulfur removal system is provided as Attachment 1. The CAM Plan was submitted to MEDEP in February 2021 as part of the Part 70 (Title V) air license renewal.

3.6 Blower/Flare Station/RNG Facility

There is one existing flare station (Flare #4) that is maintained and operated by NEWSME that is licensed to combust approximately 106.5 MMBtu/hr of LFG from the entire landfill, equivalent to approximately 3,550 standard cubic feet per minute (scfm) of landfill gas at 50% CH_4. The projected maximum LFG collection rate including a factor of safety is 170 MMBtu/hr (equivalent to approximately 5,600 scfm at 50% CH_4). JRL is applying to install an additional flare station, proposed Flare #5, when needed to control LFG. Flare # 5 would be located adjacent to Flare #4.

The system vacuum is generated using a dual blower system that is located at the existing Thiopaq Building. The blower/flare equipment is checked at least weekly to evaluate: (i) the condition of pipe and connections; (ii) the consistency of the flare operation; and (iii) the condition of the automatic sparking ignition system.

Operating separately from the blower/flare station is an RNG processing facility owned and operated by AHJRLLFG, LLC (c/o Archaea Energy) which is designed to accept up to 3,200 scfm of LFG (at 50% methane) from the Thiopaq® system for beneficial use. There is also a separate 6,400 scfm flare that is owned and operated by Archaea. The RNG facility, which is located just south of the Thiopaq® building, is designed to accept partially treated LFG for further treatment and processing into pipeline quality natural gas.

The RNG facility is owned and operated separately from the landfill gas extraction system. When in operation, the RNG facility reduces the percentage of LFG that would otherwise be flared by the main flare at JRL. The RNG facility does not set the vacuum supply to the LFG extraction system on the landfill, so if the facility is down for maintenance, it does not inhibit the ability of NEWSME to combust LFG from the Thiopaq® at NEWSME's main flare. Controls are also set up to run the flare associated with the RNG facility in the event that the RNG facility is operating at reduced capacity. The RNG Facility does not alter the operation of the Thiopaq® sulfur removal system. The separate flares owned by NEWSME and Archaea provide redundancy in combustion capacity at the landfill and simplifies the integration of the RNG facility with the existing landfill gas extraction system and flare system.

The RNG facility also includes an aboveground 15,000-gallon vertical double-walled carbon steel tank manufactured by Highland Tank LLC that provides a means to temporarily store LFG condensate collected at the RNG Facility. The tank measures approximately 10-feet in diameter by 26.5-feet tall and was installed vertically on a reinforced concrete foundation. The tank allows Archaea the ability to independently store a set amount of LFG condensate that is collected at the RNG Facility prior to it being hauled off site for treatment. If lab test results indicate that the condensate meets acceptable criteria and permission is granted by Maine DEP and NEWSME, the condensate may be pumped to the landfill's main leachate storage tank via a dual-walled force main and stored there prior to being hauled off site for treatment as coordinated by NEWSME. If the landfill's main leachate storage tank cannot accept the condensate generated at the RNG facility for any reason, then Archaea is responsible for management of the condensate.

3.7 Ancillary Observations

In the course of monitoring system components, the condition of the landfill cover systems should also be observed for indications of settlement, tears and rips in the exposed synthetic cover, stressed vegetation, improper drainage, and condition of cover soils. The presence of odors should be noted.

3.8 Monitoring and Reporting

NEWSME monitors the LFG system components on a monthly basis as required by the New Source Performance Standards (NSPS, 40 CFR Part 60 Subpart XXX) and National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Part 63 Subpart AAAA) for MSW Landfills as described below in Section 4.0. On January 6, 2021, NSPS Subpart XXX and NESHAP Subpart AAAA superseded NSPS Subpart WWW (an earlier version of the NSPS for MSW Landfills). Since that time, JRL has operated the gas collection and control system to operate in compliance with the updated NESHAP Subpart AAAA which has an increased wellhead gas temperature limit of 145 °F (the limit under NSPS Subpart WWW was 131 °F).

4.0 OPERATION AND ADJUSTMENT

4.1 Well System Tuning

The adjustment or "tuning" of the landfill gas management system involves monitoring various parameters and making adjustments to optimize the extraction of landfill gas from each extraction point in the system. The objective of the tuning is to provide negative pressure (vacuum) at each extraction point without causing intrusion of air into the landfill. Tuning is an iterative process, as adjustments to any portion of the system have the potential to affect the entire system. A discussion of the monitoring and tuning procedures is provided below. A summary of the steps to be taken and data to be gathered is presented in Table 3.

4.2 Equipment

The instrument used to monitor landfill gas flow rates, pressures, and composition at JRL must be either a GEM-2000 or a GEM-5000 Portable Gas Analyzer (meter) manufactured by QED Landtec of Colton, California. Other site approved equivalents may be used. Like most analytical instrumentation, it is important to field calibrate the meter prior to using it to collect landfill gas

data. The instrument requires calibration with methane, carbon dioxide, and oxygen span gases. The meter should be field-checked with calibration gas, and if necessary, calibrated in accordance with the manufacturer's recommendations at least once each day that it is used. A log of the calibration should be kept with the instrument. Vibration, shock, and large temperature changes can affect the calibration of the instrument.

QED Landtec certifies that this instrument is intrinsically safe. However, it is generally good practice to avoid operating this instrument in an explosive atmosphere. Factory calibration should be performed in accordance with manufacturer's requirements.

4.3 Indicator Parameters

Typical ranges in concentrations of the various constituents found in landfill gas are presented in Table 1. Normal values for the landfill are established using data collected during operation. System tuning should be performed based on the methane, carbon dioxide, and oxygen concentrations in the landfill gas at individual wellheads. Typically, as the methane and carbon dioxide concentrations decrease, the concentrations of oxygen and nitrogen will increase. Such a trend indicates air intrusion into the system and adjustments should be made to reduce the landfill gas extraction (vacuum) rate to maintain oxygen to five percent or less. Alternatively, the landfill gas extraction rate could be increased if the methane and carbon dioxide concentrations are consistently in the middle to upper end of the typical ranges and/or indicate the development of an upward trend.

The composition of the landfill gas is measured using a meter. The gas sample is obtained through the static pressure port on the meter, and the percent methane, carbon dioxide, oxygen, and balance gas (predominately nitrogen) is reported.

4.4 Flow Rates

The landfill gas extraction flow rates will be different at each monitoring point and will vary with barometric pressure changes as well as landfill cover condition (i.e., whether geomembrane has been constructed over the extraction location or the condition of the intermediate cover). Likewise, the cumulative landfill gas flow rate at the flare will vary with time. The flow rates can be adjusted, if needed, based on the concentrations of the various constituents as described above. As the operating record of the system becomes established over time, "normal" flow ranges for the individual extraction points as well as the system may be established.

The landfill gas flow rate is calculated from differential pressure readings obtained at the wellheads. The portable gas meter can be programmed to directly correlate differential pressure to flow rate.

4.5 Pressures

Landfill gas pressure will vary throughout the system at any given time and will vary with varying extraction rates. The pressures at the extraction points should be negative to provide active extraction from that point. If the pressure is positive, then adjustments should be made to

increase the flow rate until negative pressure is achieved, provided that the methane concentration is at least 30 percent with no more than five percent oxygen.

The static pressure at the landfill gas extraction points and along the conveyance pipe is obtained by connecting the meter to the static pressure ports at the monitoring locations.

4.6 Temperature

Landfill gas temperature at the extraction points is obtained directly from thermometers installed on the wellhead assemblies or from a meter using a thermocouple inserted into the wellhead thermometer port.

As of January 6, 2021, JRL changed from operating the gas collection and control system to comply with NSPS Subpart WWW to operating the system to comply with NSPS Subpart XXX and NESHAP Subpart AAAA. Since that time, JRL has operated the gas collection and control system to operate in compliance with the updated NESHAP Subpart AAAA wellhead gas temperature limit of 145°F.

Operating at the default gas temperature for MSW landfills in NESHAP Subpart AAAA (145 °F) has not always been possible at JRL due to the type of waste disposed at the site and the corresponding decomposition temperature. To allow for gas collection with waste decomposition temperatures greater than 145°F, JRL has obtained approval from MEDEP to operate some gas extraction locations at an alternative operating temperature of 150°F.

LFG temperatures up to 150 °F do not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. When the measured temperature is greater than the applicable limit of 145°F (the default temperature limit) or 150°F (the approved higher operating value [HOV] for some collectors), the wellhead valve opening should be reduced to decrease flow and temperature.

5.0 MAINTENANCE AND TROUBLESHOOTING

5.1 Collection System Maintenance

LFG system maintenance involves the following:

- Repairs to the conveyance pipes due to damage caused by accident, settlement, or environmental factors;
- Repair or replacement of system components (e.g., wellheads, access ports, flex hoses, valves, condensate traps, etc.);
- Excavation for repair of damaged pipe and components; and
- Repairing and re-adjusting pipe supports and anchors.

In many instances, repairing the system may involve shutting down the flare or certain sections of the LFG collection system temporarily. The duration of the shutdown should be kept to a minimum; where possible, the work should be scheduled to coincide with scheduled flare shutdowns.

The sulfur removal system has a 95 percent uptime requirement and records are maintained to demonstrate that there are no more than 438 hours of downtime per 12-month period.

5.2 Landfill Surface

The landfill cover is an integral part of the landfill gas management system. Proper landfill cover maintenance practices are important for effective operation and performance of the landfill gas management system. Experience has shown that in most cases, proper cover maintenance in conjunction with timely installation of active landfill gas management system components will address most landfill odor problems. A visual inspection is helpful in identifying rips, tears, pinholes, cracks, fissures, or bare spots in the synthetic and soil cover systems. Damaged areas should be evaluated and repaired as soon as practical.

5.3 Conveyance Pipe

Over time, the conveyance pipe may develop air leaks. Air leakage should be limited to the degree practicable and it is recommended that oxygen not exceed 3.5 percent by volume in landfill gas in the conveyance pipe. (Under normal operations, the landfill gas should contain no more than one percent oxygen.)

Leaks can occur in above-grade pipe systems due to pipe separations caused by thermal contraction resulting from cooling at night and during a system shutdown. Separations or damage can occur to below-grade pipe due to differential settlement. Buried pipe is also subject to expansion and contraction, but to a lesser degree because of a more uniform temperature and the anchoring effect of the soil support within the trench.

Solid conveyance pipes are typically installed with at least a 5 percent slope within the landfill footprint in order to reduce the potential for liquid (condensate) blockage in pipes due to differential settlement. Increased pitch (i.e., greater than 5 percent) is provided, if practical. Other factors, such as constraints encountered during construction, may limit slopes on pipes. Blockages in pipes can be evaluated by installing access ports for monitoring. With buried systems, it may be necessary to “pot hole” (i.e., perform exploratory excavation) with a backhoe to install access ports for monitoring. If the main conveyance pipe becomes blocked or restricted with condensate, then either re-establishing the slope of the pipe or installing an additional condensate trap and drain should rectify the condition.

Landfill gas conveyance pipes will be replaced prior to final closure of the landfill, and as such, will be located just below the final cover system. These conveyance pipes, installed close to final grade, are not expected to fail. However, if replacement or access to pipes becomes necessary, repairs should be designed to reduce impacts to the final cover system and to restore the cover system to match final closure conditions. The MEDEP should be notified prior to impacting the final cover system, and repair efforts should be documented.

5.4 Blower(s)/Flare Station Maintenance

A brief discussion of general maintenance requirements for specific equipment follows. For more detailed information refer to the applicable manufacturer's information. Table 4 describes the monitoring checklist for the blower(s)/flare station.

5.4.1 Pipe and Fittings

Conveyance pipe and fittings installed at JRL are primarily high-density polyethylene (HDPE), with Polyvinyl Chloride (PVC) pipe installed in vertical extraction wells and PVC valves in the HDPE header pipe.

Process plant pipe and fittings may be constructed of both steel and thermoplastic. Both are durable long-lived materials. However, thermoplastic pipe can be subject to damage from shock, strain, or heat. Thermoplastic pipe should not be used near sources of extreme heat such as the flare. Carbon steel piping can erode and corrode. Stainless steel, cast iron, and aluminum piping have all been successfully used in landfill gas applications.

Landfill gas and condensate exhibit corrosive properties. The presence of oxygen, carbon dioxide, and organic acids common to landfill gas can be present in landfill gas condensate. The combination of these constituents can promote corrosion of steel pipe that carries landfill gas condensate. The most common point of wear due to erosion or corrosion in steel pipe in landfill applications is typically at pipe elbows and other fittings that are subject to erosion and where liquid condensate accumulates. Theses pipes, where they occur, should be inspected for evidence of corrosion (leakage, particularly at fittings). Where questions of pipe integrity exist, ultrasonic thickness testing may be performed, if necessary.

5.4.2 Valves

LFG flow control valves installed at JRL are primarily gear operated PVC butterfly valves with stem extensions. Gaskets are typically Viton. Joint hardware is typically Type 304 stainless steel. Other valve types and components may be present. Valve seats and stem seals may wear and eventually require replacement. Butterfly valves with elastometer seals, such as Buna-N or EPDM, may be affected by landfill gas. In such cases, it may be necessary to replace with Viton or Teflon™. Viton or Teflon™ valve seats in butterfly and ball valves, respectively, have demonstrated reasonably good performance.

5.4.3 Blower Maintenance

Routine maintenance for blowers and motors consists of listening for signs of abnormal operating conditions, monitoring for excessive vibration or temperature, and draining condensate from the blower housing periodically and before startup (if not automatically drained). The blower drive belt tension and wear should be checked on a monthly basis. If belts are glazed or cracked, then they should be replaced. At least one spare set of matched belts should always be on hand. On direct drive machines, flexible coupling alignment should be checked on initial setup and periodically as recommended by the manufacturer (typically quarterly to annually). Bearings should be greased or repacked according to the manufacturers' recommendations, (typically quarterly to annually). The electric drive motor, if not equipped with sealed bearings, should also

be greased. Blower seals and packing should be checked periodically for leakage. If blower seals continually leak or will not last, then consult the manufacturer or try another type of seal or seal material. Consult the manufacturer's literature for detailed information on the maintenance of the blower.

5.4.4 Gas Inlet Automatic Block Valve

An automatic block valve shuts off the flow of landfill gas to the blower(s)/flare station when the flare is not operating or when a fault or shutdown is initiated. This is a butterfly-type valve and should be serviced only when a need is indicated. The automatic block valve seat should maintain a gas-tight seal whenever the valve is in the closed position. Refer to the manufacturer's literature for information on service.

5.4.5 Flame Arrester

A flame arrester is designed to prevent the migration of burning landfill gas from the flare backwards into the process pipe and the flare station. This condition can cause what is known as "detonation" (an explosion) or "flashback" within the pipe network. A flame arrester will only work properly if the velocity and pressure of the flashback in the pipe is within the allowable range and the flame arrester is properly assembled.

The differential pressure across the flame arrester should be checked during monthly monitoring. The normal differential pressure is typically less than 0.5 inches water column (w.c.). The differential pressure across the flame arrester should not exceed 1.0-inch w.c. If excessive differential pressure is observed, then the flame arrester should be serviced. To service the flame arrester, shut down the blower/flare station and block in the flame arrester upstream using the manual and automatic block valves (**verify the valves do not leak**). Closely follow the directions in the manufacturer's literature for maintenance and re-assembly of the flame arrester element. It is important to note that a flame arrester's effectiveness is based upon a design spacing or gap in the flame arrester element. During maintenance and re-assembly, this spacing must be maintained according to the manufacturer's original specifications if the flame arrester is to function as designed. Ensure that all parts are returned and in the proper orientation when re-assembling the flame arrester.

5.4.6 Flare

Operation and maintenance of the flare is straightforward and consists of maintaining proper fuel pressure, maintaining the igniter system, and keeping the flare drained of condensate. Proper fuel velocity, quality, mixing, and flame condition are key to performance. Also, to operate consistently, the flare burner assembly must be adequately shielded from excessive wind. Problems with flame stability in an open flare are usually caused by poor landfill gas quality.

The primary wear on flares is due to thermal stress. If the flare is operated in an imbalanced condition or at excessively high temperature, then it will exhibit signs of accelerated thermal stress. This may be indicated by wear and deformation of the burner.

The flare may require burner adjustment or modification to achieve and maintain proper combustion performance. Adjustment of the flare may involve changing an orifice or burner ring, or moving or changing a plate. Consult the manufacturer or seek qualified assistance.

Landfill gas velocity to the flare is adjusted at the blower/flare station inlet. This is accomplished by balancing the distribution of the blower's total pressure, so that there is sufficient fuel pressure at the flare. In severe cases where adjustment will not work, the flare burner or the blowers may need to be modified or replaced. **Never modify the flame arrester to increase gas velocity.**

The flame safeguard sensor system consists of an electronic controller mounted in the control panel and a thermocouple mounted near the tip of the flare. At least one spare thermocouple should be kept on the site.

A thermocouple can be checked independently with a voltmeter and thermocouple tables or with a digital thermocouple test meter or digital thermometer. Proper polarity must be observed when installing and monitoring a thermocouple. If the thermocouple is subjected to flame impingement, then its life may be shortened considerably. Thermocouples can be mounted in protective sheathing; however, this will cause some delay in response to temperature changes.

See the flare manufacturer's literature for specific component operation, maintenance, and troubleshooting information.

5.4.7 Electrical Equipment Controls and Instrumentation

Dust may accumulate in electrical cabinets and absorb moisture from the air. Over sufficient time, a conductive path can be created that can cause a failure. Connections may also become loose due to thermal expansion and contraction. Electrical service and control cabinets should be cleaned on an annual basis. Wire connections should be checked and tightened throughout the cabinets annually. Calibration and verification of instrumentation gages and thermocouples should be performed annually. Shutdown alarms and devices should be tested and the results recorded in a log. Thermocouples for sensing flare stack temperature should be maintained and replaced when they no longer perform properly. This is normally evident by failure of the temperature controller to properly read or control the flare stack temperature (usually due to an open junction) or by loose or corroded connection terminals at the temperature transmitter, connector block, or temperature controller.

Test and recalibrate instruments, fault protection, and shutdown devices. Large breakers or fused disconnects should be disconnected under load. Ensure high voltage breakers or disconnects are "locked out" in accordance with 29 CFR 1910.147 and 1910.333 Subpart S before working on equipment associated with them. Fuses should be physically pulled to isolate equipment. When the blower/flare station will be down for major maintenance or stand down, large breakers should be locked out (i.e., physically separated and disconnected) and the fuses should be pulled.

5.4.8 Lubrication - General

Follow the manufacturer's recommendations for specific types and brands of lubricants. It is important to use the recommended type of grease and not to mix types or brands of grease. Do not over lubricate. Personnel who perform lubrication services should be knowledgeable in lubrication practices and should follow the manufacturer's instructions for lubrication requirements.

Establish an initial lubrication frequency based upon the equipment manufacturer's recommendation. It may be necessary to adjust the lubrication frequency interval based upon experience with the equipment.

5.4.9 Other Equipment Maintenance and Operating Tips

The system operator should be proactive, remain alert, and develop a habit of observing equipment.

Equipment noises (such as bearings) may be monitored using an equipment stethoscope or using a wrench or similar tool by placing it on the equipment and placing the opposite end of the tool against the bone in front of the ear to listen. It is important to develop a sense of what baseline conditions are for comparison. The smell of leaking landfill gas or burned lubricant can indicate a seal, component, or lubricant failure.

When checking motors or other electrical devices for temperature by feel, the back of the hand should be used. Approach the equipment slowly and feel for radiant heat, which would indicate a very high temperature. If the equipment is too hot to maintain hand contact, then it is at or above a threshold of about 60 to 63°C (140 to 145°F) and may be considered excessive in many cases depending upon the equipment and service. The reason for using the back of the hand is that it is more heat sensitive and in the case of electrical fault to the casing, the natural reaction will be for the muscles of the arm to contract away from the device. This can prevent electrocution.

Operating personnel should wear all cotton clothing that provides some degree of protection in gas flash fires. Some synthetics such as polyester blends will melt readily, which can be fatal. Ties or loose items (e.g., identification badges hanging around the neck, etc.) should never be worn around rotating or belt-driven equipment. All watches, rings, identification bracelets, etc., should be removed when performing electrical testing or troubleshooting.

It is important that maintenance supplies, lubricants, and spare parts be inventoried on a frequent basis to ensure that adequate stocks are maintained for when they will be needed. Supplies should be reordered and restocked as used.

5.4.10 Condensate Handling Systems

Condensate is managed using traps constructed inside the limit of waste, and condensate knockout structures constructed outside the limit of waste. The condensate knockout structures collect condensate in perimeter landfill gas conveyance pipes located outside the limit of waste

and discharge the condensate into primary leachate collection system cleanouts. The condensate traps inside the limit of waste drain by gravity into primary leachate collection system cleanouts or in some cases drain back into the waste mass. The blower/flare station is fitted with various traps, drains, valves, and pumps for handling condensate. Condensate handling components installed for LFG treatment systems (i.e., Sulfatreat & Thiopaq) should also be inspected and maintained periodically. Condensate can be corrosive and the equipment should be checked carefully and frequently for the effects of corrosion. Seals, o-rings, and valves are usually high maintenance items. Refer to the manufacturer's information for maintenance of individual equipment or components.

6.0 COLD WEATHER OPERATIONAL CONSIDERATIONS

Condensate in exposed pipes and equipment or in below-grade pipes without adequate soil cover may freeze during winter operations. Care must be taken to limit the amount of condensate allowed to collect in the landfill gas system at any time. The landfill gas is a source of heat for the system. If the system shuts down for a short period during winter months, then condensate in the exposed portions of the system may freeze.

If freezing of condensate under normal operating conditions becomes a regular problem, then heat trace and insulate the affected areas.

7.0 DATA COLLECTION

Data will be collected routinely using a meter for the flare, the well field, structures, etc. These "readings" are transferred to a computer and then uploaded to a secure database website. The database can be accessed by approved landfill personnel. Data is also collected via the supervisory control and data acquisition (SCADA) system for the flare and Thiopaq system.

7.1 Data Assessment

LFG measurements at each wellhead may be compared with previous data to assess relative performance. Persons assessing the data should be aware of the normal operating range for each parameter, note changes, and assess their causes. Equipment deterioration that can be sudden or gradual may be indicated by an abnormal monitoring result. Such indications should be promptly investigated. Data should fall within established parameters for normal operating ranges by comparing monitoring data with previous readings and target criteria for pressure (vacuum), methane (45 percent or more), oxygen (five percent or less), and temperature (150°F or less).

7.2 Landfill Daily Log Book

Whenever the system is monitored for any reason, staff should make appropriate entries in the Daily Log Book stored in the landfill office.

- Name of person making the entry;
- Date and time;
- Reason for the monitoring (e.g., routine, shutdown, specific monitoring or maintenance activity, etc.);

- Reason for any shutdown;
- Actions taken or adjustments made;
- Equipment status upon leaving; and
- Unusual observations made.

The daily log is used as a record of events regarding the landfill and to communicate between operating personnel. The log entry also becomes part of the daily landfill readings.

7.3 Data Collection Routine

Data are collected manually at the individual data points (i.e., at wells on the landfill, etc.).

Equipment used for data collection includes:

- Portable Gas Analyzer (GEM-2000, GEM-5000, or equivalent);
- Calibration gases (use before going into the field);
- Data reading sheets;
- Field book;
- Site map of the data points;
- Carrying tray, toolbox, or backpack, etc.;
- Tools needed to access the system components; and
- Spare parts for maintenance such as access ports, plugs, etc.

8.0 APPROVAL PROCEDURES FOR LANDFILL MANAGEMENT SYSTEM INSTALLATION

Prior to the installation of new landfill gas management system infrastructure within the landfill, various procedures must be followed to assure that the proposed system modification is properly designed and approved. This section defines the procedures to be followed prior to the modifying the landfill gas management system.

8.1 System Design

The landfill gas management system structures, conveyance pipes, and condensate management structures at JRL are designed by Sanborn, Head & Associates, Inc. (Sanborn Head) using sound engineering principles that follow industry standard procedures. The blower(s)/flare station is sized according to projected landfill gas flow rates.

NEWSME routinely retains Sanborn Head to prepare detailed design packages for the expansion of the landfill gas management system associated with each new operational cell to comply with Condition 15.B of Solid Waste Order #S-020700-WD-N-A and Condition 18 of Solid Waste Order #S-020700-WD-BI-N. The detailed design package typically includes the following:

- A description of the basis for the design;
- Drawings;
- Specifications; and
- Quality assurance and quality control information.

The landfill gas system expansion design for each cell is based on the projected development plans as prepared by Sevee & Maher Engineers, Inc. and a yearly review of landfill gas generation rates performed by Sanborn Head. The landfill gas expansion design is then submitted to the MEDEP for review and approval.

Required changes to the existing LFG infrastructure are occasionally identified and proposed by NEWSME as the landfill gas generation rate and the disposal capacity needs are reviewed. In addition, NEWSME may propose changes to the approved landfill gas management system design to address observed conditions that may require modifications or additions to the system.

8.2 Approval Procedures

Procedures to modify approved landfill gas management system designs fall into two categories referred to as Major and Minor Revisions. A discussion of these revisions are discussed in Sections 8.3 and 8.4 below and depicted in the flow chart provided as Figure 3.

8.3 Approval of Major Revisions to Approved Design

Major revisions are defined as a modification that affects the design or operation of the gas management system and can include such projects as:

- The addition of vertical extraction wells;
- The installation or rerouting of conveyance pipes;
- Changes to the condensate management design; and
- The addition of gas collection trenches.

Major revisions to approved design projects will be handled as a Change Order pursuant to 06-096 CMR 401-3.D of the Maine Solid Waste Regulations. Prior to submitting a formal change order request, NEWSME will contact the MEDEP and describe the issue (orally) and the proposed remedy (i.e., construct additional wells). Appropriate sketches will be provided as necessary. NEWSME will identify the anticipated time frame for construction and the name of the qualifying person who will oversee the construction. Following this step, the proposed (MEDEP agreed upon) changes will be provided to Sanborn Head, who will revise the drawings to include the location of additional wells and associated conveyance pipe, to include well depth information, etc. NEWSME will submit a written change order request to the MEDEP for review and approval at least five business days prior to the planned construction, unless an alternate deadline has been agreed upon with the MEDEP. The MEDEP will issue a response to the change order request within five business days or approval of the Change Order is automatically granted.

8.4 Approval of Minor Revisions to Approved Design

Minor revisions to the design are defined as modifications that do not significantly affect the design or operation of the landfill gas management system and can include projects such as:

- Minor shifting of a previously approved trench;
- The addition of a pipe intended to bypass a “water-out” or non-functioning section of an existing trench; and
- The addition of a short stub to an existing gas collection trench.

These modifications do not typically require the installation of an additional wellhead and are often a means of addressing a concern in a section of the operational landfill area.

For major changes to the design of the landfill gas management system that require MEDEP approval, NEWSME will notify the MEDEP and describe the need for the change, the location, and how the structure will be connected to the existing infrastructure. A hand sketch will be provided as necessary.

9.0 INFRASTRUCTURE CONSTRUCTION AND DOCUMENTATION

Construction of landfill gas infrastructure will be performed by qualified NEWSME staff and specialty contractors when needed. This section describes the components of the landfill gas management system that can be installed by NEWSME staff and the system components that require specialty contractors.

9.1 Construction Projects by NEWSME Staff

Qualified NEWSME staff is authorized to install the below listed infrastructure:

- Gas collection trenches;
- Conveyance pipe within the solid waste boundary;
- Condensate structures located within the solid waste boundary; and
- Wellheads on new wells and trenches and replacement wellhead fixtures.

NEWSME staff will follow an approved set of technical specifications for each project and qualified personnel will document the construction using field survey techniques. Following construction, field survey data will be provided to Sanborn Head so that the as-built drawings may be updated. Updated as-built drawings will be provided to the MEDEP as part of the annual report.

9.2 Construction Projects by Specialty Contractors

Specialty contractors will be retained to perform the following installations:

- Vertical extraction wells;
- Conveyance pipes outside of the solid waste boundaries; and
- Condensate pipe and structures outside of the solid waste boundary.

NEWSME staff may also elect to perform the above installations with third party oversight.

9.3 Construction Quality Assurance and Quality Control

Construction activities by NEWSME staff as listed in Section 9.1 above (with the exception of LFG conveyance pipe installations) will be overseen and documented by qualified NEWSME staff. Construction of vertical extraction wells, conveyance pipes of 12-inches diameter or greater, and condensate pipe and structures outside of the solid waste boundary will be overseen by qualified construction quality assurance personnel separate from NEWSME and the installation contractor following an approved CQA plan. The construction will be documented and the information will be submitted to the MEDEP within 45 days of completion of work.

9.4 Licensing of LFG Infrastructure Installations

Proposals for new gas related projects will be submitted to the MEDEP in the form of a minor revision application pursuant to 06-096 CMR 400.3.B(2)(b) of the Maine Solid Waste Management Regulations, except that if a major redesign of the gas extraction system is being proposed, the MEDEP may require an amendment application be submitted. For projects related to new cell construction, including the layout for proposed gas collection trenches, the landfill gas management system design will be included with the application for the new cell construction. The MEDEP may include comments on the proposed landfill gas management system design as part of its review of the new cell design. MEDEP's review will be completed prior to the construction of the new cell.

9.5 Emergency Situations

In an after-hours emergency, such as vandalism or a catastrophic failure, that causes damage and/or shuts down the landfill gas management system, NEWSME will immediately notify the proper parties by all means (office, home, MEDEP spill response line) to notify them of any proposed activities associated with abating the condition. It is understood by MEDEP staff that any work required to get the landfill gas management system operating again will proceed as needed.

TABLE 1

TYPICAL LANDFILL GAS CONSTITUENTS AT JRL

Operations and Maintenance Manual
Juniper Ridge Landfill
Old Town, Maine

COMPONENT	PERCENT VOLUME (All are stated on a dry basis except moisture.)
Methane (CH_4)	40 to 50%.
Carbon Dioxide (CO_2)	38 to 50%.
Oxygen (O_2)	Less than 1%.
Nitrogen (N_2)	0 to 6%.
Hydrogen (H_2)	Trace to 5% plus; generally less than 1%.
Carbon Monoxide (CO)	Trace; CO is an indicator of the possible presence of a subsurface fire.
Hydrogen Sulfide (H_2S) & Other Sulfur Components	Varies up to 15,000 ppm
Moisture	Up to 14% (increases with gas temperature).
Volatile Organic Compounds (VOCs)	Less than 2%; typically 0.25 to 0.5%.

Note: This table represents typical characteristics of landfill gas at JRL. Fluctuations can occur. A difference between characteristics in the gas from the facility and the values tabulated above does not necessarily indicate a problem. However, a large disparity should be reviewed to evaluate the cause.

TABLE 2

RECOMMENDED MONITORING SCHEDULE

Operations and Maintenance Manual
Landfill Gas Management System
Juniper Ridge Landfill
Old Town, Maine

ITEM	FREQUENCY	PARAMETER
Wellheads	Monthly	• Condition of flex hose; • Valve position; • Gas flow rate; • Static Pressure; • Percent methane; • Percent carbon dioxide; • Percent oxygen; and • Temperature of gas.
Blower/Flare Station	Weekly	• Condition of pipe and connections; • Consistency of flame; and • Functioning of ignition sparker.
Conveyance Pipe	Bi-Annual	• General condition of exposed pipe.

Notes:

1. The monitoring frequency may be reduced with approval from the Maine Department of Environmental Protection.

2. In addition to the monitoring schedule outlined above mechanical components of the blower/flare station should also be monitored and serviced in accordance with the manufacturer's instructions.

TABLE 3

GAS EXTRACTION SYSTEM MONITORING CHECKLIST

Operations and Maintenance Manual
Landfill Gas Management System
Juniper Ridge Landfill
Old Town, Maine

A. Prior to going out onto the landfill.

1. Calibrate the GEM-5000 Portable Gas Analyzer (meter) using methane, carbon dioxide, and oxygen.
2. Calibrate the pressure transducers by performing the "Zero Pressure" function.
3. Record the ambient weather conditions including:
   - Temperature;
   - Barometric pressure;
   - Wind speed and direction;
   - Precipitation amounts; and
   - Current observations (i.e., drizzling, raining, snowing).

B. At each wellhead assembly.

1. Connect the striped tubing with the external filter/water trap assembly from the static pressure/sampling port on the meter to the static pressure port on the wellhead assembly.
2. Connect the clear tubing between the impact pressure port on the meter and the impact pressure port on the wellhead assembly.
3. Perform the "Read Gas Levels" function on the meter. Follow instructions on the meter.
4. Record the following data on the data sheets or in the meter memory:
   - Station identification;
   - Percent methane;
   - Percent carbon dioxide;
   - Percent oxygen;
   - Percent balance;
   - Percent LEL;
   - Temperature of the gas stream;
   - Static pressure;
   - Differential pressure;
   - Gas flow rate; and
   - Control valve percent open.
5. Make adjustments to the flow rate by adjusting the wellhead control valve, if required.

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SITE ENTRANCE ROAD
SCALE HOUSE
RNG FACILITY
GAS TREATMENT BUILDING
LOCATION OF EXISTING FLARE NO. 4
PERMANENT CONDENSATE SUMP
PROPOSED FLARE NO. 5
EAST PERIMETER LFG HEADER
PERMANENT CONDENSATE SUMP
PUMP STATION
CELL 18 CONDENSATE PUMP STATION (TEMPORARY)
PROPOSED EXPANSION LIMIT OF WASTE CONTAINMENT
CELL 18
CELL 21
CELL 22
CELL 19
CELL 20
CONDENSATE PUMP STATION
CELL 20 CONDENSATE PUMP STATION (TEMPORARY)
CONDENSATE PUMP STATION
PERMANENT CONDENSATE SUMP
WEST PERIMETER LFG HEADER
CONDENSATE PUMP STATION

NOTES:

1. THE TOPOGRAPHY AND SITE FEATURES SHOWN OUTSIDE THE LIMIT OF WASTE CONTAINMENT WERE PREPARED BY AERIAL SURVEY & PHOTO INC., OF NORRIDGEWOCK, MAINE. PHOTO DATE MAY 1, 2025. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY CASELLA WASTE SERVICES.
2. PROPOSED EXPANSION GRADES SHOWN WERE PROVIDED TO SANBORN HEAD BY SEVEE & MAHER, (SME) INC. OF CUMBERLAND, MAINE.
3. ACTUAL GRADES MAY DIFFER FROM GRADES SHOWN ON DRAWINGS AT THE TIME OF CONSTRUCTION.
4. THE EXISTING LANDFILL GAS EXTRACTION SYSTEM INFRASTRUCTURE FEATURES SHOWN ARE BASED ON A COMBINATION OF DESIGN AND AS-BUILT DOCUMENTATION AVAILABLE TO SANBORN, HEAD & ASSOCIATES, INC. (SANBORN HEAD). ACTUAL LOCATIONS OF INDIVIDUAL FEATURES MAY BE DIFFERENT THAN SHOWN.
5. THIS PLAN IS INTENDED TO ILLUSTRATE THE PROPOSED LAYOUT OF THE LANDFILL GAS (LFG) EXTRACTION SYSTEM. ACTUAL LOCATION OF WELLS, PIPE, AND VALVES MAY CHANGE DEPENDING ON SITE CONDITIONS AND CONSTRAINTS DURING CONSTRUCTION.
6. SOLID LANDFILL GAS CONVEYANCE PIPE LOCATED INSIDE THE LIMIT OF WASTE CONTAINMENT SHALL BE INSTALLED AT A MINIMUM SLOPE OF 5 PERCENT. PERFORATED LANDFILL GAS COLLECTION TRENCHES SHALL BE INSTALLED AT A MINIMUM SLOPE OF 2 PERCENT.
7. HDPE PIPE AND FITTINGS SHALL BE SDR-17. HDPE FITTINGS SHALL BE MOLDED, FABRICATED FITTING SHALL NOT BE USED.

LEGEND:

EXISTING		PROPOSED
180	10 FOOT CONTOUR	370
	2 FOOT CONTOUR	
GW-11	VERTICAL LFG WELL	GW-305
GW-19R	REPLACEMENT VERTICAL LFG WELL	
12"ø	LFG CONVEYANCE PIPE (SIZE AND SLOPE DIRECTION)	
T	CONDENSATE TRAP	T
	CONTROL VALVE	
	CONDENSATE PUMP STATION	
	LEACHATE COLLECTION CLEANOUT	
	VERTICAL RISER	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
HP	HIGH POINT	HP
	TEMPORARY PIPE TERMINATION	

SANBORN HEAD

GRAPHICAL SCALE
200' 100' 0' 200' 400'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: O. HERNANDEZ
DESIGNED BY: V. ZUCCHELLI
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: NOVEMBER 2025

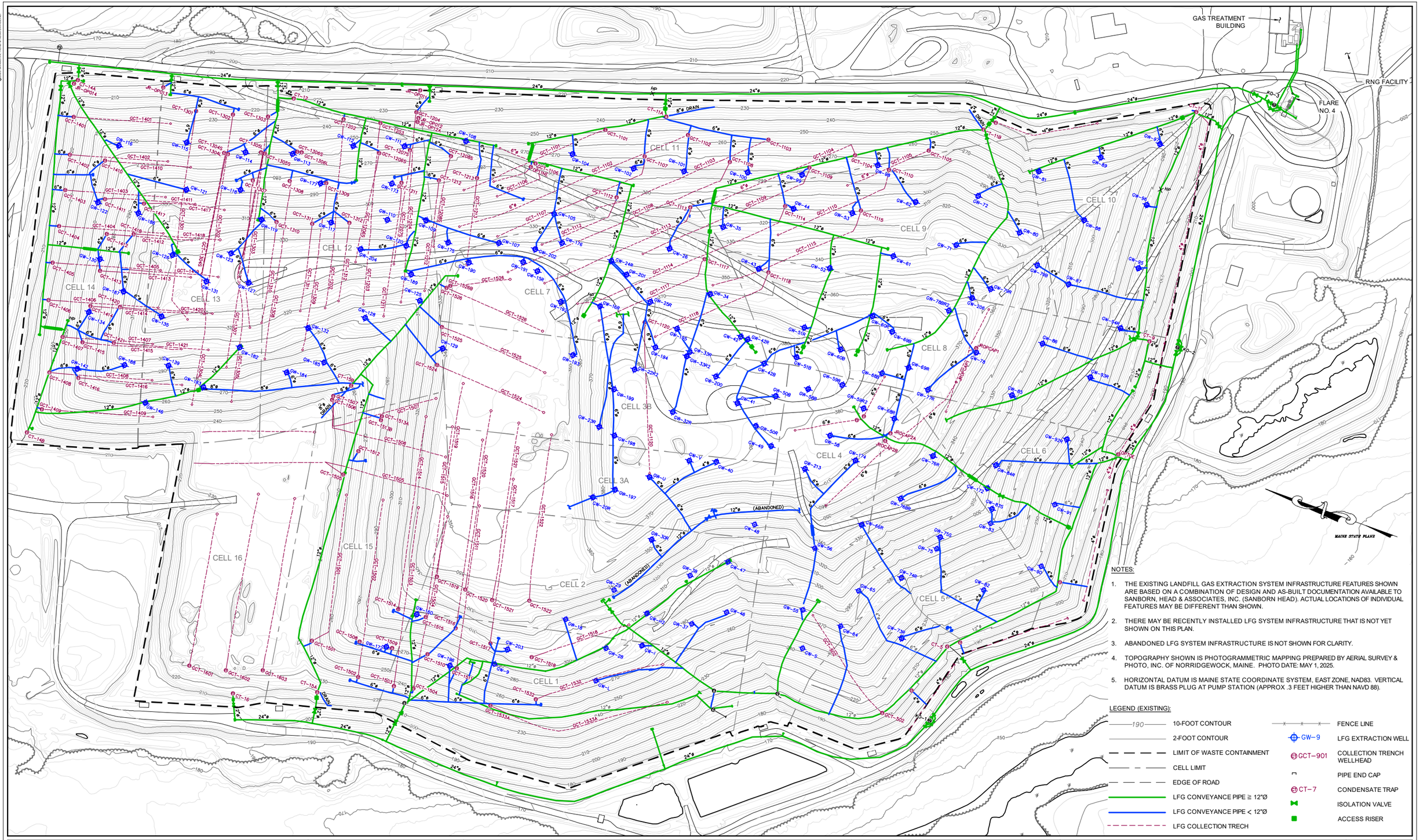
PHASE II LFG SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

JRL LFG INFRASTRUCTURE PLAN (FULL BUILD-OUT)

FIGURE NUMBER: 1

FILE: P:\2500s\2536.40\Graphics\Final\CAD\Phase II Expansion\Figures\OnePlan\Figure 1.dwg
LAYOUT: Layout1
CREATED: Ana Bandeira
PLOT DATE: 11/17/25



NOTES:

1. THE EXISTING LANDFILL GAS EXTRACTION SYSTEM INFRASTRUCTURE FEATURES SHOWN ARE BASED ON A COMBINATION OF DESIGN AND AS-BUILT DOCUMENTATION AVAILABLE TO SANBORN, HEAD & ASSOCIATES, INC. (SANBORN HEAD). ACTUAL LOCATIONS OF INDIVIDUAL FEATURES MAY BE DIFFERENT THAN SHOWN.
2. THERE MAY BE RECENTLY INSTALLED LFG SYSTEM INFRASTRUCTURE THAT IS NOT YET SHOWN ON THIS PLAN.
3. ABANDONED LFG SYSTEM INFRASTRUCTURE IS NOT SHOWN FOR CLARITY.
4. TOPOGRAPHY SHOWN IS PHOTOGRAMMETRIC MAPPING PREPARED BY AERIAL SURVEY & PHOTO, INC. OF NORRIDGEWOCK, MAINE. PHOTO DATE: MAY 1, 2025.
5. HORIZONTAL DATUM IS MAINE STATE COORDINATE SYSTEM, EAST ZONE, NAD83. VERTICAL DATUM IS BRASS PLUG AT PUMP STATION (APPROX .3 FEET HIGHER THAN NAVD 88).

LEGEND (EXISTING):

- 190 — 10-FOOT CONTOUR
- 2-FOOT CONTOUR
- LIMIT OF WASTE CONTAINMENT
- CELL LIMIT
- EDGE OF ROAD
- LFG CONVEYANCE PIPE ≧ 12"Ø
- LFG CONVEYANCE PIPE < 12"Ø
- LFG COLLECTION TRECH
- FENCE LINE
- GW-9 — LFG EXTRACTION WELL
- GCT-901 — COLLECTION TRENCH WELLHEAD
- PIPE END CAP
- CT-7 — CONDENSATE TRAP
- ISOLATION VALVE
- ACCESS RISER

SANBORN HEAD

GRAPHICAL SCALE
120' 60' 0' 120' 240'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: O. HERNANDEZ
DESIGNED BY: O. HERNANDEZ
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: NOVEMBER 2025

JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

AS-BUILT GAS COLLECTION & CONTROL SYSTEM PLAN

FIGURE: 2

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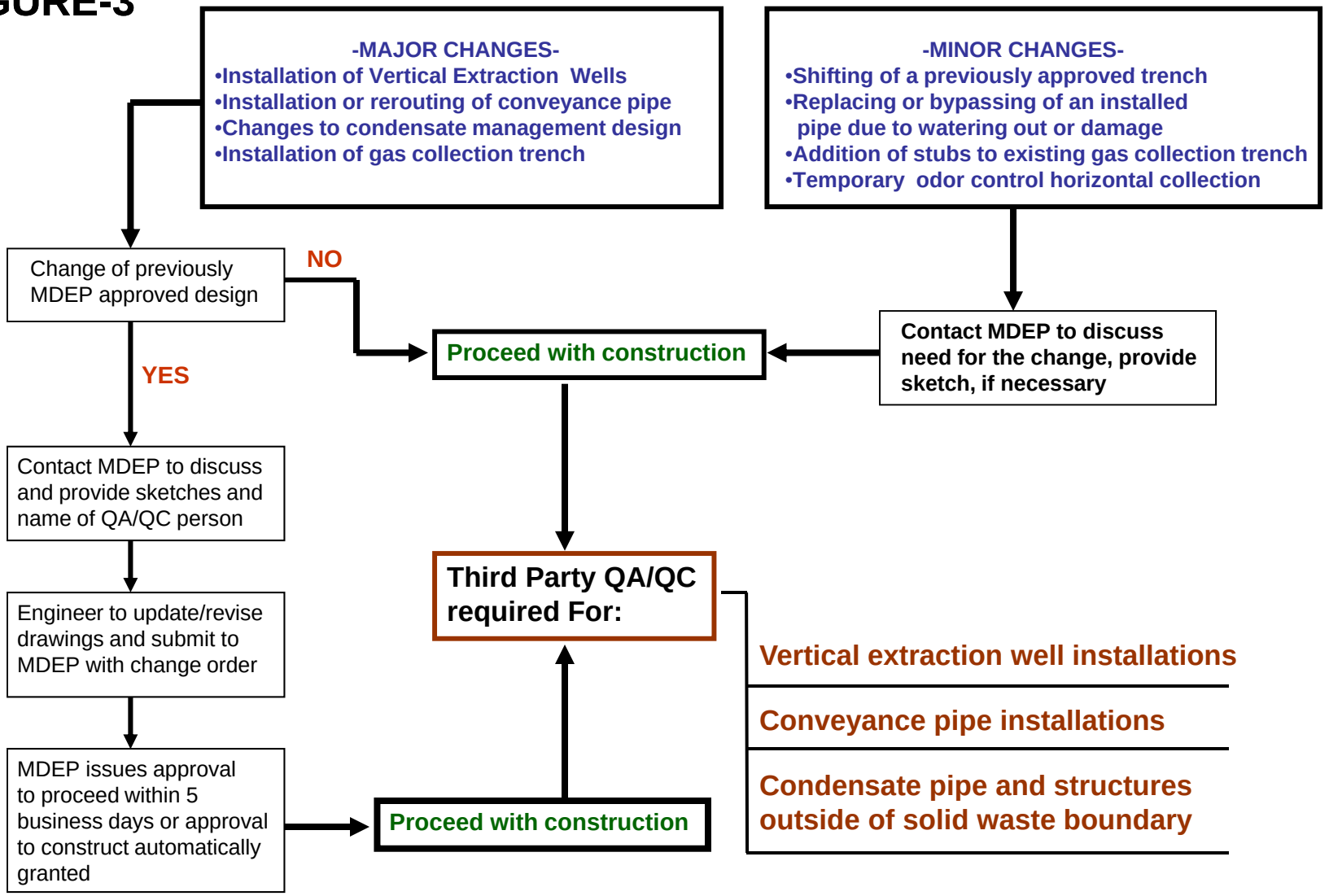
FILE: P:\2536\2536-49\Graphics\FreeCAD\As-Built Figures\20251103 JRLfillAsBuiltLFGAsBuilt.dwg
LAYOUT: 2
C.TBL FILE: BFA Standards
PLOT DATE: 11/14/25

FIGURE-3



-PROTOCOL FOR LFG SYSTEMS INSTALLATION-

ATTACHMENT 1

COMPLIANCE ASSURANCE MONITORING

TRS CONTROL EQUIPMENT FOR TRS / SO2 CONTROL
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

I. Background

A. Emissions Unit

Description:	Landfill Gas Utility Flares #2, #3, and #4
Identification:	Flare #2, 22.5 MMBtu/hr Flare #3, 40.5 MMBtu/hr Flare #4, 106.5 MMBtu/hr
Facility:	Juniper Ridge Landfill Old Town, Maine

B. Applicable Regulation, Standard of Performance, Emission Limit, and Monitoring Requirements

Regulation:	BACT emission limits in Chapter 115 New Source Review Air License A-921-77-4-M, Part 70 Air Emission License A-921-70-B-R and Amendment #1, A-921-70-H-A
Standards of Performance:	
TRS:	On a 12-month rolling average basis: • An outlet concentration of 1,000 parts per million by volume (ppmv) for gas delivered to the flares.
Emission Limit:	
SO_2:	On a 12-month rolling average basis: • 33.09 lb/hr from Flare #2 • 59.56 lb/hr from Flare #3 • 157.0 lb/hr from Flare #4 • 449.0 tons per year from all flares combined
Monitoring Requirements:	Landfill gas (LFG) TRS concentration, flow rate, H_2S concentration, control equipment downtime, scrubber bypass flow, flow meter calibrations

C. Control Technology

TRS Control Equipment, including Thiopaq wet scrubber system and other alternative control equipment in conjunction with the Thiopaq as necessary to remove TRS from LFG.

II. Monitoring Approach

The key elements of the monitoring approach are presented in Table 1. The performance indicators are TRS concentration and LFG flow rate.

TABLE 1. MONITORING APPROACH

COMPLIANCE ASSURANCE MONITORING
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

	Indicator No. 1	Indicator No. 2	Indicator No. 3
I. Indicator	Landfill gas TRS concentration	Landfill gas flow rate	Facility-Wide SO_2 emission rate
Measurement Approach	TRS levels in the landfill gas entering (3 samples) and exiting (3 samples) the TRS control equipment will be measured once per month and laboratory analyses will be performed by ASTM-D5504 and ASTM-D1945 (or equivalent method), per MEDEP Air License A-921-77-4-M.	The landfill gas flow rate is measured using a thermal mass flow meter.	The SO_2 emission rate is estimated based on the measured flow rate of landfill gas to the flares, and the concentration of TRS compounds measured during once-per-month sampling events.
II. Indicator Range	An excursion is defined as landfill gas delivered to the flares at a concentration greater than 1,000 ppmv TRS on a 12-month rolling average basis. An excursion shall trigger an inspection, corrective action as necessary, and a reporting requirement as required by the Part 70 license.	An excursion is defined as a landfill gas flow rate exiting the TRS control equipment which when combined with a TRS control equipment outlet concentration, results in a 12-month rolling average SO_2 emission rate greater than 33.09 lb/hr from Flare #2, greater than 59.56 lb/hr from Flare #3, or greater than 157.0 lb/hr from Flare #4, except for periods of maintenance or unavoidable malfunction (as described in 38 M.R.S.A. §349.9) of the TRS control equipment. An excursion shall trigger an inspection, corrective action as necessary, and a reporting requirement as required by the Part 70 license.	An excursion is defined as an SO_2 emission rate greater than 449.0 tons per year from all flares combined on a 12-month rolling basis. An excursion shall trigger an inspection, corrective action as necessary, and a reporting requirement as required by the Part 70 license.
III. Performance Criteria			
A. Data Representativeness	The TRS concentration is measured at the inlet and outlet of the TRS control equipment.	The landfill gas flow rate should be equal at the inlet and outlet of the TRS control equipment. Therefore, a single landfill gas flowrate measurement will be recorded to document the flow through the TRS control equipment.	TRS levels in the landfill gas entering (3 samples) and exiting (3 samples) the TRS control equipment will be measured once per month and laboratory analyses will be performed by ASTM-D5504 and ASTM-D1945 (or equivalent method), per MEDEP Air License A-921-77-4-M. JRL shall record the gas flow rate on the day of sampling and the monthly volume of bypass flow.
B. Verification of Operational Status	Periodic monitoring of the TRS control equipment includes H_2S concentrations before and after the equipment. JRL will use colorimetric tubes to provide information for use as operational tools, but not for compliance determinations.	The flow meter is calibrated once per year, per MEDEP Air License A-921-77-4-M. Flow meter readings are recorded on the TRS sampling dates.	Laboratory analysis includes QA/QC checks. The flow meter is calibrated once per year, per MEDEP Air License A-921-77-4-M. Flow meter readings are recorded on the TRS sampling dates. Monthly bypass flow is measured and recorded.
C. QA/QC Practices and Criteria	Laboratory analysis includes QA/QC checks.	The flow meter is calibrated once per year, per MEDEP Air License A-921-77-4-M.	Laboratory analysis includes QA/QC checks. The flow meter is calibrated once per year, per MEDEP Air License A-921-77-4-M.
D. Monitoring Frequency and Data Collection	The TRS concentration entering and exiting the TRS control equipment is measured on a single day, once per month.	The TRS concentration entering and exiting the TRS control equipment is measured on a single day, once per month. The gas flow rate through the TRS control equipment is measured and recorded on the TRS sampling dates.	The TRS concentration entering and exiting the TRS control equipment is measured on a single day, once per month. The gas flow rate through the TRS control equipment is measured and recorded on the TRS sampling dates. The gas flow rate through the TRS control equipment is measured and recorded on the TRS sampling dates. Bypass flow is recorded monthly.
E. Averaging Period	Monthly	Monthly	Monthly

MONITORING APPROACH JUSTIFICATION

I. Background

This compliance assurance monitoring (CAM) plan is for the landfill gas total reduced sulfur (TRS) control equipment, which consists of a Thiopaq desulfurization system (scrubber) and other alternative control equipment (e.g., activated carbon), operated as necessary in conjunction with the Thiopaq, at the State of Maine Juniper Ridge Landfill (JRL) in Old Town, Maine. The TRS control equipment is used to control sulfur dioxide (SO_2) emissions by reducing the concentration of TRS in landfill gas (LFG) prior to combustion. The facility is operated by NEWSME Landfill Operations, LLC.

The LFG combustion devices at JRL consist of three utility flares: Flare #2 (22.5 MMBtu/hr), Flare #3 (40.5 MMBtu/hr), and Flare #4 (106.5 MMBtu/hr). SO_2 is an LFG combustion byproduct generated by the destruction of TRS compounds, primarily hydrogen sulfide (H_2S). The Maine Department of Environmental Protection (MEDEP) specified in Air License A-921-70-B-R an SO_2 emission rate limit from JRL of 449.0 tons per year (tpy) from all flares combined. The concentration of TRS in LFG delivered to the flares shall not exceed 1,000 parts per million by volume (ppmv) on a 12-month rolling average basis; and the emission rate of SO_2 shall not exceed 33.09 pounds per hour (lb/hr) from Flare #2, 59.56 lb/hr from Flare #3, or 157.0 lb/hr from Flare #4 except for periods of maintenance and unavoidable malfunction (as described in 38 M.R.S.A. §349.9). Compliance with the SO_2 lb/hr and tpy limits and the TRS ppmv limit shall be based on a 12-month rolling average (per MEDEP Air License A-921-77-4-M).

To demonstrate compliance with the SO_2 lb/hr and tpy limits and the TRS ppmv limit, TRS levels in the landfill gas entering (3 samples) and exiting (3 samples) the TRS control equipment will be measured once per month and laboratory analyses will be performed by ASTM-D5504 and ASTM-D1945 (or equivalent method), per MEDEP Air License A-921-77-4-M. JRL shall record the gas flow rate on the days of sampling and the monthly volume of bypass flow. It will be assumed that the remaining sulfur in the landfill gas is converted to SO_2 and emissions calculated accordingly.

II. Rationale for Selection of Performance Indicators

Measurement of TRS concentrations in LFG at the inlet and outlet of the TRS control equipment is required by Air License A-921-77-4-M; the license that established the 1,000 ppmv limit. That Air License also requires JRL to monitor LFG flow rate, H_2S concentration, control equipment downtime, and scrubber bypass.

III. Rationale for Selection of Indicator Ranges

Indicator ranges for LFG TRS concentrations were selected based on JRL's licensed limits (on a 12-month rolling average basis) for TRS control to an outlet concentration of 1,000 ppmv. To meet the licensed allowable SO_2 emission rates from the flares, the acceptable LFG flow rates are dependent on the TRS concentration at the TRS control equipment outlet. Specific LFG flow rate ranges were, therefore, not identified in the CAM Plan. Rather, the mass emission rate (i.e., combination of the LFG flow rate and TRS concentration) will be evaluated.

Monthly measurements of TRS concentrations at the inlet and outlet of the TRS control equipment, and the LFG flow rate conveyed to the flares is required by MEDEP Air License A-921-77-4-M. An excursion is defined as an exceedance of a flare's SO_2 lb/hr limit, calculated as a 12-month rolling average. As a proactive approach, JRL will undertake inspection and corrective action as necessary, when the monthly average TRS concentration in treated gas delivered to the flares exceeds 1,000 ppmv or a monthly average SO_2 emission rate exceeds a flare's lb/hr limit.

For the combined emissions from all the flares, an excursion is defined as an SO_2 emission rate greater than 449.0 tons per year on a 12-month rolling basis.

APPENDIX K

ODOR COMPLAINT MANAGEMENT AND RESPONSE PLAN

SME
SEVEE & MAHER
ENGINEERS

Operated by NEWSME Landfill Operations, LLC

JUNIPER RIDGE LANDFILL
Odor Complaint Management and Response Plan

Revisions:

11/25, 05/25, 04/25, 04/20, 02/13, and 02/10

December 2007

1.0 Introduction

NEWSME Landfill Operations, LLC (NEWSME), which operates the Juniper Ridge Landfill (JRL), receives periodic complaints of odors from residents living within the vicinity of the landfill. NEWSME is committed to mitigating the odor problem and has implemented an aggressive program of identifying potential sources of odors and corrective measures to reduce the intensity and frequency of odors transported offsite to residential locations. A copy of JRL's Odor Control Plan may be found in Attachment C.

As part of the program, NEWSME has instituted a plan to respond to odor complaints received from the community. NEWSME encourages local residents potentially affected by odors from the JRL to report any odors that they may be experiencing as soon as they occur. This will allow the landfill staff to immediately investigate and identify the source of the odor, and to implement corrective measures to reduce the transport of odors offsite.

This document details the procedures NEWSME staff will follow to respond to complaints received on odor, document the response, and institute a plan of action to address the complaint.

2.0 Odor Complaint Response Procedure

2.1 Basic Procedure for Responding to Odor Complaints

The basic procedure for responding to odor complaints is as follows:

1. When odor complaints are received during landfill operational hours, complaint line personnel will ask several specific questions of the caller including requesting identification and the nature of the complaint (first determine if the complaint is odor related).
2. The information will be documented by the person receiving the call at the scale house, then relayed immediately to a member of the complaint response group, who will respond to the complaint, if deemed necessary.
3. During the following times, all complaint line calls will be automatically forwarded to a member of the response group via cell phone:
   Weekdays: 9:00 PM – 5:30 AM Weekends: 5:00 PM – 5:00 AM
4. The designated response group staff member will be responsible for following up with each caller, more thoroughly documenting the complaint, and also for notifying other staff, if any corrective action(s) may be required.

2.2 NEWSME Phone Number for Receipt of Complaints

NEWSME Operations has a dedicated incoming phone line for complaints from the public relating to any aspect of the JRL operations. The complaint line is answered 24 hours per day 7 days per week by trained landfill personnel.

The complaint number is 207-394-4376.

2.3 Scale House Operator Procedures for Responding to Odor Complaints

The following information will be gathered from any users (callers) of the complaint number:

- Name, address, and telephone number.
- Determine if the complaint is odor related.
- Ask what time of day they first experienced the odor.
- Ask whether or not the odor is being experienced at their residence.

Attachment A lists the dialogue the scale house operator will employ in responding to a caller, and the specific questions the scale house operator will ask of the caller. After this information is received, the scale house operator taking the call will immediately relay the information to the appropriate complaint response personnel.

In addition, the scale house operator will formally document the complaint using a blank complaint record form provided in Attachment B. The completed complaint record forms will be kept on file at the Environmental Compliance Manager's office.

2.4 Response Group Procedures for Further Responding to Odor Complaints

During operational hours, an available member of the complaint response group will respond to the complaint if necessary. If a return call has been requested, the on-call response group member will first telephone the person initiating the complaint. If a site visit has been requested, the group member will go to the residence to evaluate site-specific information.

During non-operational hours, the on-duty response group member is responsible for completion of all procedures relating to the complaint call. Whether or not the response group member meets directly with the individual initiating the complaint, the following information will be gathered at the earliest opportunity and entered onto the Complaint Record Form:

- Time of arrival at the location of the odor complaint (if applicable).
- Recorded wind direction and speed at the landfill.
- H_2S level measured at the complaint location.
- Observation of the cover integrity at the landfill.
- Observed waste materials being accepted at time of complaint.
- If necessary, initiate remedial measures with the landfill supervisor to mitigate the source of the odor.

The complaint response group member will be responsible for documenting the additional information required by the complaint record form, including the following:

- Actions taken to remedy cause of the complaint.
- Resolution of the complaint.
- Time and comments made in reporting back to caller.
- Comments made by caller during final exchange.
- Recommendations as to how to resolve any observed problem.

If applicable, it is important that the person calling with the complaint be made fully aware of the actions taken and resolution of the complaint, such as placement of additional cover or other remedial measures. It's also important to notify the caller if it's determined that the source of the odor is not the JRL.

Attachment A

Scale House Operator Odor Response Procedures

-JUNIPER RIDGE LANDFILL-

-LANDFILL COMPLAINT RESPONSE PROCEDURES-

WHEN RECEIVING A COMPLAINT CALL PERTAINING TO JUNIPER RIDGE LANDFILL, FOLLOW THE BELOW LISTED LANGUAGE:

1. **HELLO, THIS IS THE LANDFILL COMPLAINT LINE, WHO IS CALLING PLEASE?**
2. **ARE YOU CALLING WITH A COMPLAINT PERTAINING TO JUNIPER RIDGE LANDFILL?**
3. **WHAT IS YOUR NAME, RESIDENCE ADDRESS, AND TELEPHONE NUMBER?**
4. **WHAT IS THE NATURE OF YOUR COMPLAINT?**
5. **AT WHAT TIME OF DAY DID YOU FIRST NOTICE THE SOURCE OF YOUR COMPLAINT?**
6. **DO YOU WANT SOMEONE TO CALL YOU BACK OR VISIT YOUR RESIDENCE?**
7. **I WILL REPORT THE SPECIFICS OF THIS COMPLAINT TO LANDFILL MANAGEMENT, SO THAT THEY CAN FOLLOW-UP AT THE EARLIEST OPPORTUNITY.**
8. **THANK YOU FOR CALLING TO REPORT THIS SITUATION.**

COMPLETELY FILL OUT THE SCALEHOUSE SECTION OF THE COMPLAINT RECORD FORM, AND THEN CALL THE APPROPRIATE INDIVIDUAL LISTED BELOW TO REPORT THE COMPLAINT. PLEASE CALL IN THE ORDER LISTED.

DURING OPERATIONAL HOURS		EVENINGS (After 9:00 PM) AND WEEKENDS (After 5:00 PM)	
NAME	**CELL**	**NAME**	**CELL**
KURTIS BROWN	207-217-1781	NICOLE HUSTUS	207-631-8786
MICHAEL ABBOTT	207-745-2025	KURTIS BROWN	207-217-1781
WAYNE BOYD	207-694-5510	MICHAEL ABBOTT	207-745-2025

Attachment B

Blank Complaint Record Form

COMPLAINT RECORD FORM

JUNIPER RIDGE LANDFILL

-THIS SECTION COMPLETED BY SCALE HOUSE-

Complaint received by the following method: □ Phone □ Email □ Fax □ In Person

Complaint received at: □ 207-394-4376 (JRL 24-hour line) □ 207-394-4370 (fax)
□ 207-941-4570 (MEDEP) □ Dominique.Dispirito@maine.gov (MEDEP)

Date of complaint: _____ Time of call/fax/visit: _____ □ AM □ PM

Name of person filing complaint: _____

Address: _____

Telephone number: _____

Nature of complaint: □ Odor □ Noise □ Lights □ Dust □ Traffic □ Other
□ Traffic- Name of Company_____ License#_____ Route_____
Direction traveling_____ Truck type □ tractor trailer □ straight/dump trailer
□ No Specific Information
For odor complaints; time odor was detected:_____ □ AM □ PM

Is the odor being detected at the caller's residence? □ Yes □ No

Telephone call requested? □ Yes □ No

Site visit requested? □ Yes □ No

Wind direction & speed at time of complaint: From the _____ @ _____mph

H_2S at off-site meters: 552 W. Old Town Rd:___ 4 W. Coiley Rd:___ Access Rd:___ Stagecoach:___

Manager contacted regarding this complaint: _____Time:_____

Comments and/or Odor Type: □ Sludge □ Trash □ Rotten Eggs (H_2S) □ Other (Specify)

_____

_____

Scale house Attendant Taking Call: _____Complaint Log Number:_____
Time Faxed to Kurtis Brown, Abbott, and Wayne Boyd: _____

-THIS SECTION COMPLETED BY RESPONSE PERSONNEL-

Wind direction & speed at time of visit: From the _____ @ _____mph

Telephone called returned by: _____ Date: _____ Time:_____

Site visited by: _____ Date: _____ Time:_____

H_2S at closest off-site meter: _____ Potential Source: □ H_2S □ Sludge □ MSW □ Other

Specific comments pertaining to complaint:

_____

Completed Complaint Record Form entered into the Environmental Audit Database: (Date) _____

Attachment C

JRL Odor Control Plan

NEWSME LANDFILL OPERATIONS, LLC
JUNIPER RIDGE LANDFILL
ODOR CONTROL PLAN

Introduction

The Juniper Ridge Landfill (JRL), formerly known as the West Old Town Landfill, accepts a variety of non-hazardous and special wastes that have the potential to generate odors. The waste types accepted with the highest potential for odor generation are bypass municipal solid waste (bypass MSW) and wastewater treatment plant sludges. The leachate generated from the landfill is also a likely source of odor during its storage and transport to the wastewater treatment plant. As the waste mix in the landfill begins to degrade, it also has the potential to generate landfill gases, such as methane and hydrogen sulfide (H_2S).

All of the above sources of landfill-related odors must be managed appropriately to prevent offsite migration of odor sources, such as H_2S, and the resulting odor complaints from individuals who live near the JRL. This Odor Control Plan describes the current odor control measures implemented at JRL, as well as policies and procedures to control the offsite migration of landfill-related odors.

Control of Odors Associated with Incoming Wastes:

A variety of methods are utilized to control offsite migration of gases and odors associated with daytime operations. They include the following:

1. The active placement of incoming wastes is confined to the smallest cell area possible. The wastes are spread over the active face, compacted, then another lift initiated. If a load of noticeably odorous waste arrives, ash, construction and demolition debris (CDD), or another effective neutralizing material, will be spread over the top to limit odor migration. This activity is particularly important on windy days to minimize odors.
2. Additionally, daily cover is applied over the active portion of the landfill at the end of each workday. Cover materials may include wood chips, CDD processing fines, bark, ash, soil-type materials, or soil equivalent foam applied to the manufacturers recommended thickness. Other approved waste materials may be used if first approved by the Department.
3. A portable trailer mounted odor neutralizer spray system is utilized in the active working area of the landfill as weather permits. This trailer helps control odors as wastes are offloaded and spread out.
4. A trailer odor neutralizer spray system is utilized to spray the tops of trailers of odorous waste (e.g., sludge, bypass MSW), upon arrival at the landfill as weather permits. This helps assist in controlling odors during the waste offloading process. Once offloaded, empty trailers pass through the same trailer odor neutralizer spray system to help control empty trailer transit odors.
5. A perimeter odor neutralization system is used to provide additional odor control coverage to the south/southwest direction as weather permits. The system is installed along the south/southwest landfill perimeter security fence.

Control of Odors Associated with Leachate Storage & Transport

1. JRL has two primary leachate storage tanks designed to store all leachate being generated from the landfill prior to being transported offsite to a wastewater treatment plant for proper disposal. The leachate storage pond is utilized as a back-up system in the event that leachate generation rates (during a heavy rain event) dramatically increase in a short period of time.
2. Tankers haul the leachate to ND OTM LLC (ND Paper) wastewater treatment plant located in Old Town or the Anson Madison Sanitary District wastewater treatment plant in Madison, ME. Generally, tankers operate from late afternoon into the evening hours. If required, chemicals will be added or metered into the tankers as they are being loaded, to minimize odor during transport. All tanker filling ports are required to be tightly sealed during transport to and from the disposal facility.

Control of Landfill-Related Gases

1. Non-active portions of the landfill will receive intermediate or final cover when cells reach final grades.
2. A comprehensive landfill gas management system, including gas blowers/flare systems, horizontal collection trenches, and vertical extraction wells, have been designed and installed at the facility. Horizontal gas collection trenches and vertical extraction wells have been installed throughout the existing landfill with horizontal systems being installed every 40-feet of waste depth to help control landfill gas generation as a cell is being filled. Gas extraction wells are generally installed after a cell has reached its final capacity and provide more efficient LFG removal.
3. The landfill gas blowers/flare system consists of a 3,550 CFM flare with dual blowers to provide the extraction and destruction of landfill gas.

Monitoring for Offsite Migration of Landfill Related Gases and Odors

1. Daily odor surveys are typically performed around the active landfill areas, while periodic surveys will be performed at surrounding residential areas when conditions warrant. The surveys will include monitoring for gas migration and landfill-related odors. Odor intensity will be rated according to the Butanol Odor Intensity Scale. The surveys will also include measurements of airborne concentrations of H_2S using a Jerome® 631-X™ Hydrogen Sulfide Analyzer. The results of the surveys will be immediately reported to the landfill operations manager in order to assure that any potential odor causing conditions are corrected accordingly.
2. As a proactive measure, JRL has five Honeywell Single Point Monitors (one onsite and four offsite), so that facility personnel can review real-time H_2S concentration data from the monitors and identify conditions that may require abatement. Locations of the monitors are as follows:

    1. Adjacent to the perimeter fence line just south of Cell #5 (Landfill South Monitor).
    2. Located approximately 1-mile north of the landfill on the access road (Access Road Monitor).
    3. Located at 4 West Coiley Road, off Route 43 southeast of the landfill (West Coiley Road Monitor).

4. Located at 552 W. Old Town Road off Route 43 southwest of the landfill (552 W. Old Town Road Monitor).
5. Located off the Old Stagecoach Road northwest of the landfill (Stagecoach Road Monitor).

All five of the H2S monitors have direct communication with the landfill's monitoring system through telemetry. Real-time information can be obtained at the scale house, as well as, on the office computer. If any of the H2S monitors detect a concentration of 15 ppb, the scale house is alerted by telephone with an automated message reporting the condition. The scale house operators and security personnel are instructed to immediately report any such condition to the supervisory staff, so that they can follow-up by investigating onsite conditions, as necessary.

If an odor complaint is received at the facility, the scale house staff can report the real-time H2S data (along with the wind direction from the onsite weather station) to response personnel to assist them with their follow-up investigation.

Odor Complaint Records

1. Odor complaints related to the JRL are accepted by the following four methods:
   - Maine DEP telephone number (207-941-4570)
   - JRL complaint line (207-394-4376)
   - JRL fax (207-394-4373),
   - Email to Dominique.Dispirito@maine.gov
2. As detailed in the JRL *Odor Complaint Management and Response Plan*, specific procedures are followed for responding to complaints. All complaints will be recorded on the facility complaint record form and assigned a complaint record number.

All completed complaint record forms will be kept on file in the Environmental Manager's Office and monthly reports on complaint activity provided to the MEDEP.

APPENDIX L

WASTE INSPECTION PLAN

SME
SEVEE & MAHER
ENGINEERS

WASTE INSPECTION PLAN
FOR
JUNIPER RIDGE LANDFILL

Waste inspection and education on proper management and handling is the best defense against the receipt of unacceptable waste. Waste inspection is critical to personal safety, environmental protection and compliance. Everyone; customer service, drivers, scale attendants, operators, and managers share in this responsibility.

Unacceptable wastes are wastes that we **CANNOT** or **SHOULD NOT** accept or transport. Wastes can be deemed unacceptable for many reasons, primarily because they are considered dangerous or harmful to human health or the environment. Below is a list of unacceptable wastes at the Juniper Ridge Landfill:

- Any Material Regulated as a "Hazardous" Waste
- Out of State Waste
- Paints
- Chemicals
- Any Liquid Wastes
- Waste Oil
- Untreated Medical-Related Wastes
- Pathological Wastes
- Dead Animals
- Abandoned or Junk Vehicles
- Friable Asbestos Materials
- Other Non-Approved Wastes

Universal Wastes such as:

- Fluorescent Lamps
- Mercury Vapor Tubes
- Light Ballasts Containing PCB's
- Batteries
- Computer Monitors (CRT's)
- Television Sets
- Mercury Thermostats/Switches
- Mercury Thermometers

Appliances such as:

- Washer Machines
- Dryers
- Stoves/Ranges
- Dishwashers
- Microwaves

Items containing CFC's or HCFC's (chlorofluorocarbons and hydrochlorofluorocarbons) such as:

- Refrigerators
- Air Conditioners
- Freezers
- Dehumidifiers
- Water Coolers
- Other Refrigerated Items

Special Wastes:

- Any Waste Material Not Receiving Prior Approval from Environmental Manager

If unacceptable wastes are detected in a load, it is the responsibility of the generator to properly and safely remove the material from the site, handle, transport, and dispose of the material in compliance with all applicable safety and environmental requirements and standards. All costs associated with receipt, removal, testing, and remediation of unacceptable wastes at JRL are the responsibility of the generator. JRL does not accept or store unacceptable waste.

Unacceptable wastes are generally listed in local, state, or federal regulations, disposal or transportation permits, or are unacceptable as a matter of company policy.

In order to uphold employee safety and comply with all acceptable & unacceptable waste regulations, the following guidelines have been established:

1. **Pre-approval of Special Wastes:**
   Special wastes require approval by the environmental manager at the facility prior to disposal. Special wastes are required to go through the **Waste Characterization Program** prior to being approved for acceptance.

2. **At the scalehouse:**
   Scalehouse operators need to question drivers on the type and source of waste, then visually inspect loads and transportation documents when appropriate.

   When inspecting waste loads, some warning signs to watch out for are:
   - Red Bags
   - Drums/Barrels/Containers
   - Vehicle Placards
   - Unfamiliar Labels or Warning Labels
   - Industrial Process Waste
   - Unusual, unfamiliar or irritant odors
   - Liquids oozing or free flowing

   Any suspicious loads should be immediately reported to the Environmental Manager (EM) and moved to a safe location for further inspection.

   The EM will need to determine what the material is and where it originated. This information will allow the EM to track down the problem areas.

   If further inspection determines that an unacceptable material is in the load, and it can be safely removed, then do so and place the material back onto the trailer or rolloff prior to it departing the facility.

   If an unacceptable item or material is identified that could create an unsafe situation when handling, then the load must be rejected. Depending upon the situation, the EM may have to report any unsafe conditions to the appropriate company contacts and regulatory agencies. Proper safety precautions must be taken for all unacceptable materials found.

3. In the landfill:

Landfill operators should be closely monitoring arriving loads for unacceptable materials that could potentially cause a dangerous situation, or cause the facility to be in non-compliance with regulations.

Any arriving load identified as potentially containing an unacceptable material needs to be immediately reported to the site supervisor and EM.

The scalehouse should be contacted if truck traffic needs to be held to address the unacceptable load. If this occurs, incoming traffic will have to stage until the material has been identified and put under safe control.

The area of unacceptable waste should be properly cordoned off. All equipment on the pad will be placed in a safe location in reference to the material. The site supervisor or EM will release the operators as soon as the material has been determined to be safe or the material has been properly removed. It will be the responsibility of the site supervisor and EM to reopen the pad and let the scalehouse know to allow incoming trucks again.

If an unacceptable item is found, and the operators know that it is not a serious hazard, and it can be removed with no employee contact, USING THE EQUIPMENT TO RELOAD IT BACK IN TO THE TRANSPORTER'S TRUCK, then the site supervisor and EM will still need to be contacted but the pad does not need to be shut down if the material can be removed in a safe and timely manner.

If an unacceptable material has been identified after the hauler has departed the site, and it can be safely removed:

- Take the appropriate precautions to remove the item
- Wear appropriate PPE for the task.
- Then transfer the item to a safe storage area until it can be properly disposed of or recycled.

AT NO TIME WILL A LANDFILL EMPLOYEE LEAVE THE EQUIPMENT TO CHECK A MATERIAL ON THE GROUND WITHOUT FOLLOWING THE ABOVE PROCEDURES!!

APPENDIX M

FACILITY NOTIFICATION PROCEDURES

SME
SEVEE & MAHER
ENGINEERS

JUNIPER RIDGE LANDFILL

Operated by NEWSME Landfill Operations, LLC

2828 Bennoch Road
Old Town, ME 04468

FACILITY NOTIFICATION PROCEDURES

Revisions:

11/25, 05/25, 04/25, and 04/20

April 2014

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ATTACHMENT A - CONTACT INFORMATION

DISTRIBUTION LIST

Copies of this Facility Notification Plan are located at the following locations:

- General Manager, Pine Tree Landfill, Hampden, ME
- Environmental Manager, Pine Tree Landfill, Hampden, ME
- Landfill Operations Manager, JRL Facility, Old Town, ME
- Safety Manager, Pine Tree Landfill, Hampden, ME
- Regional Vice President, Regional Office, Westbrook, ME

Copies of this Facility Notification Plan have also been forwarded to the following entities:

- Landfill Manager, Maine Bureau of General Services, Augusta, ME
- MEDEP, Bangor, ME
- City of Old Town, Old Town, ME
- Sevee & Maher Engineers, Cumberland Center, ME
- Pierce Atwood LLP, Portland, ME

1.0 PLAN PURPOSE

This Facility Notification Plan (FNP) addresses the notification process if/when a regulatory compliance issue or public safety incident occurs or when there is a need for facility coverage during both routine operations and/or during an emergency.

Also included, are procedures for using the JRL Community Notification System (CNS), to alert interested parties about warranted events as deemed appropriate by NEWSME Landfill Operations LLC (NEWSME) Routine Site Managers. Notifications in CNS will be created by NEWSME and distributed to interested parties by a private notification service (PNS).

Efforts to prevent emergency situations from occurring are just as important as prior planning to respond in the event of an emergency. The JRL facility is committed to the prevention of all incidents and to the safe and effective response to any emergency that may occur.

This FNP plan is in addition to other pre-existing JRL contingency plans which include the Spill Prevention, Control and Countermeasures (SPCC) Plan, Stormwater Pollution Prevention Plan (SWPPP), Environmental Monitoring Plan (EMP), and other health and safety plans already on file at the JRL facility.

2.0 FACILITY INFORMATION

The JRL facility and its associated ancillary buildings and equipment is located at 2828 Bennoch Road, Old Town, Maine and is owned by the Maine Bureau of General Services (Maine BGS) and operated by NEWSME, a subsidiary of Casella Waste Systems, Inc. (Casella) of Rutland, Vermont. NEWSME operates the Juniper Ridge Landfill and a wood storage facility at the same address.

Facility Name:	Juniper Ridge Landfill
Facility Address:	2828 Bennoch Road Old Town, ME 04468
County:	Penobscot County

3.0 FACILITY NOTIFICATION & CNS SIGN-UP

3.1 Notification to Proper Officials and Interested Parties

JRL will notify the proper officials in a timely manner in the event of a regulatory compliance issue, public safety incident, or other emergency situation. Notifications to interested parties will occur for public safety incidents at the discretion of NEWSME's Routine Facility Managers (General Manager, Landfill Operations Manager, or Environmental Systems Manager), or a designated representative when events at the site warrant. Events that may require notification to interested parties may include but are not limited to the following:

- Significant fires or explosions,
- Detections of hydrogen sulfide levels which have been confirmed and are continuously above 30 parts per billion offsite,
- Situations or events that are likely to cause odors well beyond normal operational odors offsite which may affect nearby residents,
- Other events/incidents deemed warranted by NEWSME Routine Facility Managers.

Notifications to interested parties will be completed through a CNS and may be a single notification or multiple notifications depending on the incident/event. The following information will be included within CNS notifications:

- Nature of the event,
- Areas likely to be affected,
- Estimated duration of the event (if known),
- Recommendation actions (if any), and

Post-notification follow-up will be issued through CNS after the event is done. The follow-up notifications will provide users a summary of the event. MEDEP and BGS will also receive the summary for inclusion on their facility websites. Specific notification procedures are further discussed in Section 5.0 of this FNP.

The list of officials to be notified, which includes emergency responders, municipal contacts, regulatory contacts, and Casella region/corporate contacts. along with their contact numbers attached in Appendix A.

3.2 CNS Notification Sign-Up

The CNS enables interested parties to receive updates regarding landfill events via recorded telephone messages, text message notifications, or email. NEWSME will distribute sign-up instructions to abutters, the landfill advisory committee, the Maine Department of Environmental Protection (MEDEP), and the Bureau of General Services (BGS) for posting on their websites. A list of interested parties will be managed by the PNS, who will provide it to NEWSME, BGS, and MEDEP upon request. Sign-up will be limited to abutters, members of the landfill advisory committee, City of Old Town (Old Town)/ Town of Alton (Alton) municipal officials/emergency responders, and Alton/Old Town residents who live within a 3-mile radius of the landfill.

4.0 FACILITY COVERAGE

4.1 Routine Facility Manager Coverage

The following table illustrates facility personnel available at the JRL on a daily basis:

Name/Title - Routine Facility Managers	Contact Info:
Wayne Boyd, General Manager	(207) 694-5510 cell
Kurtis Brown, Landfill Operations Manager	(207) 217-1781 cell
Michael Abbott, Environmental Systems Manager	(207) 745-2025 cell

In the event that the General Manager is off-site, the Landfill Operations Manager shall assume responsibility for the site. In the event that the General Manager and the Landfill Operations Manager are both off-site, the Environmental Systems Manager shall assume responsibility for the site. In the event of a regulatory compliance, public safety or emergency situation the General Manager, Landfill Operations Manager, and Environmental Systems Manager are required to:

- Perform notifications to regulatory agencies and local officials,
- Activate any necessary emergency response organizations,
- Coordinate and catalog any emergency response effort,
- Appropriate, either directly or through prearranged contracts, any funds required to carry out all necessary activities,
- Maintain communications with corporate management, and
- Alert interested parties about warranted events as deemed appropriate.

4.2 Emergency Facility Coverage

In the event that the General Manager, Landfill Operations Manager, Environmental Systems Manager are off-site or require additional assistance due to emergencies or unforeseen circumstances, the following personnel are available:

Name/Title - Emergency Managers	Contact Info:
Jake Deroche, Site Supervisor	(207) 631-3716 cell
Brandon Badger, Shop Supervisor	(207) 249-3536 cell
Jim Worster, Safety Manager	(207) 745-8345 cell
Jeffrey Pelletier, Environmental Manger	(207) 249-8025 cell
Simon Tripp, Regional Vice President	(978) 479-0374 cell

In the event of a regulatory compliance, public safety or emergency situation, the Environmental Manager and the Safety Manager for the facility shall serve as the designated alternate emergency contacts for the facility. The Environmental Manger and the Safety Manager are required to arrive at the site within a reasonable time after notification and are required to do the following:

- Perform notifications to regulatory agencies and local officials,
- Activate any necessary emergency response organizations,
- Coordinate and catalog any emergency response effort,
- Appropriate, either directly or through prearranged contracts, any funds required to carry out all necessary activities,
- Maintain communications with corporate management, and
- Alert interested parties about warranted events as deemed appropriate.

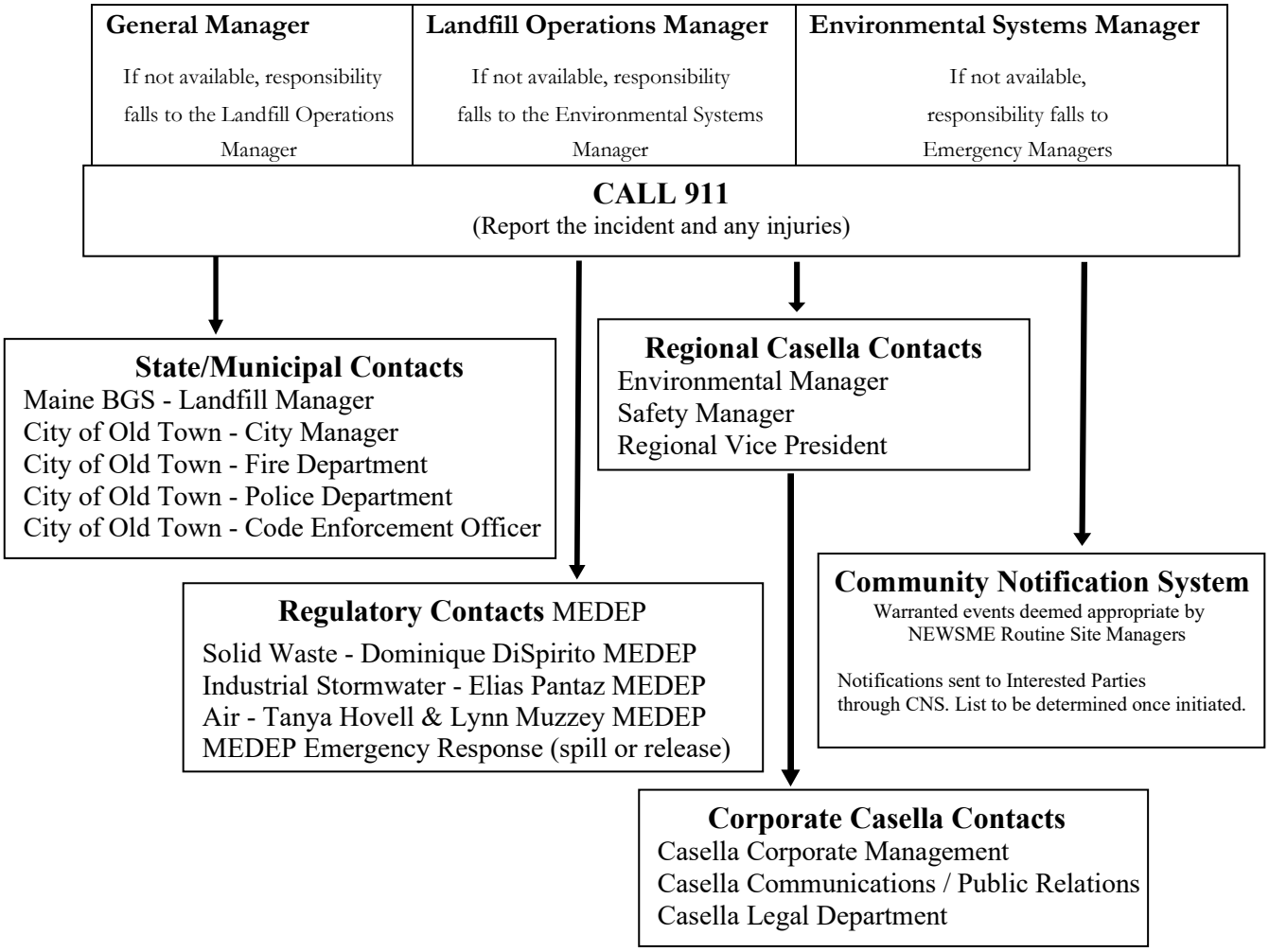
5.0 SAFETY / NOTIFICATION PROCEDURES

5.1 Safety

In the event of any emergency situation the primary focus of any individual authorized in this FNP is to immediately secure the safety of facility personnel, onsite third-party contractors, facility visitors, and the public. The secondary focus is to take any reasonable action to prevent impacts to public health and the environment. Once this has been accomplished, the procedures below should be executed immediately to notify the proper officials.

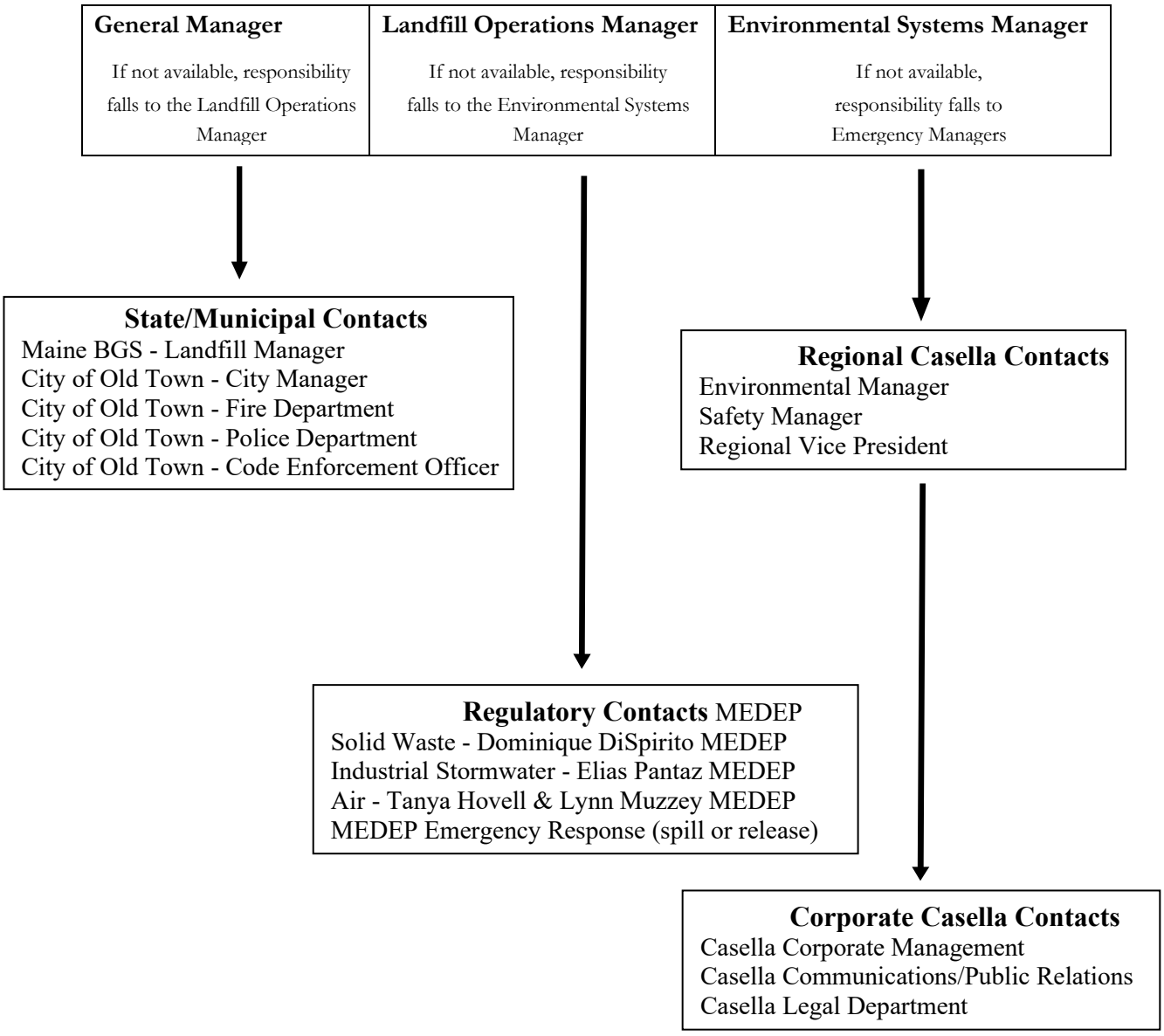
5.2 Notification Procedures – Public Safety Emergency

In the event of a public safety emergency and after securing the safety of those at the facility, the facility management team shall execute the following notification procedures:



5.3 Notification Procedures – Regulatory Compliance

In the event of a regulatory compliance issue and after securing the safety of those at the facility, the facility management team shall execute the following notification procedures:



6.0 TRAINING

6.1 Training

The facility management authorized by this FNP will receive training on the notification procedures.

ATTACHMENT A

CONTACT INFORMATION

JRL FACILITY MANAGEMENT	
Wayne Boyd, General Manager	(207) 694-5510 cell
Kurtis Brown, Operations Manager	(207) 217-1781 cell
Michael Abbott, Environmental Systems Manager	(207) 745-2025 cell
Jake Deroche, Landfill Supervisor	(207) 631-3716 cell
Brandon Badger, Shop Supervisor	(207) 249-3536 cell
Jeffrey Pelletier, Environmental Manager	(207) 249-8025 cell
Jim Worster, Safety Manager	(207) 745-8345 cell
Simon Tripp, Regional Vice President	(207) 978-0374 cell
STATE / MUNICIPLE CONTACTS	
Maine BGS - Landfill Manager	(207) 592-0841 cell
City of Old Town - Town Manager	(207) 827-3965, ext. 200
City of Old Town - Fire Department	911 or (207) 827-3400
City of Old Town - Police Department	911 or (207) 827-6358
City of Old Town Code Enforcement Officer	(207) 827-3965, ext. 205
Maine State Police	(800) 452-4664
Northern New England Poison Center	(800) 222-1222
Eastern Maine Medical Center	(207) 973-7000
MEDEP CONTACTS	
MEDEP Solid Waste – Dominique DiSpirito	(207) 441-0732
MEDEP Industrial Stormwater – Elias Pantaz	(207) 458-3627
MEDEP Air – Tanya Hovell	(207) 446-8397
MEDEP Emergency Response	(800) 482-0777
CASELLA CORPORATE CONTACTS	
John Casella – Chairman & CEO	(802) 236-5673 cell
Ned Coletta – President	(802) 345-7441 cell
Jeff Weld – VP Communications	(802) 558-6859 cell
Shelley Sayward – Sr. VP / General Counsel	(802) 345-2597 cell
Melissa Stevens – Associate General Counsel	(802) 417-9661 cell

APPENDIX N

GEOTECHNICAL MONITORING PLAN

SME
SEVEE & MAHER
ENGINEERS

PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
GEOTECHNICAL MONITORING PLAN

Prepared for

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

August 2025

4 Blanchard Road
P.O. Box 85A
Cumberland, ME 04021

Tel: 207.829.5016 sme-engineers.com

SME
SEVEE & MAHER
ENGINEERS

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LIST OF ATTACHMENTS

ATTACHMENT 1 ANNUAL GEOTECHNICAL INSPECTION FORM

PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
GEOTECHNICAL MONITORING PLAN

1.0 INTRODUCTION

This Geotechnical Monitoring Plan (GMP) describes the geotechnical monitoring to be performed at the existing Juniper Ridge Landfill (JRL) including the proposed Phase II Expansion. The GMP will serve as the Stability and Settlement Monitoring Plan for the Phase II Expansion, as required by Ch. 401.4.D(3) of the Rules.

The Phase II Expansion will be located to the north of, and adjacent to, the existing landfill and will be constructed atop firm foundation soils (i.e., dense glacial till). It will consist of five new landfill cells (i.e., Cells 18-22) that will provide approximately 11.9 million cubic yards (MCY) of additional disposal capacity. The Phase II Expansion will expand JRL's solid waste footprint by about 57 acres. The Phase II Expansion will be developed in a phased approach over its anticipated 10- to 12-year life span. Each new cell is sized to provide about two years of capacity, at a projected usage rate of about 880,000 tons/year. The new cells will receive similar types of wastes as those received by the current landfill cells.

This GMP incorporates the proposed Phase II Expansion and, as such, it replaces the existing GMP and the associated Stability and Settlement Monitoring Plan for the original and Phase I Expansion portions of the JRL (SME, 2015). Based on the results of geotechnical monitoring performed for the existing portions of JRL, no changes in geotechnical monitoring for the GMP are proposed. The types and frequency of monitoring indicated in this GMP are consistent with those that have been utilized at JRL since 2010.

This GMP describes the activities to be completed to monitor the geotechnical performance of the Phase II Expansion, and the existing landfill, and verify consistency with the parameters and assumptions used in the facility's design. The monitoring will include regular visual observations of the landfill by NEWSME Landfill Operations, LLC (NEWSME) personnel and an annual, independent geotechnical inspection including review of landfill operations and associated data, as described herein. The findings of this GMP will be reported to the Maine Department of Environmental Protection (MEDEP) annually as part of NEWSME's Annual JRL Report.

2.0 GEOTECHNICAL MONITORING

The geotechnical monitoring will consist of four primary activities and associated reporting:

- Visual observations and inspections of the landfill relative to slope stability, settlement, and general condition;
- Review of semi-annual topographic surveys;
- Review of waste types, quantities, placement locations, and filling sequences; and
- Review and evaluation of fluid levels measured within the leachate collection layer of selected cells.

The primary monitoring activities are described in the paragraphs below.

2.1 Visual Observations and Inspections

Visual observations and inspections relating to landfill slope stability, settlement, and general condition will be made on the active and inactive portions of the JRL.

2.1.1 Routine Inspections

NEWSME operational personnel will perform routine inspections of the landfill and associated infrastructure on a regular basis, as described in the JRL Operations Manual. These inspections will be to document landfill operations and check that facility components are operating properly. As part of these inspections, NEWSME personnel will observe the landfill and document its overall condition including any evidence of cracking, localized depressions, erosion, leachate breakout on sideslopes, areas of ponded water, and toe heaving. An inspection report, using the form presented in the Operations Manual, Appendix O, will be filled out for each inspection. If a routine inspection identifies an unfavorable or unexpected condition, NEWSME will consult with an independent engineer to develop a plan to address the condition, as appropriate. Any such plan will be reviewed with the MEDEP prior to implementation.

2.1.2 Annual Independent Geotechnical Inspection

An independent geotechnical engineer will complete an annual visual inspection and review of the landfill using the form presented in Attachment 1. This annual review will include a site inspection, a review of site aerial topographic survey data (see Section 2.2 below), a review of site operating records, including waste types, quantities, placement locations, and filling sequences (see Section 2.3 below), and a review of liquid levels in the landfill obtained from pressure transducers installed in various leachate collection layers (see Section 2.4 below). The purpose of the annual independent inspection is to assess the overall condition of the landfill and to specifically look for evidence of cracking, localized depressions, erosion, leachate breakout on sideslopes, areas of ponded water, stressed vegetation, toe heaving, and other potential tell-tale signs of movement or slope instability. The intent of the on-site inspection and

associated evaluations is to confirm that the landfill is maintained in a stable condition and that the geotechnical behavior of the facility is consistent with that anticipated during design.

If the annual inspection or associated evaluations indicate a condition requiring immediate action, the engineer will notify NEWSME and develop a plan to address the items identified. Any such plan will be reviewed with the MEDEP prior to implementation.

2.2 Review of Topographic Survey Data

Topographic survey of the landfill is periodically completed for volume change evaluation. The topography from the surveys will be compared to detect areas of unexpected settlement and to verify that active waste fill slope angles do not exceed those stipulated in the Operations Manual. Similarly, the topography will be reviewed to identify any potential toe-of-slope heave and to confirm flow continuity of drainageways. The topographic survey data will also be used to evaluate in-place waste densities and changes in secondary (time-dependent) strain rates of the waste that are used for the assessment of final cover performance.

2.3 Review of Waste Composition

The review of waste types/properties, quantities, placement locations, and filling sequences will be used to evaluate consistency with the assumptions used in the geotechnical evaluation and design for the landfill cells.

2.4 Review and Evaluation of Fluid Waste Liquid Levels

Liquid pressure transducers were previously installed in the leachate collection layer of Cells 11 to 16 to measure liquid levels above the primary geomembrane liner. The transducers were installed at the bottom of the leachate collection sand atop the geocomposite drainage layer. The purpose of the transducers is to confirm that the hydraulic head within the leachate collection layer (i.e., atop the cell liner) is minimal. Pressure transducers will be installed at the base of the leachate collection layer in Phase I Expansion Cell 17, as well as in Cells 18 through 22 of the Phase II Expansion.

The independent engineer will review the pressure transducer data and liquid levels as part of the annual inspection.

2.5 Reporting

The independent engineer will prepare an annual Geotechnical Inspection Report for submission to NEWSME. NEWSME will include that report in the Annual JRL Report, which will be submitted to the MEDEP. The Geotechnical Inspection Report will include a summary of waste types and waste placement activities,

the findings from the site inspections and associated data evaluations, and recommendations regarding any proposed changes to the GMP.

References

Sevee & Maher Engineers, Inc., July 2015, Juniper Ridge Landfill Expansion Geotechnical Monitoring Plan

ATTACHMENT 1

ANNUAL GEOTECHNICAL INSPECTION FORM

SME
SEVEE & MAHER
ENGINEERS

JUNIPER RIDGE LANDFILL
ANNUAL GEOTECHNICAL INSPECTION FORM

Observation Date: _____ Inspector Name: _____
Weather: _____

Observation (Enter a ✓ as appropriate)			Description (location, direction, appearance, etc.)	Proposed Action
Area	**Sat.**	**Unsat.**		
Active Filling Area				
location description				
slope stability				
waste lift thickness				
active slope angle				
erosion				
leachate breakout				
ponded water				
toe heaving				
overall condition				
Inactive Filling Area				
location description				
slope stability				
cracking				
erosion				
leachate breakout				
ponded water				
toe heaving				
overall condition				
Interim/Final Cover Area				
location description				
overall surface condition				
cracking				
erosion of cover material				
erosion of ditch lining				
leachate breakout				
ponded water				
toe heaving				
grass kills				
gas venting				
overall condition				

Utilize additional pages for notes, as necessary.

APPENDIX O

OPERATIONAL AND INSPECTION FORMS

SME
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SPILL REPORTING FORM

SPILL REPORTING FORM

Emergency Contact Information	
Fire Department	911
Medical Emergency	911
MEDEP Oil Spill Response Hotline	1-800-482-0777
National Response Center	1-800-424-8802

Spill Information		
Site Name/Company:		
Street Address:	City or Town/State:	
Date & Time of Spill:	Product Spilled:	Quantity Spilled:
Location of Spill:	Source of Spill:	
Immediate Measures Taken to Control Spill:		
Measures Taken to Prevent Re-Occurrence:		

Notifications	**Yes**	**Not Required**	**Date & Time**	**Contact Name**
911				
MEDEP 1-800-482-0777				
Other				

Name **Signature**

SWPPP TRAINING LOG

SWPPP TRAINING LOG

Trainer Name:	**Location:**
Title:	
Date:	

Training Topics:

- An overview of the SWPPP;
- Spill response procedures, maintenance requirements, and material management practices;
- The location of all controls on the site required by the MSGP, and how they are to be maintained;
- The proper procedures to follow with respect to the MSGP's pollution prevention requirements;
- When and how to conduct inspections, record applicable findings, and take corrective actions;
- Used and spent oil solvent management;
- Fueling procedures;
- General good housekeeping practices; and
- Used battery management.

Name	**Signature**

QUARTERLY VISUAL MONITORING FORM

QUARTERLY VISUAL MONITORING FORM

Person Collecting Sample:

Person Performing Visual Assessment:

Site Name and Address: Juniper Ridge Landfill, 2828 Bennoch Road, Alton, Maine

Date and Time:

Time Since Previous Storm Event:

Time Since Current Storm Event Began:

Measurable Discharge from Outfall(s):

Outfall	Time	Type of Discharge (rainfall/ snowmelt)	Observations								
			color	odor	clarity	floating solids	settled solids	suspended solids	foam	oil sheen	other
Outfall #1											
Outfall #2											
Outfall #3											
Outfall #4											
Outfall #5											
Outfall #6											
Outfall #7											
Outfall #8											
Outfall #9											
Comments											

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:_____ Title:_____ Date:_____

ROUTINE INSPECTION FORM

ROUTINE INSPECTION REPORT

Site Name/Company	Juniper Ridge Landfill/NEWSME Landfill Operations, LLC
Location	2828 Bennoch Road, Alton, Maine
Date of Visit	
Inspector Name/Signature	
Weather	

Does this inspection qualify as the one required annual inspection conducted during qualifying storm event? ☐ Yes ☐ No

Are there any new discharges or pollutants at the site? ☐ Yes ☐ No

Table 1
Inspection of Potential Pollutant Sources (PPS)

Description	
Industrial Activity or Area	**Describe where any of the following were observed:** • **Any discharges present at the time of inspection;** • **Any evidence of pollutants entering the drain system or outfalls;** • **The condition of the outfalls, including any restricted flow;** • **Industrial materials, residue or trash on the ground;** • **Leaks or spills from industrial equipment, drums, barrels, tanks or other containers;** • **Offsite tracking of industrial or waste materials or sediment; and** • **Tracking or blowing of raw, final, or waste materials.**
Scale House and Scale	
Salt & Sand Storage Area	
Soil Stockpile Areas	
Borrow Pit	
Wood Waste Handling Area	

Table 1
Inspection of Potential Pollutant Sources (PPS)

Maintenance Building	
Rubb Building	
LFG Treatment Facility	
RNG Facility	
Leachate Storage Tank	
Leachate Loading Rack	
Leachate Collection System	
Gravel Laydown Area	
Employee Parking Area	
1,500-Gallon Gasoline Tank	
2,500-Gallon Diesel Delivery Truck	
Access Roads	
Foam Production Well	

Table 2
Inspection of Structural Control Measures and Outfalls

BMP	Describe where any of the following were observed: • Any evidence that the BMP is not functioning properly; • Any evidence of erosion; and • Industrial materials, residue, or trash.
Detention Pond 1	
Geomembrane Lined Storage Pond	
Detention Pond 2	
Detention Pond 6	
Litter Fence	
Leachate Storage Tank Containment Area	
Leachate Storage Tank Containment Area Riprap Outlet	
Leachate Loading Rack Catch Basin	
Detention Pond 9	
2,000-Gallon Underground Storage Tank	
Detention Pond 10	
Detention Pond 11	
RNG Facility Stormwater Pond	

Table 2
Inspection of Structural Control Measures and Outfalls

Outfall No. 1	
Outfall No. 2	
Outfall No. 3	
Outfall No. 4	
Outfall No. 5	
Outfall No. 6	
Outfall No. 7	
Outfall No. 8	
Outfall No. 9	

Table 3
Corrective Actions Required for PPS(s) and/or Existing Structural Control Measures

Reference	Description/Schedule	Date Completed

Table 4
Recommendation for New PPS(s) and/or Structural Control Measures

Reference	Description/Schedule	Date Completed

Table 5
Modifications Required to SWPPP or Site Plan

Reference	Description

Certification

☐ Site is in compliance with SWPPP and MSGP.
☐ Site is not in compliance with SWPPP and MSGP and either structural control measure maintenance, additional controls, or modifications to the SWPPP are required.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	**Telephone:**
Signature:	**Date:**

WEEKLY/MONTHLY INSPECTION FORMS

WEEKLY/MONTHLY INSPECTION FORM

Site Name/Company	Juniper Ridge Landfill/NEWSME Landfill Operations, LLC
Location	2828 Bennoch Road, Alton, Maine
Date of Visit	
Inspector Name/Signature	

Note: For weekly inspections, only Table 1 and Table 3 need to be completed. For monthly inspections, Tables 1, 2 and 3 need to be completed.

Table 1
Inspection of Active Areas at the Facility

Active Areas at the Facility			
Leachate	Is leachate observed on the ground, or leaking from tanks or piping, with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Access Roads	Are industrial materials, residue or trash observed on roads where vehicles enter or exit the active landfill with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
MSW and CDD (windblown debris)	Is MSW and/or CDD on ground, tracking, blowing or whirling with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Borrow Pit	Is there evidence of tracking or erosion from site soil borrow areas with potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Mobile Equipment	Is mobile equipment leaking oil or other liquids with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)

Active Areas at the Facility	
Comments	

Table 2
Inspection of Stabilized Areas at the Facility

Stabilized Active Areas at the Facility			
Leachate	Is leachate observed on the ground, or leaking from tanks or piping, with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Access Roads	Are industrial materials, residue or trash observed on roads where vehicles enter or exit the active landfill with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
MSW and CDD (windblown debris)	Is MSW and/or CDD on ground, tracking, blowing or whirling with evidence of or the potential to impact stormwater?	☐ Yes ☐ No	☐ Comments (see below)
Comments			

Table 3
Inspection of Stormwater BMPs, Conveyances and Outfalls

BMP	Describe where any of the following were observed: • Any evidence that the BMP is not functioning properly.
Detention Pond 1	
Geomembrane Lined Storage Pond	
Detention Pond 2	
Detention Pond 6	
Litter Fence	
Leachate Storage Tank Containment Area	
Leachate Storage Tank Containment Area Riprap Outlet	
Leachate Loading Rack Catch Basin	
Detention Pond 9	
2,000-Gallon Underground Storage Tank	
Detention Pond 11	
RNG Facility Stormwater Pond	
Detention Pond 10	
Outfall No. 1	

Table 3
Inspection of Stormwater BMPs, Conveyances and Outfalls

BMP	Describe where any of the following were observed: • Any evidence that the BMP is not functioning properly.
Outfall No. 2	
Outfall No. 3	
Outfall No. 4	
Outfall No. 5	
Outfall No. 6	
Outfall No. 7	
Outfall No. 8	
Outfall No. 9	

Table 4
New Potential Pollutant Source and/or Recommendations for Additional BMPs

Reference	Description	Schedule

Certification

☐ Site is in compliance with SWPPP and MSGP. ☐ Site is not in compliance with SWPPP and MSGP and either structural control measure maintenance, additional controls, or modifications to the SWPPP are required.
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:	**Telephone:**
Signature:	**Date:**

CORRECTIVE ACTION REPORT

CORRECTIVE ACTION REPORT

Site Name/Company:	
Location:	
Contact Name:	**Contact Signature:**
Date of Discovery:	
Date of Corrective Action Initiation:	
Date of Corrective Action Completion:	
Condition Requiring Corrective Action	
Immediate Measures Taken to Control	
Measures Taken to Prevent Re-Occurrence	

Corrective actions must be completed within 14 days of the discovery of the condition. SWPPP modifications must be completed within 14 days of the completion of the corrective action. In the case of a spill, fill out Appendix E – Spill Report in addition to this form.

If it is not feasible to complete the corrective action within 14 days, please describe the reason and proposed schedule for completion: _____

_____

_____

If corrective actions cannot be completed within 45 days of discovery, MEDEP must be notified.

MONTHLY/ANNUAL ABOVE GROUND STORAGE TANK AND CONTAINER CHECKLISTS

STI SP001 MONTHLY ABOVEGROUND STORAGE TANK AND CONTAINER CHECKLIST
NEWSME LANDFILL OPERATIONS LLC – JUNIPER RIDGE LANDFILL
2828 BENNOCH ROAD, ALTON, MAINE

INSPECTOR'S SIGNATURE:	DATE:	INSPECTOR'S TITLE:

The checklist shall be completed on a monthly basis and be retained with the SPCC Plan for at least 3 years.

TANK #:	1	2	3	4	5	6	7	8	9	Tote	Drums	Drums
LOCATION:	Maintenance Building		Outside Maintenance Building	Delivery Truck (Active Cell of Landfill)	Active Cell of Landfill		Office Building	Diesel Generator	LFG Treatment Facility	Maintenance Building		Rubb Building
CONTENTS:	500-GAL Motor Oil	500-GAL Hydraulic Oil	1,500-GAL Gasoline	500-GAL Diesel	275-GAL Hydraulic Oil	2,500-GAL Diesel	275-GAL No. 2 Fuel Oil	366-GAL Diesel	270-GAL Mineral Oil	275-GAL Used Oil	55-GAL Drums Varies	55-GAL Drums Varies
TANK CONTAINMENT:												
Water in primary tank, secondary containment, interstice, or spill container?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Debris or fire hazard in containment?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Drain valves operable and in a closed position?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Containment egress pathways clear and gates/doors operable?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Concrete intact and in good condition with no cracks?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
LEAK DETECTION:												
Visible signs of leakage around the tank, concrete pad, containment, ring wall or ground?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
TANK ATTACHMENTS AND APPURTANCES:												
Ladder and platform structure secure with no sign of severe corrosion or damage?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Tank liquid level gauge readable and in good condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Tank openings properly sealed?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			

COMMENT ON MAINTENANCE OR REPAIR NEEDED ON THE LAST PAGE OF THIS DOCUMENT FOR ANY MARKED RED UNDERLINED CHECK BOX.

STI SP001 MONTHLY ABOVEGROUND STORAGE TANK AND CONTAINER CHECKLIST
NEWSME LANDFILL OPERATIONS LLC – JUNIPER RIDGE LANDFILL
2828 BENNOCH ROAD, ALTON, MAINE

TANK #:	1	2	3	4	5	6	7	8	9	Tote	Drums	Drums
GENERAL HOUSEKEEPING:												
Fire extinguisher nearby?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
Spill equipment nearby?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No			
PORTABLE CONTAINERS:												
Are portable containers in designated storage area?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Debris, spill, or other fire hazards in containment or storage area?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Water in outdoor secondary containment?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Drain valves operable and in a closed position?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Egress pathways clear and gates/doors operable?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Container distorting, buckling, denting, or bulging?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Visible signs of leakage around the container or storage area?										o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
COMMENTS / REPAIRS / MAINTENANCE:												

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STI SP001 ANNUAL ABOVEGROUND STORAGE TANK AND CONTAINER CHECKLIST
NEWSME LANDFILL OPERATIONS, LLC – JUNIPER RIDGE LANDFILL
2828 BENNOCH ROAD, ALTON, MAINE

INSPECTOR'S SIGNATURE:	DATE:	INSPECTOR'S TITLE:

The checklist shall be completed on annual basis and be retained with the SPCC Plan for at least 3 years.

TANK #:	1	2	3	4	5	6	7	8	9
LOCATION:	Maintenance Building		Outside Maintenance Building	Delivery Truck (Active Cell of Landfill)	Active Cell of Landfill		Office Building	Diesel Generator	LFG Treatment Facility
CONTENTS:	500-GAL Motor Oil	500-GAL Hydraulic Oil	1,500-GAL Gasoline	500-GAL Diesel	275-GAL Hydraulic Oil	2,500-GAL Diesel	275-GAL No. 2 Fuel Oil	366-GAL Diesel	270-GAL Mineral Oil
TANK CONTAINMENT:									
Containment structure in satisfactory condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Drainage pipes/valves fit for continued service?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
TANK FOUNDATION AND SUPPORTS:									
Evidence of tank settlement or foundation washout?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Cracking or spalling of concrete pad or ring wall?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Tank supports in satisfactory condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Grounding strap secured and in good condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Water able to drain away from tank:	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Are all labels and tags intact and legible?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
CATHODIC PROTECTION:									
CP system functional?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
What is the rectifier reading?	_____ o NA	_____ o NA	_____ o NA	_____ o NA	_____ o NA	_____ o NA	_____ o NA	_____ o NA	_____ o NA

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STI SP001 ANNUAL ABOVEGROUND STORAGE TANK AND CONTAINER CHECKLIST
NEWSME LANDFILL OPERATIONS, LLC – JUNIPER RIDGE LANDFILL
2828 BENNOCH ROAD, ALTON, MAINE

TANK #:	1	2	3	4	5	6	7	8	9
TANK EXTERNAL COATING:									
Evidence of paint failure?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
TANK SHELL/HEADS:									
Noticeable shell/head distortions, buckling, denting or bulging?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Evidence of shell/head corrosion or cracking?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
TANK MANWAYS, PIPING AND EQUIPMENT WITHIN SECONDARY CONTAINMENT:									
Flanged connection bolts tight and fully engaged with no sign of wear or corrosion?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
TANK ROOF:									
Standing water on roof?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Evidence of coating cracking, crazing, peeling, blistering?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Holes in roof?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
VENTING:									
Vents free of obstructions?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Emergency vent operable; lift as required?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
INSULATED TANKS:									
Insulation missing?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Noticeable areas of moisture on the insulation?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Mold on insulation?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Insulation exhibiting damage?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No

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STI SP001 ANNUAL ABOVEGROUND STORAGE TANK AND CONTAINER CHECKLIST
NEWSME LANDFILL OPERATIONS, LLC – JUNIPER RIDGE LANDFILL
2828 BENNOCH ROAD, ALTON, MAINE

TANK #:	1	2	3	4	5	6	7	8	9
Insulation sufficiently protected from water intrusion?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
LEVEL AND OVERFILL PREVENTION INSTRUMENTATION OF SHOP-FABRICATED TANKS:									
Has the tank liquid level sensing device been tested to ensure proper operation?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Does the tank liquid level sensing device operate as required?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Are overfill prevention devices in proper working condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
ELECTRICAL EQUIPMENT:									
Are tank grounding lines in good condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
Is electrical wiring for control boxes/lights in good condition?	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No	o Yes o NA o No
COMMENTS / REPAIRS / MAINTENANCE:									

COMMENT ON MAINTENANCE OR REPAIR NEEDED ON THE LAST PAGE OF THIS DOCUMENT FOR ANY MARKED RED UNDERLINED CHECK BOX.

RECORD OF SECONDARY CONTAINMENT DRAINAGE

Record of Secondary Containment Drainage
Juniper Ridge Landfill – 2828 Bennoch Road, Alton, Maine

Date	Tank No.	Comments	Approved

APPENDIX P

LEAK RESPONSE ACTION PLAN

SME
SEVEE & MAHER
ENGINEERS

PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
LEAK RESPONSE ACTION PLAN
VOLUME IV

Prepared for

NEWSME LANDFILL OPERATIONS, LLC

November 2025

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SME
SEVEE & MAHER
ENGINEERS

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PHASE II EXPANSION APPLICATION
JUNIPER RIDGE LANDFILL
LEAK RESPONSE ACTION PLAN
VOLUME I`

1.0 INTRODUCTION

NEWSME Landfill Operations, LLC (NEWSME), under contract with the Maine Bureau of General Services (BGS), operates the Juniper Ridge Landfill (JRL or landfill) in Old Town, Maine. NEWSME receives solid waste from private and public entities and places the waste into 22 continuous waste disposal cells with base areas ranging from approximately 6 to 17 acres. The cells are identified as Cells 1-22 and are located as shown on Figure 1. This document is the Leak Response Action Plan (LRAP or Plan) that will be followed for monitoring the performance of leak detection systems constructed at JRL for the landfill cells associated with the Phase I and Phase II Expansions. Table 1 lists the landfill cells by identification number and provides cell-specific information including year of construction, base size, and presence/absence of leak detection systems and underdrain systems. As of January 2025, Cells 17-22 were yet to be constructed but are treated as if in-place and functional for purposes of this Plan.

JRL has been designed, constructed, and is operated as a secure waste disposal facility. The groundwater beneath and adjacent to the landfill is separated from the waste by a protective liner system that prevents hydraulic barrier leachate movement to the environment. Each landfill cell includes a leachate collection system above the liner system that diverts leachate generated by the waste to a central storage tank for subsequent removal from the JRL site for treatment. Landfill Cells 1, 2, 3A, 3B, 4, 5, 6, 7, 8, 9, and 10 comprise the original landfill and Cells 11-17 comprise the Phase I expansion. The Phase II expansion, which is expected to be constructed beginning in 2027, will consist of Cells 18-22.

The liner system for Cell 1 consists of a 2-foot-thick layer of compacted till barrier soil (i.e., till) overlain by an 80-mil high-density polyethylene (HDPE) geomembrane. The liner for Cell 2 consists of a 2-foot-thick layer of compacted till overlain by a geosynthetic clay liner (GCL), and an 80-mil HDPE geomembrane. The liner system for Cells 3-10 consists of a 2-foot-thick layer of till barrier soil, a GCL, and an 80-mil HDPE geomembrane. The liner systems for Cells 1-10 are referred to as composite liner systems in that they feature two or more hydraulic barrier layers in direct contact with one another to limit leachate seepage into the environment.

Cells 11-17 were constructed with a primary composite liner system and an underlying secondary composite liner system (referred to as a double-composite liner system). For Cells 11-17, the primary composite liner system consists of a 1-foot-thick layer of clay barrier soil overlain by a GCL, which is overlain by an 80-mil HDPE geomembrane; the secondary composite liner system consists of 1 foot of clay barrier soil overlain by a 60-mil HDPE geomembrane. For Cells 11-17, the base of the primary composite liner system and the top of the secondary composite liner system are separated by a layer of drainage

sand and a layer of drainage geocomposite. The sand and drainage geocomposite serve as a leak detection system (LDS). The LDS for each cell is sloped to a drainage sump within that cell that collects any liquid draining from the sand. Liquid collected in the sump is removed by pumping, measured for volume, and is sampled for specific conductance on a bi-weekly basis (once every two weeks) during normal operations, as indicated in Section 4.1 of this Plan.

Cells 18-22 will use a primary liner system consisting of an 80-mil geomembrane underlain by a GCL, which is in turn underlain by a 1-foot layer of compacted clay. The secondary liner system for Cells 18-22 will consist of a 60-mil geomembrane underlain by 1-foot of compacted till in areas where the distance from the base grade to bedrock is greater than five feet and a 60-mil geomembrane with a GCL and two feet of compacted clay in areas where the distance from base grade to bedrock is less than five feet. An LDS consisting of a 12-inch-thick layer of drainage sand underlain by a drainage geocomposite will separate the primary and secondary liner systems. The leachate collection system (located on top of the primary liner system) consists of a drainage geocomposite with 12 inches of drainage overlying the drainage geocomposite.

Many of the individual cell liner systems at JRL include an underdrain layer beneath the lower-most liner system. The underdrain layer consists of a buildup of sand and gravel with embedded perforated piping that functions to intercept groundwater and allow it to drain below the overall liner system. Table 1 indicates the cells that were constructed with underdrain layers.

TABLE 1

CELL CONSTRUCTION INFORMATION

Cells	Size (acres)	Date of Construction	Leachate Collection (LC)	Liner System	Leak Detection (LD)	Underdrain	Active Years	Date of Closure	Final Cover	Permit Numbers
1	7.8	1996	Yes	Composite	No	Yes	1996 - Present	Active	Temporary Cover	S-020700-7A-A-N
2	6.7	2000	Yes	Composite	No	Yes	2000 - Present	Active	Temporary Cover	S-020700-WD-J-M
3A	4.1	2005	Yes	Composite	No	Yes	2005 - Present	Active	Temporary Cover	S-020700-WD-P-M
3B	6.1	2006	Yes	Composite	No	Yes	2006 - Present	Active	Temporary Cover	S-020700-WD-S-M
4	5.8	2008	Yes	Composite	No	Yes	2008 - Present	Active/Partial	Composite[1]	S-020700-WD-AB-M
5	7.7	2009	Yes	Composite	No	Yes	2009 - Present	Active/Partial	Composite[1]	S-020700-WD-AH-M
6	3.8	2010	Yes	Composite	No	Yes	2010 - Present	Active/Partial	Composite[1]	S-20700-WD-AO-M
7	6.6	2011	Yes	Composite	No	Yes	2011 - Present	Active	Temporary Cover	S-020700-WD-AT-M
8	7.5	2012	Yes	Composite	No	Yes	2012 - Present	Active/Partial	Composite[1]	S-020700-WD-AY-M
9	6.5	2015	Yes	Composite	No	Yes	2015 - Present	Active/Partial	Composite[1]	S-020700-WD-BD-C
10	5.4	2017	Yes	Composite	No	Yes	2017 - Present	Active/Partial	Composite[1]	S-020700-WD-BJ-C
11	9.3	2018	Yes	Double Composite[2]	Yes	No	2018 -Present	Active	Temporary Cover	S-020700-WD-BI-N
12	9.6	2020	Yes	Double Composite[2]	Yes	Yes	2020 - Present	Active	Temporary Cover	S-020700-WD-CB-C
13	7.3	2021	Yes	Double Composite	Yes	Yes	2021 - Present	Active	Temporary Cover	S-020700-WD-CL-C
14	7.6	2022	Yes	Double Composite	Yes	Yes	2022 - Present	Active	Temporary Cover	S-020700-WD-CP-C
15	6.7	2023	Yes	Double Composite[2]	Yes	No	2023 - Present	Active	Temporary Cover	S-020700-WD-CR-C
16	6.2	2024	Yes	Double Composite[2]	Yes	No	2025 - Present	Active	N/A	S-020700-WD-CU-C
17	6.8	2026 (Anticipated)	Yes	Double Composite[2]	Yes	No				
18	15.3	2027 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
19	11.2	2029 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
20	16.9	2031 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
21	7.6	2033 (Anticipated)	Yes	Double Composite	Yes	Yes			N/A	
22	5.6	2035 (Anticipated)	Yes	Double Composite	Yes	Yes			NA	

Notes:

[1] A portion of these cells received final composite cover in 2023 and 2024.

[2] A portion of these cells have an augmented secondary clay barrier soil layer (i.e. an additional 12-inch layer of compacted barrier soil beneath the secondary barrier soil layer).

GCL - Geosynthetic Clay Liner.

Intermediate Cover - Either an 18-inch layer of compacted low permeability soil or a 40-mil geomembrane cover.

Final Composite Cover - (top to waste) 18-inch vegetative cover soil layer, drainage geocomposite, geomembrane, GCL, 12-inch layer of barrier soil, 6-inch drainage layer (CDD fines or drainage sand).

Composite Liner - (top to bottom) 12-inch layer of LC sand, drainage geocomposite, geomembrane, GCL, 12-inch compacted barrier soil.

Double Composite Liner - (top to bottom) 12-inch layer of LC sand, drainage geocomposite, geomembrane, GCL, 12-inch compacted barrier soil, 12-inch layer LD sand, drainage geocomposite, geomembrane, GCL, 12-inch compacted barrier soil, (12-inch augmented barrier soil layer as needed).

NOTE:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004, STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
3. BORINGS AND TEST PIT LOCATIONS FIELD SURVEYED BY SEVEE & MAHER ENGINEERS, INC. OF CUMBERLAND, MAINE.
4. BASE GRADES REPRESENT THE PREPARED SUBGRADE SURFACE BELOW THE UNDERDRAIN OR AUGMENTED LAYER. IN LOCATIONS THAT ARE NOT IDENTIFIED TO RECEIVE UNDERDRAIN OR AUGMENTED LINER, ONE FOOT OF NATIVE SOILS SHALL REMAIN IN PLACE ABOVE THE BASE GRADE. THE BASE LINER SYSTEM SHALL BE CONSTRUCTED ON THE RESULTING GRADE ABOVE THE UNDERDRAIN, AUGMENTED LINER, OR ONE FOOT OF NATIVE SOILS.
5. CELL 17 BASE GRADES REPRESENT PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE LINER SYSTEM WITHIN THE LANDFILL LINER LIMITS. CELL 17 BASE GRADE SHOWN OUTSIDE THE LANDFILL REPRESENT THE PREPARED SUBGRADE PRIOR TO CONSTRUCTING THE ACCESS ROAD. CELL 17 HAS NOT BEEN CONSTRUCTED AT THE TIME THESE DRAWINGS WERE PREPARED.
6. SPECIAL FLOOD HAZARD ZONE PER FEMA PANEL 23019C1926D.

EXISTING SCALE HOUSE INFRASTRUCTURE AREA
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT (TYP)
BEDROCK OUTCROP (TYP)
END OF EXISTING LEACHATE FORCE MAIN
DETENTION POND 11R
PROPOSED SOLID WASTE LIMIT (TYP)
EXISTING OVERHEAD ELECTRIC LINE (TYP)
PERMITTED TILL BORROW PIT
PERMITTED WOOD WASTE HANDLING AREA
PROPERTY LINE (TYP)
PROPOSED WOOD STORAGE LOT
SUBSURFACE WASTEWATER DISPOSAL FIELD
APPROXIMATE LOCATION OF PROPOSED PFAS TREATMENT PLANT
DETENTION POND 9
MAINTENANCE BUILDINGS
RNG TREATMENT FACILITY POND
LFG TREATMENT FACILITY
WOOD STORAGE FACILITY 2 ACRE
WATER SUPPLY WELL
GRAVEL UTILITY ACCESS ROADS (TYP)
VERNAL POOL (TYP)
LFG KNOCKOUT STRUCTURE (TYP)
CELL 12 PUMP STATION
PRIMARY ACCESS ROAD (TYP)
CELL 14 PUMP STATION
CELL 13 PUMP STATION
FORCE MAIN VAULT (TYP)
CATCH BASIN AND CULVERT (TYP)
DETENTION POND 10
1 ACRE
RENEWABLE NATURAL GAS (RNG) FACILITY
LFG FLARE LOCATION
LIMIT OF BRI WETLANDS DELINEATION (TYP) SEE NOTE 2
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT (TYP)
DETENTION POND 14
RIPRAP DITCH (TYP)
DETENTION POND 11
RIPRAP CB INLET
CELL 11 PUMP STATION
LEACHATE STORAGE TANK PUMP STATION
LEACHATE STORAGE TANK 1
PROPOSED LEACHATE STORAGE TANK 2
PROPOSED LEACHATE STORAGE TANK
PROPOSED GUARDRAIL (TYP)
24" LFG HEADER (TYP)
LFG KNOCKOUT STRUCTURE (TYP)
UTILITY MANHOLE (TYP)
DETENTION POND 6
CELL 8 PUMP STATION
EXISTING CELLS
LINER LIMIT (TYP)
(2) 24" HDPE CULVERTS
PERMANENT LANDFILL ACCESS ROAD
100-YEAR FLOOD ZONE SPECIAL FLOOD HAZARD AREA (TYP) SEE NOTE 6
DETENTION POND 13
CELL 20 PUMP STATION
PROPOSED LANDFILL BASE GRADES (TYP) SEE NOTE 4
PROPOSED CELL LIMITS (TYP)
LIMIT OF PHASE I EXPANSION LINER (TYP)
25-FOOT SETBACK FROM WOSS
FENCE (TYP)
8"x12" LEACHATE FORCEMAIN
PROPERTY LINE (TYP)
20'-WIDE GRAVEL ACCESS ROAD (TYP)
ELECTRICAL MANHOLE (TYP)
DEED RESTRICTION (TYP)
DETENTION POND 2
UNDERGROUND ELECTRIC (TYP)
CELL 19 PUMP STATION
CELL 16 PUMP STATION
EXISTING EMH (TYP)
DETENTION POND 1A
LFG KNOCKOUT STRUCTURE AND VALVES
DETENTION POND 12
CELL 17 BASE GRADES (SEE NOTE 5)
EXISTING FORCEMAIN VAULT (TYP)
CELL 15 PUMP STATION
CELL 5 PUMP STATION
CELL 4 PUMP STATION
RIPRAP DITCH (TYP)
EXISTING 24" DIA LANDFILL GAS PIPE
8" GRAVITY SEWER IS ABANDONED
25-FOOT STREAM SETBACK
WATER LOADING RACK
DETENTION POND 1

200 0 400 FEET

DWG: BASE LMN: SITE-DEV-FIG CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 11/6/2025

FIGURE 1
SITE DEVELOPMENT PLAN
PHASE II EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

I:\Nserver\cts\Casella\OldTown\Landfill\Expansion\Phase II Expansion\Acad\Plans\BASE.dwg, B_FIG 1, 11/6/2025 12:25:40 PM, sjm

2.0 OVERVIEW OF WASTE CONTAINMENTS AND LDS FLOWS

2.1 Waste Containments

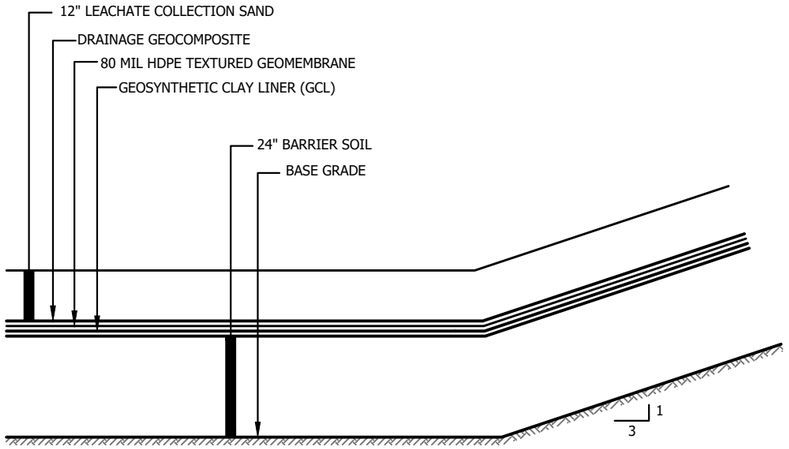
The waste containments (i.e., cells) at JRL consist of contiguous land areas separated by earthen berms such that water is laterally confined to the limits of each bermed area. The bermed areas are lined with either a composite liner system or a double-composite liner system (see Figure 2 for liner system cross-section). Table 1 indicates the type of liner system used for each cell and Figure 1 shows the location of the cells in relation to the overall landfill area. Cells constructed with double-composite liner systems include a leak detection system (LDS). The base of each LDS is purposely graded (i.e., sloped) to a low spot (i.e., sump) where liquid will accumulate. The primary purpose of the LDS is to identify and evaluate leakage from the landfill through the primary liner system. Each LDS sump is fitted with tubing that connects to a pumping station where the liquid volume removed from the LDS can be measured and sampled for analysis. Liquids are pumped from the sump(s) based on a continuous reading liquid level transducer located in the sump. When the liquid level in the sump reaches an established set high-point, the pump is actuated, and the liquid is removed from the sump until a set low-point is reached. Liquid removed from the LDS is passed through a flow/volume totalizer meter. The meter is connected to JRL's on-site SCADA system that records the volume of liquid removed and the pumping time interval. In this way, the flow rate into the LDS is calculated as the volume of liquid removed. The leakage per unit area of liner for a particular cell is calculated as the flow rate divided by the cell base area. Typical units for flow rate and flow per unit area used in this Plan are gallons per day (gpd) and gallons per acre per day (gpad). The calculated flow rate into an LDS assumes that leakage into the LDS is steady and constant, which may be misleading. Uncertainty in the LDS flow rate measurements is reduced by conducting frequent (e.g., bi-weekly) measurements of LDS indicator parameters and comparing it to leachate from the same cell. Uncertainty can be further reduced by analyzing the chemical composition of the LDS liquid for and comparing it to the chemical composition of the leachate from the same cell. LDS chemical analysis is described in the JRL Environmental Monitoring Plan (SME, 2025). The LDS pumping stations are located along the landfill perimeter as shown on Figure 3. Figure 3 also shows the approximate location of the sumps for the cells constructed with an LDS.

Many of the JRL cells include an underdrain layer that allows groundwater below the cell to drain. The underdrains consist of a 12-inch-thick layer of sand with embedded drainage piping. The piping discharges by gravity to daylight along the landfill's perimeter. The piping discharge points are accessible for sampling which is done monthly when flows are present. Most of the existing underdrain discharge points at JRL are dry.

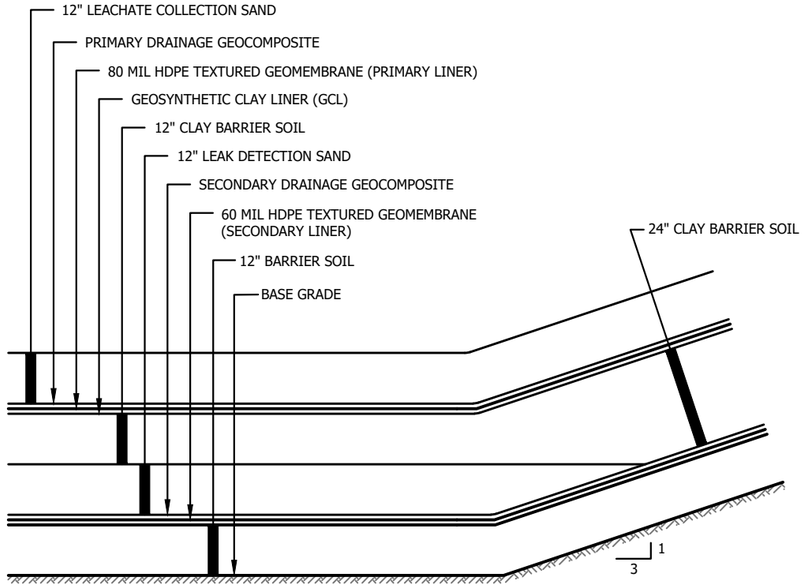
2.2 LDS Flows

Ideally, leakage through the primary liner system into the LDS will be small due to the multiple barrier layers forming the primary liner system and the minimal leachate head in the overlying leachate collection system. Leakage through the primary liner system, can be associated to the transmissivity of imperfections (i.e., pinholes) in the geomembrane and hydraulic conductivity of the GCL and soil barrier layers.

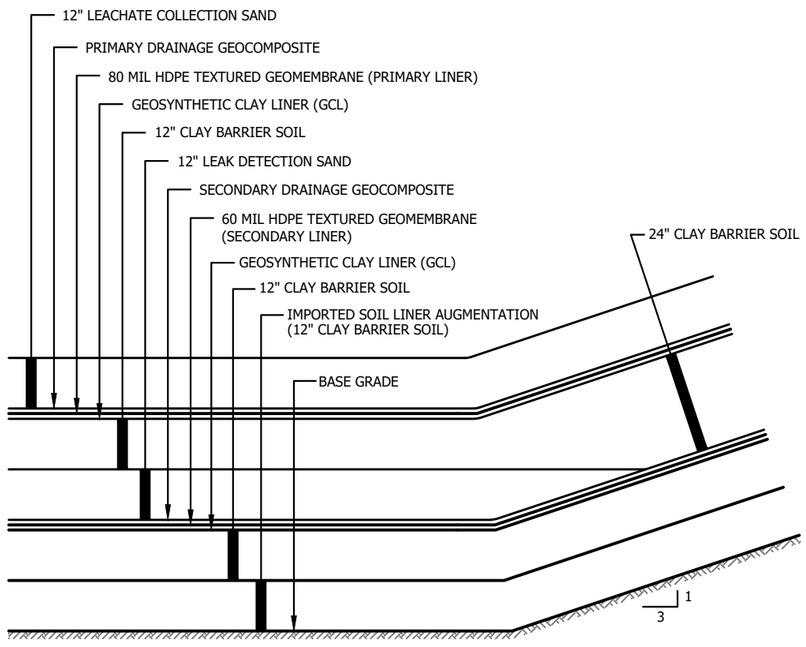
Estimates of leakage have been both theoretically and empirically evaluated by Bonaparte, Giroud, and Gross (1989); Laine (1991); and Wilson-Fahmy and Koerner (1995). Wilson-Fahmy and Koerner (1995) used a finite difference model to predict leakage rates through holes in a geomembrane when used in conjunction with a GCL. The Wilson-Fahmy and Korner findings demonstrated that the transmissivity of the geomembrane/GCL interface was a major factor in controlling the volume of leakage through a hole of given size in a geomembrane. The findings showed that for a geomembrane with a 10-mm-diameter hole overlying a GCL the calculated flow through the geomembrane ranged from $2x10^{-3}$ to $1.32x10^{-4}$ gpd, assuming the geomembrane and GCL transmissivity values were in the range of $6x10^{-12}$ m^2/sec to $2x10^{-10}$ m^2/sec, respectively. Accordingly, due to the very small flow rate associated with small imperfections in a geomembrane, if noticeable volumes of liquid are removed from an LDS leakage, then it is reasonable to expect that some larger imperfection in, or damage to, the geomembrane has occurred.



CELLS 1-10 BASE LINER SYSTEM
NTS



CELLS 11-22 BASE LINER SYSTEM
NTS



AUGMENTED LINER SYSTEM
NTS

FIGURE 2
LINER SYSTEMS
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: OM-DETAILS LMN: OM-DETAILS CTB: SME-STD.CTB JOB#: 240101 REV: 5/2/2025

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LEGEND

12	CELL IDENTIFICATION
	WETLAND DELINEATED
	PERMANENT LEACHATE COLLECTION AND LEAK DETECTION PUMP STATION
	PERMANENT LEAK DETECTION PUMP STATION
	COLLECTION SUMP
	PERMANENT LEAK DETECTION SAMPLE SUMP

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC, NORRIDGEWOCK, MAINE. PHOTO DATE 5/21/2024. CONTROL POINTS BASED ON SURVEY BY PLISGA & DAY LAND SURVEYORS OF BANGOR, MAINE, ON APRIL 24, 2025. VERTICAL DATUM: ASSUMED. SUBTRACT 0.34 FEET FROM ELEVATIONS LISTED TO CONVERT ELEVATIONS TO NAVD 88. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC., OF CUMBERLAND, MAINE. SEE NOTE 1 ON DWG C-100.
2. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014, 2015, AND BRI ENVIRONMENTAL IN 2024.
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LIMIT OF BRI WETLANDS DELINEATION (TYP)
VERNAL POOL (TYP)
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT
CELL 21 LEAK DETECTION SAMPLE SUMP
LIMIT OF PHASE II AUGMENTED LINER (TYP)
250' SIGNIFICANT VERNAL POOL CRITICAL TERRESTRIAL HABITAT
EXISTING OVERHEAD ELECTRIC LINE (TYP)
DETENTION POND 11R
CELL 18 PUMP STATION
CELL 14 PUMP STATION
CELL 13 PUMP STATION
CELL 12 PUMP STATION
CELL 11 PUMP STATION
PRIMARY ACCESS ROAD (TYP)
PERMITTED TILL BORROW PIT
DETENTION POND 14
DETENTION POND 13
CELL 14 LEAK DETECTION SAMPLE SUMP
CELL 22 LEAK DETECTION SAMPLE SUMP
CELL 20 PUMP STATION
LIMIT OF PHASE I EXPANSION LINER (TYP)
FENCE (TYP)
DEED RESTRICTION (TYP)
CELL 20 LEAK DETECTION SAMPLE SUMP
CELL 19 PUMP STATION
DETENTION POND 12
CELL 17 LEAK DETECTION SAMPLE SUMP
CELL 16 PUMP STATION
CELL 15 PUMP STATION

200 0 400 FEET

FIGURE 3
LEAK DETECTION PUMP STATION AND SUMPS LOCATIONS
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

SME
SEVEE & MAHER ENGINEERS

DWG: OM-SITE-DEV LMN: PS-SUMP-LOCS CTB: SME-STD-HALF.CTB JOB#: 240101 REV: 8/6/2025

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3.0 ACTION LEAKAGE RATES (ALR) AND LEAK DETECTION SYSTEM ACTION LEVELS (LDSAL)

3.1 Background

The term "Action Leakage Rate" (ALR) was defined by the United States Environmental Protection Agency (U.S.EPA) in proposed rules covering liner and leak detection for waste management units regulated under 40 CFR, 260, 264, 270, and 271. The term has been adopted for use with waste facilities that utilize double-liner systems where a leak detection layer exists between the primary and secondary liner. The U.S.EPA initially proposed an ALR range of 5 to 20 gpad for waste management units using a composite liner system (Federal Register, 1987). In a supplemental document supporting final rulemaking, U.S.EPA acknowledged that the 5 to 20 gpad range was not consistently achievable at many existing waste facilities that met the minimum U.S.EPA design standards for double-lined facilities (U.S.EPA, 1992). Consequently, U.S.EPA recommended an ALR of 100 gpad be used for lined landfill facilities based on (1) actual flow rate measurements in leak detection systems from several operating facilities that met U.S.EPA's minimum design requirements, and (2) a theoretical analysis of leakage into a leak detection system using a three-dimensional seepage model. In recommending the 100 gpad ALR be adopted, U.S.EPA stated "leakage rates above this value [i.e., over 100 gpad] often indicate major localized or general failure of the top liner system. Flow rates of 1,000 gpad or greater represent significant flow rates and potentially significant hole sizes [in a liner] that may be readily identified and repaired."

3.2 LDS Action Leakage Rate(s) for JRL

LDS ALRs for the Phase I Expansion were previously established based on the U.S.EPA guidance, and from available information for similar operating cells at a variety of other landfill facilities (SME, 2015). For the Phase I Expansion, two LDS ALRs were identified: ALR-I at 20 gpad and ALR-II at 100 gpad. The ALR units are defined as the volume of leakage into an LDS with respect to time, with the leakage rate units stated as gallons per acre of cell liner per day (i.e., gpad).

- ALR-I, set at 20 gpad is considered representative of a primary liner system functioning as intended. ALR-I was established and approved for the Phase I Expansion permitting process. For the Phase II Expansion at the JRL, the same ALR-1 will be used in that 20 gpad is considered a sufficiently low leakage rate to trigger an initial review of an LDS performance and increase monitoring of the LDS to form an opinion of the cause for the ALR-I exceedance. That process is outlined in more detail in Section 3.4.
- ALR-II, set at 100 gpad, is considered representative of a condition where the primary liner system has become damaged or compromised for some unknown post-construction reason and a steady flow of leachate is occurring into the LDS. ALR-II was established and approved for the Phase I Expansion. The Phase I and Phase II primary liner system have identical specifications, therefore, use of the 100 gpad is considered appropriate. In the event that an ALR-II is reached, the process is addressed in more detail in Section 3.4.

It is also worth noting that keeping the ALR values consistent for monitoring of the LDS(s) associated with the Phase I and Phase II Expansion waste cells will help minimize drawing conclusions relative to leakage and confusion with respect to implementation of mitigation measures when needed. Table 2 summarizes the ALR-I and ALR-II values for each of the cells in Phase I and Phase II.

TABLE 2

LEAK DETECTION SYSTEM ACTION LEAKAGE RATES

Cell No.	Primary Liner System Area (Acres)	LDS ALR-I (gallons per day) Based on 20 gpad ALR for Cell Area	LDS ALR-II (gallons per day) Based on 100 gpad ALR for Cell Area
11	9.3	186	930
12	9.6	192	960
13	7.2	144	720
14	7.6	266	760
15	6.7	208	670
16	6.2	124	620
17	6.8	211	680
18	15.3	1071	1530
19	11.2	224	1120
20	16.9	338	1690
21	7.6	152	760
22	5.6	112	560

3.3 Leak Detection System Response Actions

Leak detection system ALRs will be reviewed by NEWSME monthly. The ALR I will be exceeded when either of the following conditions are noted during monthly leachate evaluations:

- The calculated daily flow rate exceeds the ALR-I for all days during that month as indicated in Table 2; and
- The ALR-I is exceeded in any two-week period and recorded leachate-specific conductance during that two-week period exceeds 1,500 µS/cm (7% of mean historical leachate concentration).

If either of the above conditions are noted, NEWSME staff will report the exceedance in the JRL's monthly Status Report which is transmitted to the MEDEP and Town of Old Town. During reporting, both the conductivity of the leak detection system and the corresponding leachate collection system will be noted (results from bi-weekly sampling events). NEWSME will also contact the MEDEP to discuss appropriate response actions.

Exceedances of ALRs during the first six months of cell operation will be exempt if the conductivity is below 1,500 µS/cm. This will allow for precipitation water which entered the system during construction to be removed before ALR reporting begins.

In the event the LDS measurements exceed the ALR-II for a particular cell for any given month, NEWSME will notify MEDEP within 14 working days following review of monthly flow data. of the exceeding measurement(s) and NEWSME will schedule a meeting with MEDEP to discuss mitigation possibilities.

JRL's technical staff is responsible for collecting the monitoring data (i.e., outflows and specific conductance measurements) for the LDS(s) at the JRL, compiling and evaluating the data, and reporting the data to the MEDEP. In the event the data suggests a liner system has become compromised, a third-party technical consultant will be retained to evaluate the data, assist in determining if a leak has occurred, and make recommendations for appropriate response action(s).

3.4 Shared LDS Pump Stations

As indicated in Table 1, the LDS(s) for Cells 17, 20, 21, and 22 flow to LDS pump stations located in adjacent cells. Specifically, the LDS flows for the Phase II expansion and Cell 17 of the Phase I Expansion flow as follows:

- Cell 17 LDS flows to the Cell 16 LDS pump station;
- Southern portion of the Cell 20 LDS flows to the Cell 19 LDS pump station;
- Northern portion of the Cell 20 LDS flows to the Cell 20 LDS pump station;
- Cell 21 LDS flows to the Cell 18 LDS pump station; and
- Cell 22 LDS flows to the Cell 20 LDS pump station.

The LDS(s) for the Phase I Expansion Cells 11-15 have individual LDS pump stations that receive leakage from those specific cells; whereas, Cells 16 and 17 (of the Phase I Expansion) and all of the Phase II Expansion cells share LDS pump stations. The shared LDS pump stations address the various leachate collection system flow directions of the overlying leachate collection systems. For LDS(s) that share a pump station, the LDS piping, which transports LDS liquid (by gravity flow) to the sump of a shared pump station, first flows through a dedicated leak detection sample sump. The dedicated leak detection sample sump(s) allow discrete samples of individual LDS(s) to be obtained and measured for specific conductance and/or analyzed for the detection monitoring parameters. In this way, the LDS leakage liquid can also be compared to the leachate values for the various individual Cells. Figure 3 shows the locations of the leak detection sample sumps associated with the cells in the Phase I Expansion and Phase II Expansion.

4.0 MONITORING AND REPORTING PROCEDURES

4.1 Monitoring

To implement the LRAP, LDS leakage volume and leakage liquid specific conductance measurements will be obtained and evaluated on a bi-weekly basis (every other week). Leakage volumes will be obtained from a totalizing flow meter that is integral to the pump discharge line from each LDS pump.

The LDS liquid outflow rates from LDS(s) that share an LDS pump station, will be evaluated as a single entity once the second cell is constructed. For example, Cell 21 ALR–I of 152 gpad will be added to Cell 18 ALR–I of 1,071 gpad to create a combined ALR–I for Cells 18 and 21 combined at 1,223 gpad. Note that the specific conductance from each LDS is measured separately and, therefore, differentiation between LDS(s) of specific conductance for LDS(s) sharing a sump is not necessary.

4.2 Reporting Procedures

NEWSME will submit a summary of LDS flow and specific conductance data collected for that year with that year's JRL annual report. Recommended changes to the LRAP will be included in the annual report.

REFERENCES

Bonaparte, R., J.P. Giroud, and B.A. Gross, 1989. Rates of Leakage through Landfill Liners; Proceedings of Geosynthetics 1989,

Federal Register, 1987. Liners and Leak Detection Systems; 52 FR 20218, May 29, 1987.

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SME, 2015. JRL Expansion Application, July 2015.

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Wilson-Fahmy and Koerner, 1995. Leakage Rates through Holes in Geomembranes Overlying Geosynthetic Clay Liners; Proc. Geosynthetics, 1995.

APPENDIX Q

THIOPAQ OPERATIONS AND MAINTENANCE MANUAL

SME
SEVEE & MAHER
ENGINEERS

JUNIPER RIDGE LANDFILL

Operated by NEWSME Landfill Operations, LLC

2828 Bennoch Road, Old Town, Maine 04468

OPERATIONS MANUAL

Juniper Ridge Landfill

Gas Treatment Facility

Old Town, ME

Revised July 2025 and April 2020

Original (April 2016)

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1.0 INTRODUCTION

This document serves as the current Operations Manual for the Juniper Ridge Landfill Gas Treatment Facility (Facility). The Facility is located south-east of the Juniper Ridge Landfill (JRL), which is located off of the Bennoch Road in Old Town, ME. The next pages include a site plan (Figure 1) and a photograph of the Facility (Figure 2). The facility began treating landfill gas in January of 2015.

The Facility is designed to collect and remove hydrogen sulfide (treat) from the landfill gas (LFG) generated by the JRL. Once treated landfill gas is sent to Archaea Energy's Renewable Natural Gas (RNG) facility for further conditioning or combusted using an onsite gas flare. When properly conditioned, the refined RNG can be sold as renewable fuel.

The current design capacity of the Thiopaq® treatment system is approximately 5000 SCFM at 5000 ppm hydrogen sulfide (H_2S). If max capacity of the facility is ever reached, reactive treatment media can also be utilized to treat additional H_2S as done prior to Thiopaq® installation.

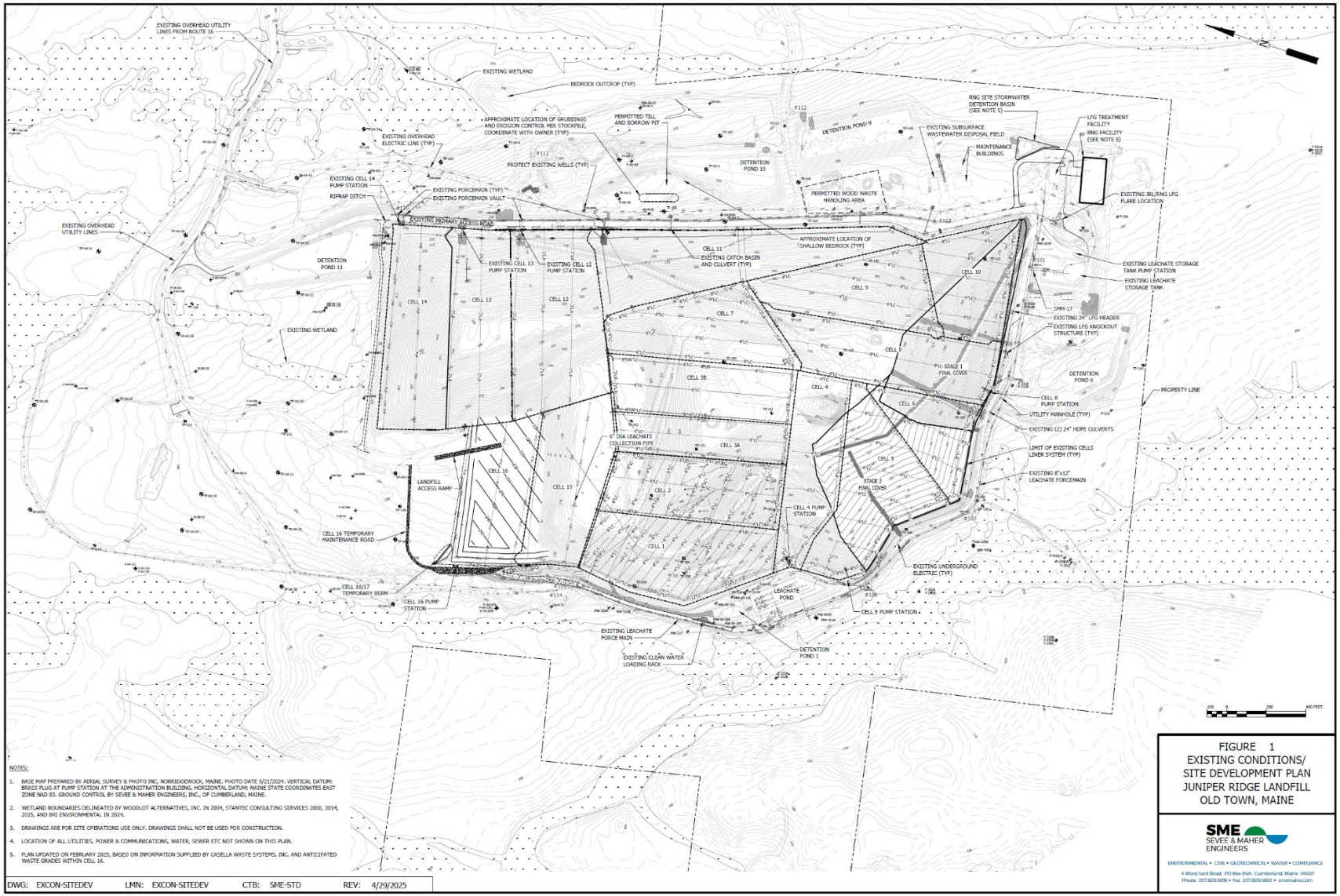

Figure 1: Site Plan

Figure 1: Photo of Juniper Ridge Landfill Gas Treatment Facility

2.0 DESCRIPTION OF FACILITY AND MEDEP APPROVALS

The JRL Gas Treatment Facility is located on a 2-acre parcel of land, at the south-east corner of the JRL facility, a 780-acre site located off the Bennoch Road in Old Town, ME. For a detailed history of the JRL site please refer to the JRL Operations Manual. The Facility removes H_2S from landfill gas before it is sent to Archaea's RNG facility for further conditioning or combusted using an onsite gas flare. When properly conditioned, the refined RNG can be sold as renewable fuel.

The Facility operates under MEDEP Air License A-921-77-3-M, issued on February 13, 2014 and MEDEP Solid Waste Permit S-020700-WD-BE-M, issued on March 3, 2015. These permits are included as Appendix A of this document.

3.0 FACILITY ACCESS AND HOURS OF OPERATION

Access to the Facility is via the access road at 2828 Bennoch Road. Only authorized personnel are allowed in and around the Facility unless escorted by plant personnel. The Facility operates 24 hours a day and is currently staffed during regular business hours. The Facility is monitored remotely and the site is secured by the scale operators after hours. Rounds are performed by JRL staff during non-staffed hours.

4.0 OPERATIONS STAFF

The operations staff personnel at the JRL Gas Treatment Facility are fully trained to fulfill the tasks required of their position. The following are brief descriptions of the positions held at the Facility.

4.1 Landfill Gas Treatment Plant Facility Manager:

The Landfill Gas Treatment Plant Facility Manager is responsible for managing the day-to-day operations of the facility, maintenance and repair of the landfill gas desulphurization and gas conditioning system, providing support to landfill staff, and maintaining a safe work environment. This position works closely with the Environmental Manager and Operations Manager but reports to the JRL Division Manager.

4.2 Landfill Gas Treatment Plant Operator I:

The Landfill Gas Treatment Plant Operator I is responsible for performing the day-to-day operations, maintenance and repair of the landfill gas desulphurization and gas conditioning system, providing support to landfill staff at both Pine Tree and Juniper Ridge Landfills, and creating a safe work environment. This position will report directly to the Landfill Gas Treatment Plant Facility Manager.

4.3 Operator Training:

Operator training occurs monthly as part of the JRL safety and compliance training program. New employees are required to complete proper training in accordance with Casella policy prior to commencement of work. Competence in operating the plant MUST be achieved before sole plant operation is allowed. Training records are kept on the Casella Safety and Compliance database.

5.0 PROCESS DESCRIPTION

5.1 Landfill Gas Process Flow

A process flow diagram pertaining to the LFG treatment and destruction through the flare may be found in Figure 3. Also shown is the connection point where the treated LFG can be sent to Archaea Energy's RNG Facility. The diagram also shows the condensate & plant effluent flow from the system. This manual provides an overview of the process. Additional process details can be found in the Cameron O&M Manual, and the manuals for the various equipment and systems. These are located in the control room of the Thiopaq Facility.

5.1.1 Landfill Gas Collection

The Gas Collection and Control System (GCCS) at JRL is designed to actively collect LFG while maintaining anaerobic conditions within the landfill by limiting air intrusion into the waste. Refer to the JRL Operations Manual for further details of the operation and maintenance of the landfill gas collection system and the flare.

5.1.2 Blowers

The Facility includes two nine-stage centrifugal blowers, operated by 200 HP motors, and two knockout pots used to remove moisture. The LFG blower skid is located on the west side of the facility adjacent to the scrubber building. The skid is controlled by the "Glauber" Programmable Logic Controller (PLC) in the electrical room. It controls vacuum, pressure and temperature setpoints, as well as the knock-out pot level controls, alarms and trips. A Human Machine Interface (HMI) interface panel is installed on this PLC cabinet.

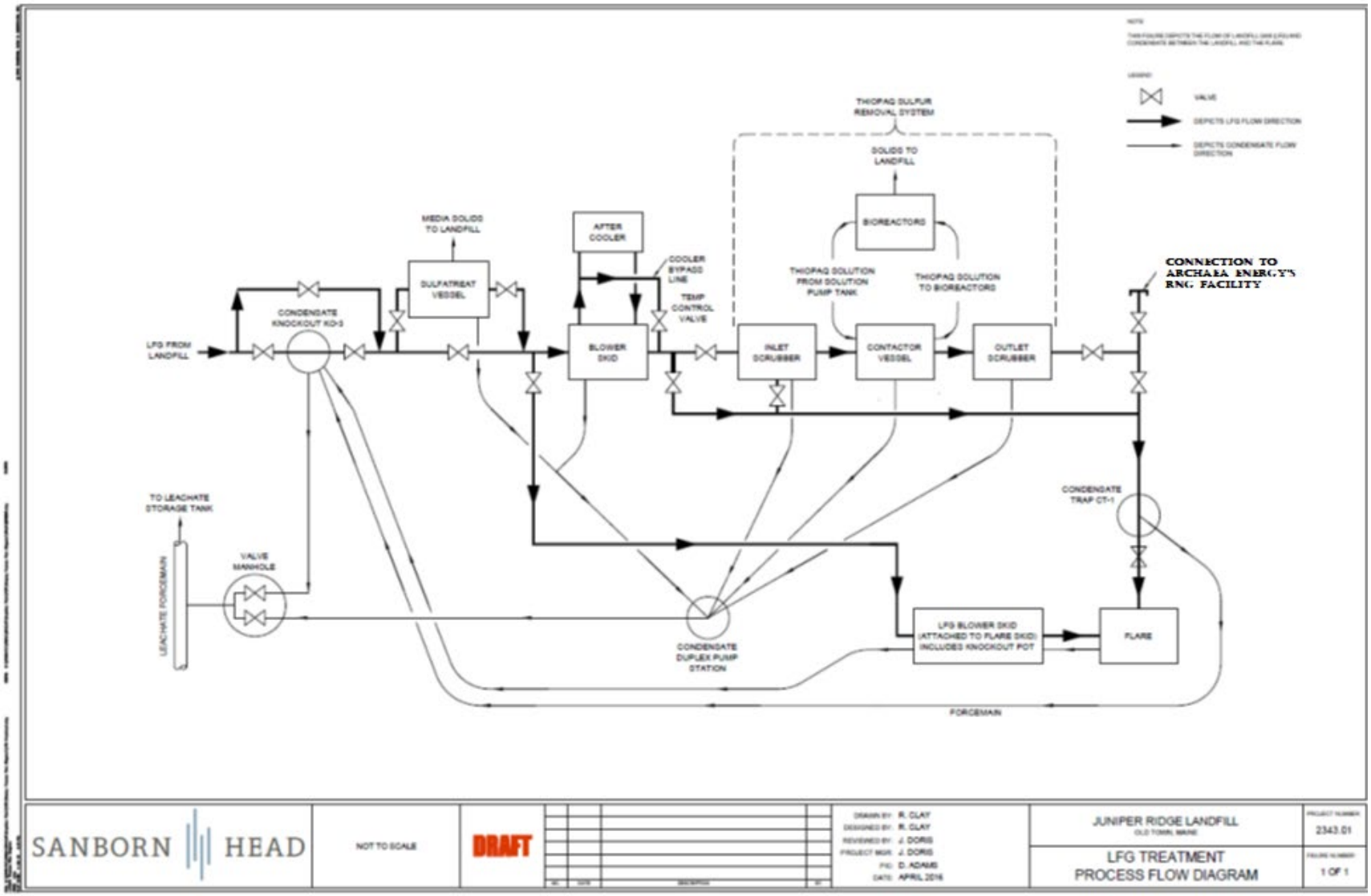

Figure 2: Process Flow Diagram

5.1.3 LFG Chiller

The compressed gas is then cooled in a dry chiller located next to the LFG compressor skid. The chiller consists of a fin and tube heat exchanger with a forced draft fan. This helps maintain appropriate process temperatures and remove moisture. The setpoint is controlled automatically by actuating the chiller bypass valve and adjusting the chiller fan speed. These functions are also controlled by the Glauber PLC. During the winter months, operators close the louvers of the chiller, to help maintain the process at the desired setpoint.

5.1.4 Condensate and Water Removal

The Facility includes 4 knockout pots, also known as scrubbers to remove excess moisture (condensate) from the gas. These are located before the compressor, after the chiller, before the contactor and after the contactor. These knockout pots all have automated level controls and high level alarms. The condensate drains to the facility pump station, where it is then pumped to the landfill condensate distribution system or to the leachate storage tank.

Precipitation that falls on the exterior concrete pad can be either discharged directly to a stormwater ditch, or to the facility pump station at the choosing of the operator in order to contain potential spills onto the pad. Interior floor drains and the filtrate drain, are piped to a settlement basin, and then to the pump station.

5.1.5 Contactor

The untreated gas then passes through the contactor. In the contactor, hydrogen sulfide rich gas enters from the bottom and comes into contact with Thiopaq solution as it rises to the top. As the gas comes into contact with the liquid Thiopaq solution, H_2S gas is stripped out. The primary chemical reaction is the reaction of H_2S with sodium hydroxide ($NaOH^-$) in the solution, producing sodium bi-sulfide ($NaHS^-$) and water, both in a liquid state. The liquid solution then travels to the bioreactors while the gas leaves the top of the contactor.

5.1.6 Flare Skid / RNG Facility

The gas subsequently passes through the outlet scrubber (knock out pot) for further condensate removal and then goes to either the flare or RNG facility through an underground pipe. Condensate traps are used to remove additional moisture prior to both the flare skid and RNG facility. A pipe and valve is also in place to allow for additional uses of the gas.

The flare skid is located west of the Facility. A flame arrestor, igniter, pressure bypass, PLC and flare stack are present on the skid. A supplemental propane tank is located on a concrete pad adjacent to the flare to provide a pilot flame for flare ignition.

Two 50 hp four stage blowers on the flare skid are used as a backup for the 200 HP facility blowers. These are used when there is a power failure or when the gas treatment facility blowers are not operational. In this case, the gas bypasses the facility and goes directly to the flare. The Sulfatreat® cans at the flare can also be used as a backup in case of emergency. There is also a knockout pot with a demisting pad upstream from these blowers.

The RNG facility is located south of the Landfill Gas Treatment Facility and is operated by Archaea Energy. Further details regarding operations of the RNG facility can be seen in Appendix R of the JRL Operations Manual.

5.2 Thiopaq Solution Flow

5.2.1 Bioreactors

The Thiopaq® Solution, rich in dissolved H_2S, travels from the contactor to the bioreactor. Air is introduced in the contactor, which allows Thiobacillus bacteria to carry out the biological reaction of $NaHS^-$ with oxygen (O_2). This regenerates the $NaOH^-$ and produces elemental sulfur. Further details of the various biological and chemical reactions which occur in the bioreactors can be found in the Cameron Installation and Operation Manual located in the Facility control room.

5.2.2 Bioreactor Air Blowers

Air is introduced into the nozzles at the bottom of the bioreactors by three 60hp positive displacement air blowers. One blower is directed to each of the two bioreactors. The third blower serves as a backup. When all three blowers are available, they are rotated periodically. The reduction-oxidation potential (redox) in each of the bioreactors is continuously measured and the blower speeds are automatically adjusted to maintain the redox setpoint.

5.2.3 Bioreactor Vent Odor Control System

After air goes through the bioreactors, it is piped through an odor control system before being vented to the atmosphere. The odor control system consists of a knockout pot, a centrifugal blower to maintain constant vent pressure, and a carbon tank with a 60" diameter. The carbon tank is filled with carbon media. The air passes through the carbon media, removing odor causing substances absorbed from the solution. Finally, a deodorizing spray is applied through a nozzle in the vent pipe to further reduce any remaining odor.

5.2.4 Solution Pump Tank

From the bioreactors, the solution travels by gravity to the Solution Pump Tank. Water, $NaOH^-$, nutrient, and anti-foam are added in controlled amounts. Water is added to control the conductivity by diluting the solution when the conductivity rises above the setpoint. $NaOH^-$, also commonly called caustic, is added using a pump timer in the HMI. It is adjusted based on measurements of alkalinity in the solution and hydrogen sulfide concentration in the treated gas, which are taken regularly by the operators. Nutrient and anti-foam solution are added by an adjustable pump timer, which has been optimized through process experience and manufacturer guidance.

5.2.5 Circulation Pumps

The solution is finally pumped back into the contactor by the circulation pumps, completing the cycle. There are three 40 horsepower circulation pumps. Two pumps run continuously to provide the necessary solution flow. The third pump serves as a backup. When all three pumps are available, they are rotated periodically.

5.2.6 Centrifuge

A slip stream of the solution is bled to a centrifuge, where the solids comprised essentially of Sulfur, is separated into a roll off container and the resulting clean solution (filtrate) is drained to a filtrate tank. If the solution level is above set-point, the filtrate is automatically dumped to the condensate pump station. Otherwise the filtrate is pumped back into the process. The flow and operation schedule of the centrifuge is based on the Total Suspended Solids (TSS) measured by the operators.

5.2.7 Solution Cooler

During the summer months, a portion of the solution passes through a heat exchanger, where it is cooled by glycol. The glycol is then pumped to a radiator, where it is cooled. The solution temperature is controlled by a temperature control valve, which is automatically actuated to bypass the glycol flow around the heat exchanger.

5.2.8 Foam Suppression Spray

Both bioreactors and the solution pump tank have a foam suppression spray in the top of the vessel. This spray is designed to knock down foam that builds up in the vessels. Flow to these nozzles must be maintained to prevent a "foam over", which is when foam rises into the vent pipe.

5.3 Process Control

Most of the process control functions are automated through the use of three PLCs in the electrical room. These PLCs are monitored and controlled from the HMI located in the control room. Digital logs are also kept on site, and backed up automatically. Data desired or required is automatically logged and stored on the HMI computer.

Through the HMI, operators can actively monitor and adjust most aspects of the facility directly from the HMI. The HMI is run off of two separate computers, which each control different parts of the process. Both computers are equipped with data logging capabilities and automatic hard

drive backup. Operators can actively monitor and adjust most aspects of the facility directly from the HMI

5.4 Utilities

5.4.1 Electricity

Electricity is supplied from the overhead power line via an underground cable to a 750 kVA transformer. Three phase 480v power is then supplied to the electrical room via underground cable from the transformer. Backup power is also supplied to the electrical room via underground cable from the on-site diesel generator. Backup power only powers the controls, lighting, heat, and 120/240V power circuits.

5.4.2 Compressed Air

The compressor system is located on the mezzanine above the bathroom. There are two air compressors that are a screw auger type compressor. They run various valves and supply working air throughout the plant. Attached to each air compressor is a refrigerant air dryer and reservoir tank. A desiccant dryer is also used to reduce the dew point even further in the winter. The dryers run automatically as the demand requires. The oil/water separator is connected to all three units and treats liquid coming off the units.

5.4.3 Water

Water is used as makeup for the process, as well as for cleaning and domestic use. The water is pumped from the well by a submersible pump. It then goes into a 500 gallon storage tank. A level transmitter turns the pump on and off to maintain a level in the storage tank. A centrifugal pump with a variable frequency drive pumps from this tank and maintains the desired water pressure.

6.0 OPERATION

6.1 Normal Operation

6.1.1 Daily Chemistry Tests

Operators perform chemistry tests as described in the Cameron Installation and Operation Manual multiple times per week and adjust the process parameters according to the results of the tests. Laboratory tests will measure alkalinity, TSS, pH, and conductivity of the Thiopaq® Solution. The results of these tests will be recorded in the JRL Scrubber Log.

6.1.2 H_2S Concentration Tests

Operators shall sample the landfill gas H2S concentration (both entering and exiting the control equipment) twice in the same day (morning and afternoon, with at least four hours between the two sample times) using colorimetric tubes and record the data in the JRL Scrubber Log. This sampling method shall occur at least two times per week with at least three days between samples, as required by JRL's air license. The colorimetric tube data shall be used as an operational tool and not for determining compliance with numerical emission limits.

Generally, this means that tests are performed on Monday morning, Monday afternoon, Thursday morning and Thursday afternoon. Generally, the concentration will be checked more frequently than required, to ensure the treated gas concentration stays below the permit required levels. Adjustments will be made to process parameters to maintain H2S concentration at or below the required levels.

6.1.3 TRS Sampling

Operators shall sample the TRS content of the landfill gas to be flared three times during a single day (i.e., three samples at the inlet to the scrubber and three samples at the scrubber outlet) once per month using Tedlar sampling bags or similar method. These samples shall be protected from

exposure to sunlight after they are taken and during transportation. Analysis shall be performed by an independent laboratory within 24 hours.

Operators shall record the gas flow rate on the days of sampling events. The average of the sampling results for each month, along with the associated gas flow rates, shall be used to estimate the monthly sulfur dioxide (SO_2) emissions based on the assumption that total reduced sulfur (TRS) compounds are converted to SO_2 during combustion. Records of SO_2 emissions shall be kept on a monthly and 12 month rolling total basis.

6.1.4 Operator Rounds

Operators will perform regular rounds of all of the process equipment to visually check for any anomalies. A round sheet will also be used to record process parameters on a regular basis. This facilitates the early detection of any changes in the process, before they lead to further problems.

6.1.5 Sulfur Removal

Elemental sulfur is removed by the centrifuge into a roll off container. Operators will periodically check the container, spread out its contents and empty it before it becomes overfilled.

6.1.6 Uptime Requirement

The facility is required to meet a 95% uptime for all sulfur control equipment on a 12-month rolling total basis, including, but not limited to, scheduled or unscheduled maintenance and repair and equipment malfunction. Operators shall keep records documenting compliance with the uptime requirement.

6.2 Startup

Before starting the GCCS, ensure that all work is completed and lockout/tagout (LOTO) has been removed. Return all valves and disconnects to the operating positions. Inform personnel in the area, that you will be starting the GCCS.

6.2.1 Flare Startup

The flare is first started using the two blowers at the flare skid. When the flare temperature is below 300°F, push the "Flare Reset" button on the HMI interface. This will cause the flare to ignite automatically using propane. When the temperature rises above 300°F, the flare blowers will start automatically and the propane will turn off. The Startup Report Form must be completed and filed under Flare Reports in the Control Room after startup event.

6.2.2 Plant Startup

Startup shall be performed in accordance with standard guidelines to the maximum extent practical. The startup procedure can be found in the O&M manual in the facility control room. Provided is an overview of the required steps:

- Verify that the air compressor is running and is functioning correctly.
- Verify that there are no alarm conditions which would prevent the plant from operating correctly. Check the "Maintenance" window in the Cameron HMI. If necessary, bypass the low pressure alarms until the system gets up to operating pressure.
- Verify that the circulation pumps and air blowers are running.
- Verify that there is sufficient solution flow from the circulation pumps and that the pump tank and contactor levels are stable and within normal operating ranges.
- Verify that other operating parameters such as redox, conductivity, temperatures and levels are within normal operating ranges.
- When the flare temperatures exceeds the low temperature shutdown setpoint (typically 600°F), the Glauber blowers can be started via the HMI panel on the Glauber PLC cabinet.
- Verify that the gas flow control valve (PV-5003) is fully open.
- Press "FO Reset" on the Cameron HMI computer to reset the plant. If there are no remaining shutdown conditions, the inlet valve will open and the bypass valve will close.
- After a shutdown, with the blowers running at minimum speed, the redox will be high. It will take some time for Redox to return to normal levels. For longer shutdown periods it can take several hours. The blowers will continue to run at minimum speed until the Redox nears the setpoint.

6.3 Shutdown

6.3.1 Maintenance Shutdown

Shutting down of the Landfill Gas Treatment Facility should be minimized. If it is necessary to shut down the facility, the flare should remain in operation if possible to control odor and emissions. If possible, the circulation pumps and the blowers should be kept running. This keeps solids in the solution from settling out. The time, duration and reason for the shutdown shall be documented in the Operations Log. The Shutdown Report Form must be completed and filed under Flare Reports in the Control Room after any shutdown event of the flare.

To shut down the Thiopaq system, switch the bypass valve to manual mode and open it using the Cameron HMI, or shutdown the facility blowers using the Stop button on the Glauber PLC. When the facility blowers are shutdown, the flare blowers will ramp up to maintain the vacuum setpoint. Other process equipment can be shut down in the appropriate sequence, once the gas is bypassed. Alternatively, the entire process can be immediately shutdown using the HMI E-stop button.

6.3.2 Power Failure

It is not possible to run the Thiopaq system during a mains power failure. The flare will restart automatically on backup power, using the flare blowers. When power is restored, follow the startup procedures to restart the plant. The time, duration and reason for the shutdown shall be documented in the operations log. A Flare Startup, Shutdown and Malfunction report shall be completed within 48 hours any time that the flare shuts down.

7.0 PREVENTITIVE MAINTENANCE

Process equipment is maintained according to manufacturer recommendations, operational experience, and/or industry best practices to ensure maximum availability and prolong the life of the equipment. A spreadsheet called "PM List" has been created to automatically flag equipment which is due for maintenance and log preventative maintenance activities. This spreadsheet is kept on the Thiopaq computer in the control room and backed up regularly. Examples of maintenance activities are oil changes, equipment greasing, filter changes, calibrations, inspections, cleaning and testing.

8.0 RECORD KEEPING

Records of chemistry tests, H_2S concentration tests, preventative maintenance activities and operator rounds will be maintained in electronic or paper form in the Facility control room. Additionally records of any shutdown, bypass of untreated gas, or unscheduled maintenance will be maintained. A *Gas Collection and Control System* (GCCS) Start-up, Shut-down and Malfunction report shall be completed within 48 hours any time the flare shuts down and starts up. These reports will be kept in the facility control room.

9.0 OPERATING PARAMETERS

Operating parameters will be regularly monitored and kept within their appropriate ranges. These ranges can be found in the Cameron Thiopaq Operations Manual. These may be adjusted according to operational experience or industry best practices in order to maintain reliability and effectiveness while minimizing costs and environmental impact. The Cameron Thiopaq Operations Manual is located in hard copy in the control room as well as on the HMI computer in the control room.

10.0 RESPONSE TO SYSTEM MALFUNCTION

The Thiopaq system continuously monitors operating parameters and alerts operators when an alarm condition exists. The HMI produces an audible alert, activates a strobe light in the process area and can call out when operators are not at the plant. The process shuts down automatically when critical measured parameters fall outside of acceptable ranges. The system then calls out to the scale house. During hours when the facility is not staffed, scale house operators will call the operator on call. A call list is provided to scale house operators so that backup personnel can be contacted in the event that the on call operator is unreachable. The Cameron O&M manual, located in the control room, provides guidance on troubleshooting various problems with the Thiopaq Process. Operators have the skills, experience and tools to correct most problems immediately and restart the facility.

11.0 GENERAL SAFETY

Safety is a high priority at the Facility. Casella Waste Systems company policy guidelines, and the Juniper Ridge Site Safety Manual are followed at all times. All work shall be conducted in accordance with company safety policies and the Site Safety Manual. A copy of the Site Safety Manual is kept in the Facility control room. Anyone not complying with the company's safety polices will be immediately removed from the site. As described, safety meetings will be conducted to maintain compliance and awareness of safety issues as part of monthly training activities.

All work shall be performed in accordance with the LOTO plan developed for the Facility. This plan is updated regularly as new procedures and revisions are required. The most up to date plan is kept in the LOTO binder in the Facility control room

APPENDIX A

MEDEP OPERATING PERMITS

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

State of Maine and
NEWSME Landfill Operations, LLC
d/b/a Juniper Ridge Landfill
Penobscot County
Old Town, Maine
A-921-70-B-R

Departmental
Findings of Fact and Order
Part 70 Air Emission License
Renewal with Amendment

FINDINGS OF FACT

After review of the Part 70 License renewal and amendment application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes Annotated (M.R.S.A.), §344 and §590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	State of Maine and NEWSME Landfill Operations, LLC d/b/a Juniper Ridge Landfill
LICENSE TYPE	Part 70 License Renewal and Part 70 Significant License Modification
NAICS CODES	562212
NATURE OF BUSINESS	Solid Waste Landfill
FACILITY LOCATION	Old Town, Maine

Juniper Ridge Landfill (JRL) is a solid waste disposal facility currently owned by the State of Maine (Bureau of General Services) and operated by NEWSME Landfill Operations, LLC.

JRL has the potential to emit more than 100 tons per year (TPY) of sulfur dioxide (SO_2) and carbon monoxide (CO). Therefore, the source is a major source for criteria pollutants. JRL does not have the potential to emit more than 10 TPY of a single hazardous air pollutant (HAP) or more than 25 TPY of combined HAP. Therefore, the source is an area source for HAP.

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PORTLAND
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(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
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web site: www.maine.gov/dep

B. Emission Equipment

The following emission units are addressed by this Part 70 License:

Process Equipment

Equipment	Capacity	Maximum Flow Rate (scfm)
Flare #2	22.5 MMBtu/hr	750
Flare #3	40.5 MMBtu/hr	1,350
Flare #4	106.5 MMBtu/hr	3,550
Sold Waste Landfill	10.0 MM cubic yards (approx.) 7.95 million Megagrams	n/a

JRL has additional insignificant activities which do not need to be listed in the emission equipment table above. The list of insignificant activities can be found in the Part 70 license application and in Appendix B of *Part 70 Air Emission License Regulations*, 06-096 CMR 140 (as amended).

C. Application Classification

The application for JRL is for the renewal of their existing Part 70 Air License. JRL has also requested incorporation into the Part 70 Air License the relevant terms and conditions of the 06-096 CMR 115 New Source Review (NSR) licenses issued to JRL, including A-921-77-2-A issued 11/26/12, A-921-77-3-M issued 2/7/14, and A-921-77-4-M issued 5/9/14. Therefore, the license is considered to be a Part 70 License renewal with the incorporation of NSR requirements.

D. Facility Description

The State of Maine (Bureau of General Services) owns the Juniper Ridge Landfill which is currently operated by NEWSME Landfill Operations, LLC. Gases formed from the decomposition of the landfill materials are collected and controlled by the facility's three flares.

JRL has previously licensed the installation of equipment for the control of the total reduced sulfur (TRS) compounds in the landfill gas (LFG) prior to the LFG being combusted in the flares. This control equipment, as well as the timetable for its installation, is addressed in this license.

E. General Facility Requirements

JRL is subject to the following state and federal regulations listed below, in addition to the regulations listed for specific units as described further in this license.

CITATION	REQUIREMENT TITLE
06-096 CMR 101	Visible Emissions
06-096 CMR 102	Open Burning
06-096 CMR 103	Fuel Burning Equipment Particulate Emission Standard
06-096 CMR 104	Incinerator Particulate Emission Standard
06-096 CMR 109	Emergency Episode Regulation
06-096 CMR 110	Ambient Air Quality Standard
06-096 CMR 116	Prohibited Dispersion Techniques
06-096 CMR 137	Emission Statements
06-096 CMR 140	Part 70 Air Emission License Regulations
06-096 CMR 143	New Source Performance Standards
06-096 CMR 144	National Emission Standards for Hazardous Air Pollutants (NESHAP)
40 CFR Part 60, Subpart WWW	Standards of Performance for Municipal Solid Waste Landfills
40 CFR Part 70	State Operating Permit Programs
40 CFR Part 98	Mandatory Greenhouse Gas Reporting

Note: CMR = Code of Maine Regulations
CFR = Code of Federal Regulations

F. Units of Measurement

The following units of measurement are used in this license:

BTU/scf	British Thermal Units per standard cubic feet
gal	gallons
grains/dscf	grains per dry standard cubic feet
lb/hr	pounds per hour
lb/MMBtu	pounds per million British Thermal Units
MMBtu/hr	million British Thermal Units per hour
m^3	cubic meters
ppmv	parts per million by volume
scfm	standard cubic feet per minute
scf/hr	standard cubic feet per hour
tpy	tons per year

II. BEST PRACTICAL TREATMENT (BPT) AND EMISSION STANDARDS

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in 06-096 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emission from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. NO_X RACT (Reasonably Available Control Technology)

Reasonably Available Control Technology for Facilities that Emit Nitrogen Oxides, 06-096 CMR 138 (as amended) is applicable to sources that have the potential to emit quantities of NO_x equal to or greater than 100 tons/year. Annual emissions of NO_x from JRL are limited to less than 100 ton/year. Therefore, NO_x RACT does not apply to this facility.

C. VOC RACT (Reasonably Available Control Technology)

Reasonably Available Control Technology for Facilities that Emit Volatile Organic Compounds, 06-096 CMR 134 (as amended) is applicable to sources that have the potential to emit quantities of VOC equal to or greater than 40 tons/year. Annual emissions of VOC from JRL are limited to 40 ton/year. Therefore, VOC RACT does not apply to this facility.

D. Mandatory Greenhouse Gas (GHG) Reporting

Federal regulation 40 CFR Part 98, *Mandatory Greenhouse Gas Reporting*, which contains GHG reporting and related monitoring and recordkeeping requirements, is applicable to the owners/operators of any facility which falls into any one of the following three categories, per 40 CFR Part 98, Subpart A, *General Provision*, § 98.2.

(a)(1) A facility that contains any source category that is listed in Table A–3 of this subpart in any calendar year starting in 2010.

(a)(2) A facility that contains any source category that is listed in Table A–4 of this subpart and that emits 25,000 metric tons CO_2e or more per year in combined emissions from stationary fuel combustion units, miscellaneous uses of carbonate, and all applicable source categories that are listed in Table A–3 and Table A–4 of this subpart.

(a)(3) A facility that in any calendar year starting in 2010 meets all three of the conditions listed in this paragraph (a)(3). For these facilities, the annual GHG report must cover emissions from stationary fuel combustion sources only.

(i) The facility does not meet the requirements of either paragraph (a)(1) or (a)(2) of this section.

(ii) The aggregate maximum rated heat input capacity of the stationary fuel combustion units at the facility is 30 MMBtu/hour or greater.

(iii) The facility emits 25,000 metric tons CO_2e or more per year in combined emissions from all stationary fuel combustion sources.

Table A-3 of Subpart 98 requires reporting for municipal solid waste landfills that generate methane (CH_4) in amounts equivalent to 25,000 metric tons CO_2e or more per year. JRL meets this criteria. Therefore, per 40 CFR Section 98.2(a)(1), JRL shall fulfill the recordkeeping and reporting requirements of 40 CFR Part 98.

E. PSD/BACT Review

The Department issued Air License A-921-77-2-A on 11/26/12 to JRL. The license was issued to permit the current flare configuration. The license was issued pursuant to federal Prevention of Significant Deterioration (PSD) requirements and the Department's air licensing requirements for major modifications. JRL has modified certain requirements contained in A-921-77-2-A and underwent the appropriate air licensing procedures to address these changes.

F. Solid Waste Landfill

JRL operates and maintains a municipal solid waste landfill.

1. New Source Performance Standards (NSPS)

JRL operates and maintains a municipal solid waste landfill that is subject to 40 CFR Part 60, Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills*. Subpart WWW requires that landfills with a design capacity in excess of 2.5 million cubic meters calculate a Non-Methane Organic Compound (NMOC) emission rate. If the annual NMOC emission

rate is found to be greater than 50 megagrams per year, the owner of the landfill is required to install a collection and control system that complies with Subpart WWW.

The process of determining the NMOC emission rate is prescribed by Subpart WWW and is a tiered analysis. In 2006 JRL performed a Tier 1 analysis in which JRL calculated NMOC emissions based on a first order decay equation with default parameters and site specific waste values. JRL used a model developed by the EPA entitled "Landfill Gas Emissions Model (LandGEM), Version 2.01". The Tier I analysis indicated that the uncontrolled NMOC emissions from the landfill would exceed 50 megagrams per year. JRL therefore decided to proceed to a Tier 2 analysis.

Using a Tier 2 analysis allows for the collection of site-specific NMOC concentrations to be included in the LandGEM model. JRL conducted Tier 2 sampling in 2006. Based on the sampling information, the 2006 Tier 2 analysis showed an NMOC emission rate less than 50 megagrams per year prior to control.

Tier 2 sampling was repeated in 2011. Results of the 2011 Tier 2 sampling demonstrate that pre-control emissions of NMOC are now greater than 50 megagrams per year. Therefore, per Subpart WWW, JRL was required to submit a Collection and Control System Design plan, which it did on June 7, 2012.

In addition, JRL is required to install and operate an active gas collection system that meets the requirements of Subpart WWW by December 8, 2014. A gas collection and control system has been operated at JRL since 2005. However, because estimated pre-control emissions exceeded 50 megagrams per year in 2012, JRL must be operating the active gas collection system in compliance with the requirements of Subpart WWW no later than December 8, 2014.

The system consists of a gas collection system and three flares. The flares are designed to achieve 98% overall destruction of NMOCs and use a small amount of propane as a pilot light.

2. National Emissions Standards for Hazardous Air Pollutants (NESHAP)

Since JRL has demonstrated estimated uncontrolled emissions of NMOC exceed 50 megagrams per year, JRL is subject to *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills,*

40 CFR 63, Subpart AAAA. However, compliance with 40 CFR Part 60, Subpart WWW constitutes compliance with 40 CFR 63, Subpart AAAA per §63.1955(a)(1).

3. TRS, H_2S, and SO_2 – Clarification of Terms Used

This license addresses the control of total reduced sulfur (TRS) present in the landfill gas. Based on actual periodic TRS grab sample tests performed at the facility, the speciation results show that H_2S is the primary TRS constituent of the landfill gas (approximately 99%) with the remaining 1% consisting of additional various sulfur containing compounds. This license includes requirements for total TRS as well as TRS measured as H_2S.

The combustion of TRS gases results in the formation of SO_2. The SO_2 emissions are directly correlated to the amount of sulfur in the landfill gas prior to combustion.

4. Control Equipment

The LFG generated at JRL is collected and then flared. The facility is equipped with an active gas collection and control system which consists of gas extraction wells and horizontal gas collection trenches that connect by a system of gas conveyance lines to a vacuum blower and then to the flares.

The primary flare at JRL is Flare #4, rated at 106.5 MMBtu/hr (3550 scfm). Flares #2 and #3 are to be used as back-up and are rated at 22.5 MMBtu/hr (750 scfm) and 40.5 MMBtu/hr (1350 scfm), respectively. The flare LFG flow rates were calculated assuming the LFG consists of approximately 50% methane and has a heat content of 500 Btu/scf. Flares #2 and #3 are not licensed to operate simultaneously with Flare #4. Flares #2 and #3 are expected to be operated together to handle the gas flow when used as back-up to Flare #4 and shall be limited to 100 hours per calendar year each. All flares are located on the southeast end of the facility when in operation. Flares may be stored in other locations when not operating.

Prior to June 1, 2015, the H_2S concentration of the LFG going to the flares shall not exceed 4,500 ppmv on a daily average basis.

SO_2 is emitted as a result of combustion of TRS compounds in the LFG. As part of NSR Amendment A-921-77-3-M, JRL agreed to install and operate a sulfur treatment system to maintain concentration of TRS compounds in LFG to less than or equal to 1,000 ppmv.

No later than June 1, 2015, JRL shall install and operate a Thiopaq® sulfur treatment system as part of the gas control system to remove TRS compounds from the LFG prior to combustion in the flares.

JRL maintains the flexibility to operate other temporary or additional TRS control equipment (e.g. SulfaTreat) for cases of scrubber downtime or temporary surges in LFG flow or TRS concentration, provided licensed limits are met.

The flares, in conjunction with the sulfur treatment system, have previously been determined to meet BACT for all criteria pollutants.

5. Emission Limits and Streamlining

For the Solid Waste Landfill a listing of potentially applicable emission standards, the origin and authority of the standards, notation if streamlining of the standards has been requested, and the applicable emission limits can be found below.

Pollutant	Applicable Emission Standards	Origin and Authority	Licensed Emission Limits
SO_2 (All flares combined)	449.0 tpy	06-096 CMR 115, BACT (A-921-77-2-A)	449.0 tpy

For Flare #2 a listing of potentially applicable emission standards, the origin and authority of the standards, notation if streamlining of the standards has been requested, and the applicable emission limits can be found below.

Pollutant	Applicable Emission Standards	Origin and Authority	Licensed Emission Limits
PM	0.2 grains/dscf	06-096 CMR 104	0.2 grains/dscf
	0.38 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.38 lb/hr
PM_{10}	0.38 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.38 lb/hr
$PM_{2.5}$	0.38 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.38 lb/hr

Pollutant	Applicable Emission Standards	Origin and Authority	Licensed Emission Limits
SO_2	33.09 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	33.09 lb/hr
	449.0 tpy (All flares combined)	06-096 CMR 115, BACT (A-921-77-2-A)	449.0 tpy (All flares combined)
NO_x	1.53 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	1.53 lb/hr
CO	8.33 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	8.33 lb/hr
VOC	0.07 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.07 lb/hr
Visible Emissions	30% opacity on a 6-minute block average basis except for two 6-minute block averages in a 3-hour period	06-096 CMR 101, §2(B)(1)(f)	20% opacity on a 6-minute block average basis *
	20% opacity on a 6-minute block average basis	06-096 CMR 115, BACT (A-921-77-2-A)	

Table Notes: * streamlining requested

For Flare #3 a listing of potentially applicable emission standards, the origin and authority of the standards, notation if streamlining of the standards has been requested, and the applicable emission limits can be found below.

Pollutant	Applicable Emission Standards	Origin and Authority	Licensed Emission Limits
PM	0.2 grains/dscf	06-096 CMR 104	0.2 grains/dscf
	0.69 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.69 lb/hr
PM_{10}	0.69 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.69 lb/hr
$PM_{2.5}$	0.69 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.69 lb/hr
SO_2	59.56 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	59.56 lb/hr
	449.0 tpy (All flares combined)	06-096 CMR 115, BACT (A-921-77-2-A)	449.0 tpy (All flares combined)
NO_x	2.75 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	2.75 lb/hr
CO	14.99 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	14.99 lb/hr
VOC	0.12 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.12 lb/hr
Visible Emissions	30% opacity on a 6-minute block average basis except for two 6-minute block averages in a 3-hour period	06-096 CMR 101, §2(B)(1)(f)	20% opacity on a 6-minute block average basis *
	20% opacity on a 6-minute block average basis	06-096 CMR 115, BACT (A-921-77-2-A)	

Table Notes: * streamlining requested

For Flare #4 a listing of potentially applicable emission standards, the origin and authority of the standards, notation if streamlining of the standards has been requested, and the applicable emission limits can be found below.

Pollutant	Applicable Emission Standards	Origin and Authority	Licensed Emission Limits
PM	0.2 grains/dscf	06-096 CMR 104	0.2 grains/dscf
	1.81 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	1.81 lb/hr
PM_{10}	1.81 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	1.81 lb/hr
$PM_{2.5}$	1.81 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	1.81 lb/hr
SO_2	157.0 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	157.0 lb/hr
	449.0 tpy (All flares combined)	06-096 CMR 115, BACT (A-921-77-2-A)	449.0 tpy (All flares combined)
NO_x	7.24 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	7.24 lb/hr
CO	39.41 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	39.41 lb/hr
VOC	0.32 lb/hr	06-096 CMR 115, BACT (A-921-77-2-A)	0.32 lb/hr
Visible Emissions	30% opacity on a 6-minute block average basis except for two 6-minute block averages in a 3-hour period	06-096 CMR 101, §2(B)(1)(f)	20% opacity on a 6-minute block average basis *
	20% opacity on a 6-minute block average basis	06-096 CMR 115, BACT (A-921-77-2-A)	

Table Notes: * streamlining requested

6. Emission Limit Compliance Methods

Compliance with the emission limits associated with the flares shall be demonstrated upon request by the Department.

7. Periodic Monitoring

JRL shall monitor and record the following periodic monitors as indicated in the following table.

Item to be Monitored	Units of Measure	Monitoring Tool/Method	Frequency
TRS concentration entering TRS control equipment	ppmv	Periodic TRS grab sample tests (or equivalent method)	See Note 1
TRS concentration exiting TRS control equipment	ppmv (12-month rolling average basis)	Periodic TRS grab sample tests (or equivalent method)	See Note 1
LFG flow to flare	scf	Flow meter	Totalized Monthly; See Note 1
LFG flow entering TRS control equip (daily average)	scf/hr	Flow meter	See Note 2
LFG flow exiting TRS control equip (daily average)	scf/hr	Flow meter	See Note 2
H_2S concentration entering TRS control equip	ppmv	Colorimetric tubes	See Note 2
H_2S concentration exiting TRS control equip	ppmv	Colorimetric tubes	See Note 2
Control Equipment Downtime	Hours	Record in logbook with explanation	As occurs
Unscrubbed bypass	Hours	Record in logbook with explanation	As occurs
Calibration of flow meters	Dates	As specified by manufacturer	Once per year

Item to be Monitored	Units of Measure	Monitoring Tool/Method	Frequency
NMOC Concentration	ppmv	As specified in 40 CFR 60.75(a)(3)	Once every five years by 12/31/17
Propane fuel use	gal	purchase records	Monthly
Hours of Operation for Flares #2 & #3 (each)	Dates & Hours	Logbook	As occurs

Note 1: JRL shall sample the TRS content of the landfill gas to be flared three times during a single day (i.e. three samples at the inlet to the scrubber and three samples at the scrubber outlet) once per month using a test method approved by the Department. JRL shall record the gas flow rate on the days of sampling events. The average of the sampling results for each month, along with the associated gas flow rates, shall be used to estimate the monthly SO_2 emissions based on the assumption that TRS compounds are converted to SO_2 during combustion. Records of SO_2 emissions shall be kept on a monthly and 12 month rolling total basis.

Note 2: JRL shall sample the landfill gas H_2S concentration (both entering and exiting the control equipment) twice in the same day (morning and afternoon, with at least four hours between the two sample times) using colorimetric tubes and average the samples for that day. This sampling method shall occur at least two times per week with at least three days between samples. The colorimetric tube data shall be used as an operational tool and not for determining compliance with numerical emission limits.

G. Facility Annual Emissions

1. Total Annual Emissions

JRL is licensed for the following annual emissions, based on a 12 month rolling total. The tons per year were calculated using the rated capacity of Flare #4 (106.5 MMBtu/hr; 3,550 scfm of landfill gas with 50% methane) and the specific SO_2 annual limit.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Total TPY	**7.9**	**7.9**	**7.9**	**449.0**	**31.7**	**172.6**	**40.0**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans,* 40 CFR Part 52, Subpart A, §52.21 Prevention of Significant Deterioration of Air Quality rule. Greenhouse gases, as defined in 06-096 CMR 100 (as amended), are the aggregate group of the following gases: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO_2e).

Based on the facility's fuel use limit(s), the worst case emission factors from AP-42, IPCC (Intergovernmental Panel on Climate Change), and *Mandatory Greenhouse Gas Reporting*, 40 CFR Part 98, and the global warming potentials contained in 40 CFR Part 98, JRL is above the major source threshold of 100,000 tons of CO_2e per year.

III. AMBIENT AIR QUALITY ANALYSIS

JRL previously submitted an ambient air quality analysis demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards (see license A-921-77-2-A issued on 11/26/12). An additional ambient air quality analysis is not required for this Part 70 License.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that emissions from this source:

- will receive Best Practical Treatment;
- will not violate applicable emissions standards; and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants the Part 70 License A-921-70-B-R pursuant to 06-096 CMR 140 and the preconstruction permitting requirements of 06-096 CMR 115 and subject to the standard and specific conditions below.

All federally enforceable and State-only enforceable conditions in existing air licenses previously issued to JRL pursuant to the Department's preconstruction permitting requirements in 06-096 CMR 108 or 115 have been incorporated into this Part 70 license, except for such conditions that the Department has determined are obsolete, extraneous or otherwise environmentally insignificant, as explained in the findings of fact accompanying this permit. As such, the conditions in this license supercede all previously issued air license conditions.

Federally enforceable conditions in this Part 70 license must be changed pursuant to the applicable requirements in 06-096 CMR 115 for making such changes and pursuant to the applicable requirements in 06-096 CMR 140.

For each standard and specific condition which is state enforceable only, state-only enforceability is designated with the following statement: **Enforceable by State-only**.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

STANDARD STATEMENTS

(1) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either

the control technology analysis or the ambient air quality standards analysis, or both; [06-096 CMR 140]

(2) The Part 70 license does not convey any property rights of any sort, or any exclusive privilege; [06-096 CMR 140]

(3) All terms and conditions are enforceable by EPA and citizens under the CAA unless specifically designated as state enforceable. [06-096 CMR 140]

(4) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license; [06-096 CMR 140]

(5) Notwithstanding any other provision in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [06-096 CMR 140]

(6) Compliance with the conditions of this Part 70 license shall be deemed compliance with any Applicable requirement as of the date of license issuance and is deemed a permit shield, provided that:

A. Such Applicable and state requirements are included and are specifically identified in the Part 70 license, except where the Part 70 license term or condition is specifically identified as not having a permit shield; or

B. The Department, in acting on the Part 70 license application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the Part 70 license includes the determination or a concise summary, thereof.

Nothing in this section or any Part 70 license shall alter or affect the provisions of Section 303 of the CAA (emergency orders), including the authority of EPA under Section 303; the liability of an owner or operator of a source for any violation of Applicable requirements prior to or at the time of permit issuance; or the ability of EPA to obtain information from a source pursuant to Section 114 of the CAA.

The following requirements have been specifically identified as not applicable based upon information submitted by the licensee.

Source	Citation	Description	Basis for Determination
Flares	06-096 CMR 102	Open Burning	These units are not considered open burning within the prohibition of 06-096 CMR 102.
Facility	06-096 CMR 105	General Process Source Particulate Emission Standard	All emission sources of PM at this facility are considered fugitive.
Facility	06-096 CMR 134	VOC RACT	Emissions from non-exempt equipment less than 40 tpy
Facility	06-096 CMR 138	NO_x RACT	Source's potential to emit for NO_x is less than 100 tpy

[06-096 CMR 140]

(7) The Part 70 license shall be reopened for cause by the Department or EPA, prior to the expiration of the Part 70 license, if:

A. Additional Applicable requirements under the CAA become applicable to a Part 70 major source with a remaining Part 70 license term of 3 or more years. However, no opening is required if the effective date of the requirement is later than the date on which the Part 70 license is due to expire, unless the original Part 70 license or any of its terms and conditions has been extended pursuant to 06-096 CMR 140;

B. Additional requirements (including excess emissions requirements) become applicable to a Title IV source under the acid rain program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into the Part 70 license;

C. The Department or EPA determines that the Part 70 license contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the Part 70 license; or

D. The Department or EPA determines that the Part 70 license must be revised or revoked to assure compliance with the Applicable requirements.

The licensee shall furnish to the Department within a reasonable time any information that the Department may request in writing to determine whether

cause exists for modifying, revoking and reissuing, or terminating the Part 70 license or to determine compliance with the Part 70 license. [06-096 CMR 140]

(8) No license revision or amendment shall be required, under any approved economic incentives, marketable licenses, emissions trading and other similar programs or processes for changes that are provided for in the Part 70 license. [06-096 CMR 140]

STANDARD CONDITIONS

(1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions and this license (38 M.R.S.A. §347-C).

(2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 140. [06-096 CMR 140]

(3) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [06-096 CMR 140]
Enforceable by State-only

(4) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to 38 M.R.S.A. §353-A.

(5) The licensee shall maintain and operate all emission units and air pollution control systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [06-096 CMR 140]
Enforceable by State-only

(6) The licensee shall retain records of all required monitoring data and support information for a period of at least six (6) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the

Part 70 license. The records shall be submitted to the Department upon written request or in accordance with other provisions of this license. [06-096 CMR 140]

(7) The licensee shall comply with all terms and conditions of the air emission license. The submission of notice of intent to reopen for cause by the Department, the filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for the renewal of a Part 70 license or amendment shall not stay any condition of the Part 70 license. [06-096 CMR 140]

(8) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:

A. perform stack testing under circumstances representative of the facility's normal process and operating conditions:

1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions;

2. to demonstrate compliance with the applicable emission standards; or

3. pursuant to any other requirement of this license to perform stack testing.

B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and

C. submit a written report to the Department within thirty (30) days from date of test completion.

[06-096 CMR 140]
Enforceable by State-only

(9) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicates emissions in excess of the applicable standards, then:

A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and

B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and

C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.

[06-096 CMR 140]

Enforceable by State-only

(10) The licensee shall maintain records of all deviations from license requirements. Such deviations shall include, but are not limited to malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emission unit itself that is not consistent with the terms and conditions of the air emission license.

A. The licensee shall notify the Commissioner within 48 hours of a violation of any emission standard and/or a malfunction or breakdown in any component part that causes a violation of any emission standard, and shall report the probable cause, corrective action, and any excess emissions in the units of the applicable emission limitation;

B. The licensee shall submit a report to the Department on a quarterly basis if a malfunction or breakdown in any component part causes a violation of any emission standard, together with any exemption requests.

Pursuant to 38 M.R.S.A. § 349(9), the Commissioner may exempt from civil penalty an air emission in excess of license limitations if the emission occurs during start-up or shutdown or results exclusively from an unavoidable malfunction entirely beyond the control of the licensee and the licensee has taken all reasonable steps to minimize or prevent any emission and takes

corrective action as soon as possible. There may be no exemption if the malfunction is caused, entirely or in part, by poor maintenance, careless operation, poor design or any other reasonably preventable condition or preventable equipment breakdown. The burden of proof is on the licensee seeking the exemption under this subsection.

C. All other deviations shall be reported to the Department in the facility's semiannual report.

[06-096 CMR 140]

(11) Upon the written request of the Department, the licensee shall establish and maintain such records, make such reports, install, use, and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [06-096 CMR 140]

(12) The licensee shall submit semiannual reports of any required periodic monitoring. All instances of deviations from Part 70 license requirements must be clearly identified in such reports. All required reports must be certified by a responsible official. [06-096 CMR 140]

(13) The licensee shall submit a compliance certification to the Department and EPA at least annually, or more frequently if specified in the applicable requirement or by the Department. The compliance certification shall include the following:

A. The identification of each term or condition of the Part 70 license that is the basis of the certification;
B. The compliance status;
C. Whether compliance was continuous or intermittent;
D. The method(s) used for determining the compliance status of the source, currently and over the reporting period; and
E. Such other facts as the Department may require to determine the compliance status of the source.

[06-096 CMR 140]

SPECIFIC CONDITIONS

(14) Solid Waste Landfill

A. JRL is subject to the requirements of 40 CFR Part 60, Subparts A and WWW, *Standards of Performance for Municipal Solid Waste Landfills* that apply to landfills with a design capacity greater than 2.5 million cubic meters and NMOC emissions greater than 50 megagrams/year. [40 CFR Part 60, Subpart WWW]

B. JRL shall operate and maintain an active LFG collection and control system. The active gas collection and control system shall be operated in compliance with the requirements of Subpart WWW no later than December 8, 2014. [06-096 CMR 140, BPT (A-921-70-A-I) and 40 CFR Part 60, Subpart WWW, §752(b)(2)(ii)]

C. JRL shall keep readily accessible, on-site records of the following:

1. The design capacity report which demonstrated that the landfill had a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters.
2. The current amount of solid waste in-place.
3. The year-by-year waste acceptance rate.

Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.
[40 CFR Part 60 §60.758(a)]

D. JRL shall continue to use good operating practices to minimize the formation and release of the TRS laden landfill gases. These practices include but are not limited to: minimizing landfill waste moisture and ambient landfill gas releases through the use of synthetic intermediate cover or an approved equivalent, the appropriate use of daily cover, and the proper design, installation, maintenance and operation of landfill gas management system infrastructure in accordance with the Solid Waste Management Regulations. [06-096 CMR 115, BACT (A-921-77-2-A)]

E. Flares #2 and #3 shall not operate when Flare #4 is operating. Flares #2 and #3 shall be used as backup to Flare #4, with backup defined for the purpose of this license as each of the Flares #2 and #3 operating no more than 100 hours per calendar year. [06-096 CMR 115, BACT (A-921-77-2-A)]

F. The elevation of the top of Flare #4 shall be maintained at or above 265 feet above sea level at the established location on the southeast end of the facility. [06-096 CMR 115, BACT (A-921-77-2-A)]

G. Flare Emission Limits

1. Emissions from Flare #2 shall not exceed the following limits:

Pollutant	grains/dscf	Origin and Authority	Enforceability
PM	0.2	06-096 CMR 104	**Federally Enforceable**

Pollutant	lb/hr	Origin and Authority	Enforceability
PM	0.38	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**
PM_{10}	0.38	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**
$PM_{2.5}$	0.35	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**
SO_2	33.09	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**
NO_x	1.53	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**
CO	8.33	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**
VOC	0.07	06-096 CMR, BACT (A-921-77-2-A)	**Federally Enforceable**

2. Emissions from Flare #3 shall not exceed the following limits:

Pollutant	grains/dscf	Origin and Authority	Enforceability
PM	0.2	06-096 CMR 104	**Federally Enforceable**

Pollutant	lb/hr	Origin and Authority	Enforceability
PM	0.69	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
PM_{10}	0.69	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
$PM_{2.5}$	0.69	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
SO_2	59.56	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
NO_x	2.75	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
CO	14.99	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
VOC	0.12	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable

3. Emissions from Flare #4 shall not exceed the following limits:

Pollutant	grains/dscf	Origin and Authority	Enforceability
PM	0.2	06-096 CMR 104	Federally Enforceable

Pollutant	lb/hr	Origin and Authority	Enforceability
PM	1.81	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
PM_{10}	1.81	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
$PM_{2.5}$	1.81	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
SO_2	157.0	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
NO_x	7.24	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
CO	39.41	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable
VOC	0.32	06-096 CMR, BACT (A-921-77-2-A)	Federally Enforceable

4. Visible emissions from the flares shall each not exceed 20% opacity on a six (6) minute block average basis.
[06-096 CMR 115, BACT (A-921-77-2-A)]

H. Annual Emissions

1. Total SO_2 emissions from the JRL flares shall not exceed 449.0 tpy, based on a 12 month rolling total. Compliance shall be demonstrated by monthly sampling of the landfill gas as described in Condition (15). [06-096 CMR 115, BACT (A-921-77-2-A)]

2. Total VOC emissions from the facility shall not exceed 40.0 tpy based on a 12-month rolling total. Compliance shall be demonstrated in accordance with methods approved by the Department. [06-096 CMR 140, BPT]

3. Total emissions of any single HAP from the facility shall not exceed 9.9 tpy based on a 12-month rolling total. Total emissions for all HAP combined at the facility shall not exceed 24.9 tpy based on a 12-month rolling total. Compliance shall be demonstrated in accordance with methods approved by the Department. [06-096 CMR 140, BPT]

(15) **Control Technology Requirements**

A. The following requirements are in effect until June 1, 2015:

1. Hydrogen Sulfide (H_2S)

a. H_2S concentration in the landfill gas going to the flares shall not exceed 4,500 ppmv on a daily average basis as demonstrated by the procedures in Condition (15)(A)(1)(b).
[06-096 CMR 115, BACT (A-921-77-4-M)]

b. JRL shall sample the landfill gas H_2S concentration twice in the same day (morning and afternoon, with at least 4 hours between the two sample times) using colorimetric tubes and average the samples for that day. This sampling method shall occur at least two times per week, with at least three days between samples. If a daily average H_2S concentration of 4,250 ppmv or more is measured, then JRL shall sample H_2S concentrations twice daily until the average daily measured concentration is less than 4,000 ppmv for seven (7) consecutive days. Records shall be maintained on site documenting the H_2S measurements. [06-096 CMR 115, BACT (A-921-77-4-M)]

2. Juniper Ridge Landfill shall sample the TRS content of the landfill gas to be flared three times during a single day once per month using a test method approved by the Department (such as laboratory analysis with ASTM Method D-5504) and record the gas flow rate rates at the times the samples are taken. The average of the sampling results for each month, along with the associated gas flow rates, shall be used to estimate the monthly SO_2 emissions and determine compliance with the ton per year (tpy) emission limit (on a 12-month rolling total basis) based on the assumption that TRS compounds are converted to SO_2 during combustion. Records shall be kept on a monthly and 12 month rolling total basis. [06-096 CMR 115, BACT (A-921-77-4-M)]

B. The following requirements are in effect on and after June 1, 2015:

1. JRL shall install and operate the Thiopaq® system no later than June 1, 2015. [06-096 CMR 115, BACT (A-921-77-4-M)]

2. JRL shall install and operate pollution control equipment as necessary on the landfill gas to achieve (on a 12-month rolling average basis) an outlet TRS concentration of 1,000 ppmv or less and to control emissions of SO_2 so as to be in compliance with the facility's SO_2 tpy limit. JRL may utilize alternative control equipment in conjunction with the Thiopaq system as necessary to meet the TRS and SO_2 emission limits. Any change in the type or configuration of the control equipment used must be submitted to the Department prior to use. Compliance testing of any alternative control equipment shall be performed within 60 days of beginning operation. If alternative control equipment is used, JRL shall notify the compliance inspector at least 30 days prior to any TRS compliance testing. [060-96 CMR 115, BACT (A-921-77-4-M)]

3. Compliance with the SO_2 lb/hr and tpy limits and the TRS ppmv limit shall be based on sampling of the landfill gas entering and exiting the control equipment three times during a single day (i.e. three samples at the inlet to the scrubber and three samples at the scrubber outlet) once per month using a test method approved by the Department. JRL shall record the gas flow rate on the days of sampling events. The average of the sampling results for each month, along with the associated gas flow rates, shall be used to estimate the monthly SO_2 emissions based on the assumption that TRS compounds are converted to SO_2 during combustion. Compliance with the SO_2 lb/hr and tpy limits and the TRS ppmv limit shall be based on a 12-month rolling average. [060-96 CMR 115, BACT (A-921-77-4-M)]

4. Periodic Monitoring [060-96 CMR 115, BACT (A-921-77-4-M)]

JRL shall monitor and record the following periodic monitors for the flares and associated TRS control equipment

Item to be Monitored	Units of Measure	Monitoring Tool/Method	Frequency
TRS concentration entering TRS control equipment	ppmv	Periodic TRS grab sample tests (or equivalent method)	See Note 1
TRS concentration exiting TRS control equipment	ppmv (12-month rolling average basis)	Periodic TRS grab sample tests (or equivalent method)	See Note 1
LFG flow to flare	scf	Flow meter	Totalized Monthly; See Note 1
LFG flow entering TRS control equip (daily average)	scf/hr	Flow meter	See Note 2
LFG flow exiting TRS control equip (daily average)	scf/hr	Flow meter	See Note 2
H_2S concentration entering TRS control equip	ppmv	Colorimetric tubes	See Note 2
H_2S concentration exiting TRS control equip	ppmv	Colorimetric tubes	See Note 2
Control Equipment Downtime	Hours	Record in logbook with explanation	As occurs
Unscrubbed bypass	Hours	Record in logbook with explanation	As occurs
Calibration of flow meters	Dates	As specified by manufacturer	Once per year
NMOC Concentration	ppmv	As specified in 40 CFR 60.75(a)(3)	Once every five years by 12/31/17
Propane fuel use	gal	purchase records	Monthly
Hours of Operation for Flares #2 & #3 (each)	Dates & Hours	Logbook	As occurs

Note 1: JRL shall sample the landfill gas TRS concentration in accordance with Condition (15)(B)(3) above.

Note 2: JRL shall sample the landfill gas H_2S concentration (both entering and exiting the control equipment) twice in the same day (morning and afternoon, with at least four hours between the two sample times) using colorimetric tubes and average the samples for that day. This sampling method shall occur at least two times per week with at least three days between samples. The colorimetric tube data shall be used as an operational tool and not for determining compliance with numerical emission limits.

C. Control Equipment Uptime

1. JRL shall utilize the flares at all times unless switching is occurring between the primary flare and the backup flares. Switching to and from primary Flare #4 and backup Flares #2 and #3 shall be performed as expediently as possible. Records shall be maintained documenting the date and timeframe when no flaring occurs.
   [06-096 CMR 115, BACT (A-921-77-4-M)]
2. JRL shall meet a 95% uptime for all sulfur control equipment on a 12-month rolling total basis; including, but not limited to, scheduled or unscheduled maintenance and repair and equipment malfunction. Periods of downtime (not to exceed 438 hours per 12 month period) may be excluded when determining compliance with the H_2S and TRS ppmv limits. JRL shall keep records documenting compliance with the uptime requirement. [06-096 CMR 115, BACT (A-921-77-4-M)]
3. Per 38 M.R.S.A. §349.9 The Commissioner may exempt from civil penalty an air emission in excess of license limitations if the emission occurs during start-up or shutdown or results exclusively from an unavoidable malfunction entirely beyond the control of the licensee and the licensee has taken all reasonable steps to minimize or prevent any emission and takes corrective action as soon as possible. There may be no exemption if the malfunction is caused, entirely or in part, by poor maintenance, careless operation, poor design or any other reasonably preventable condition or preventable equipment breakdown. The burden of proof is on the licensee seeking the exemption under this subsection. In the event of an unavoidable malfunction, the licensee must notify the commissioner in writing within 48 hours and submit a written report, together with any exemption requests, to the Department on a quarterly basis. **Enforceable by State-Only**

(16) **Fugitive Emissions**

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed an opacity of 20 percent, except for no more than five (5) minutes in any 1-hour period. Compliance shall be determined by an aggregate of the individual fifteen (15)-second opacity observations which exceed 20 percent in any one (1) hour. [06-096 CMR 101]

(17) **General Process Sources**

Visible emissions from any general process source shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1-hour period. [06-096 CMR 101]

(18) **Semiannual Reporting** [06-096 CMR 140]

A. The licensee shall submit to the Bureau of Air Quality semiannual reports which are due on **January 31st** and **July 31st** of each year. The facility's designated responsible official must sign this report.
B. The semiannual report shall be considered on-time if the postmark of the submittal is before the due date or if the report is received by the DEP within seven calendar days of the due date.
C. All instances of deviations from license requirements and the corrective action taken must be clearly identified and provided to the Department in summary form for each six-month interval.

(19) **Annual Compliance Certification**

JRL shall submit an annual compliance certification to the Department in accordance with Standard Condition (13) of this license. The annual compliance certification is due January 31 of each year. The facility's designated responsible official must sign this report.

The annual compliance certification shall be considered on-time if the postmark of the submittal is before the due date or if the report is received by the Department within seven calendar days of the due date. Certification of compliance is to be based on the stack testing or monitoring data required by this license. Where the license does not require such data, or the license requires such data upon request of the Department and the Department has not requested the testing or monitoring, compliance may be certified based upon other reasonably available information such as the design of the equipment or applicable emission factors. [06-096 CMR 140]

(20) **Annual Emission Statement**

In accordance with *Emission Statements*, 06-096 CMR 137 (as amended), the licensee shall annually report to the Department the information necessary to accurately update the State's emission inventory by means of either:

A. A computer program and accompanying instructions supplied by the Department; or
B. A written emission statement containing the information required in 06-096 CMR 137.

The emission statement must be submitted by the date as specified in 06-096 CMR 137.

[06-096 CMR 137]

(21) **General Applicable State Regulations**

The licensee is subject to the State regulations listed below.

Origin and Authority	Requirement Summary	Enforceability
06-096 CMR 102	Open Burning	-
06-096 CMR 109	Emergency Episode Regulation	-
06-096 CMR 110	Ambient Air Quality Standard	-
06-096 CMR 116	Prohibited Dispersion Techniques	-
38 M.R.S.A. §585-B, §§5	Mercury Emission Limit	Enforceable by State-only

(22) **Units Containing Ozone Depleting Substances**

When repairing or disposing of units containing ozone depleting substances, the licensee shall comply with the standards for recycling and emission reduction pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioning units in Subpart B. Examples of such units include refrigerators and any size air conditioners that contain CFCs.
[40 CFR, Part 82, Subpart F]

(23) **Asbestos Abatement**

When undertaking Asbestos abatement activities, JRL shall comply with the Standard for Asbestos Demolition and Renovation 40 CFR Part 61, Subpart M.

(24) **Expiration of a Part 70 license**

A. JRL shall submit a complete Part 70 renewal application at least 6 months prior, but no more than 18 months prior, to the expiration of this air license.

B. Pursuant to Title 5 MRSA §10002, and 06-096 CMR 140, the Part 70 license shall not expire and all terms and conditions shall remain in effect until the Department takes final action on the renewal application of the Part 70 license. An existing source submitting a complete renewal application under 06-096 CMR 140 prior to the expiration of the Part 70 license will not be in violation of operating without a Part 70 license. **Enforceable by State-only**

(25) **New Source Review**

JRL is subject to all previous New Source Review (NSR) requirements summarized in this Part 70 air emissions license and the NSR requirements remain in effect even if this 06-096 CMR 140 Air Emissions License (A-921-70-B-R) expires.

DONE AND DATED IN AUGUSTA, MAINE THIS 7 DAY OF October , 2014.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cane for
PATRICIA W. AHO, COMMISSIONER

The term of this license shall be five (5) years from the signature date above.

[Note: If a complete renewal application as determined by the Department, is submitted at least 6 months prior to expiration but no earlier than 18 months, then pursuant to Title 5 MRSA §10002, all terms and conditions of the Part 70 license shall remain in effect until the Department takes final action on the renewal of the Part 70 license.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 6/17/10
Date of application acceptance: 7/8/10

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

Filed
OCT 08 2014
State of Maine
Board of Environmental Protection

Applicant

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

STATE OF MAINE, ACTING THROUGH THE	)	MAINE HAZARDOUS
BUREAU OF GENERAL SERVICES	)	WASTE, SEPTAGE AND
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	SOLID WASTE
JUNIPER RIDGE LANDFILL	)	MANAGEMENT ACT
LANDFILL GAS TREATMENT FACILITY	)	
#S-020700-WD-BE-M	)	
(APPROVAL WITH CONDITIONS)	)	MINOR REVISION

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 *Rules Concerning the Processing of Applications and Other Administrative Matters*, 06-096 CMR 2, (last amended August 25, 2013, *Solid Waste Management Rules: General Provisions,* 06-096 CMR 400 (last amended July 20, 2010) and *Landfill Siting, Design and Operation*, and 06-096 CMR 401 (last amended July 20, 2010), the Department of Environmental Protection ("Department") has considered the application of THE STATE OF MAINE, ACTING THROUGH THE BUREAU OF GENERAL SERVICES ("BGS" or "applicant") with its supportive data, staff review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

A. Application: The applicant has applied for a minor revision to Department Order #S-020700-WD-N-A, dated April 9, 2004, which approved a vertical increase in the final elevation of the Juniper Ridge Landfill ("JRL") and the acceptance of additional waste streams. Specifically, the applicant seeks approval to construct and operate a landfill gas ("LFG") sulfur control facility at the landfill.

B. History: On October 21, 2003, the Department issued conditional approval for the transfer of licenses for the West Old Town Landfill, developed and operated by Georgia-Pacific Corporation, to the Maine State Planning Office ("SPO") (Department licenses #S-020700-WR-M-T and #L-019015-TH-C-T); the transfer became effective when the sale of the landfill to SPO occurred on February 5, 2004. On February 5, 2004, SPO also finalized an Operating Services Agreement ("OSA") with Casella Waste Systems, Inc. ("Casella"), for the operation of the West Old Town Landfill. On April 9, 2004, the Department approved an amendment application (Department license #S-020700-WD-N-A) for a vertical increase in the final elevation of the landfill and the disposal of additional waste streams ("the amendment license"). An active LFG collection system, consisting

of horizontal and vertical LFG collectors, a blower and flare station, has been operating at the facility since 2005. Currently, the facility utilizes a Sulfatreat® control unit to remove sulfur compounds from the LFG prior to combustion. Special Condition #4.B(2) of Department Order #A-921-77-2-A required JRL to install and operate pre-flare control technology that will limit total reduced sulfur (TRS) concentrations to at least 1000 ppmv (parts per million by volume) on a 12-month rolling average.

C. Summary of Proposal: The applicant is proposing to install and operate a Thiopaq® sulfur control system capable of limiting TRS concentrations to at least 1000 ppmv on a 12-month rolling average. The Thiopaq® sulfur control system is a biological process that removes TRS compounds (primarily hydrogen sulfide) from LFG and converts them to elemental sulfur. Collected LFG is sent through an absorption tower where it mixes with sodium hydroxide and thiobacillus bacteria. The mixture removes TRS from the gas and then moves on to aerated bioreactor tanks where the bacteria convert the hydrogen sulfide to elemental sulfur. Sulfur is removed from the solution via a centrifuge producing a sulfur cake that is 95 to 98 percent elemental sulfur. The applicant initially plans to landfill the sulfur cake, but will be applying for a beneficial use license to use the sulfur cake as a soil amendment. The extracting liquid will be re-circulated back to the absorption tower.

The facility will consist of a 4,000 square-foot building that will house the process bioreactors, process pump tank, nutrient and solution tanks, dewatering equipment, numerous pumps and piping, an electrical room and office and maintenance areas. An external concrete pad will house a contact tower, LFG blowers, inlet and outlet scrubbers, process heat exchangers and cooling equipment and piping. The facility will be located in the southeast corner of the site in close proximity to the existing LFG flare. The existing Sulfatreat® control unit will remain in place to supplement the proposed Thiopaq® system to meet air license limits or as a backup if the new system goes offline for maintenance or repairs.

2. GAS COLLECTION AND CONTROL SYSTEMS

A. Gas Flow: Untreated LFG from the landfill will flow into the treatment facility via a 30-inch HDPE pipe from a tie-in to an existing LFG header, run through the treatment process and then be directed to the existing flare station for combustion via a 24-inch HDPE pipe. Stubs will be installed along the 24-inch return line to allow for the installation of additional gas flares if necessary. Valves will be

STATE OF MAINE, ACTING THROUGH THE	3	MAINE HAZARDOUS
BUREAU OF GENERAL SERVICES	)	WASTE, SEPTAGE AND
OLD TOWN, PENOBSCOT COUNTY, MAINE	)	SOLID WASTE
JUNIPER RIDGE LANDFILL	)	MANAGEMENT ACT
LANDFILL GAS TREATMENT FACILITY	)	
#S-020700-WD-BE-M	)	
(APPROVAL WITH CONDITIONS)	)	MINOR REVISION

installed at prescribed locations allow for uninterrupted operation of LFG extraction during operations including maintenance and repair activities. The blower that will be constructed as part of the treatment system will provide adequate vacuum on the landfill in order to function as an effective odor control strategy. The design flow rate of the system is 5,000 scfm (standard cubic feet per minute) from the landfill. Based on the permitted capacity of the landfill, the maximum LFG flow rate will be less than 3,550 scfm. The existing Sulfatreat® control unit will remain in place to supplement the proposed Thiopaq® system to meet air license limits or as a backup if the new system goes offline for maintenance or repairs.

B. Condensate Management: The 30-inch HDPE intake pipe will slope back toward the existing knockout No. 3 as shown on the plan drawings submitted with the application, ensuring that any condensate will flow back into the knockout structure. Similarly, the 24-inch HDPE return pipe will slope toward a condensate sump/pump station that will be installed as part of the facility. Condensate from the sump/pump station will be directed to knockout No. 3, where it is directed to the leachate holding tank. Finally, a separate pump station and force main will be installed as part of the treatment facility that will collect and transport process condensate and filtrate from the sulfur dewatering equipment and internal and external floor drains to the leachate holding tank.

The Department finds that the applicant has made adequate provisions for the collection and management of LFG and condensate generated by the proposed gas treatment facility.

3. ALL OTHER

All other Findings of Fact, Conclusions, and Conditions remain as approved in Department Order # S-020700-WD-N-A, and subsequent modifications.

BASED on the above Finding of Facts, the Department makes the following CONCLUSION:

The construction and operation of the proposed landfill gas treatment plant at the Juniper Ridge Landfill will not pollute any waters of the State, contaminate the ambient air, constitute a hazard to health or welfare, or create a nuisance.

THEREFORE, the Department APPROVES the construction and operation of a landfill gas treatment facility as described in the noted application of the STATE OF MAINE, ACTING

STATE OF MAINE, ACTING THROUGH THE BUREAU OF GENERAL SERVICES OLD TOWN, PENOBSCOT COUNTY, MAINE JUNIPER RIDGE LANDFILL LANDFILL GAS TREATMENT FACILITY #S-020700-WD-BE-M (APPROVAL WITH CONDITIONS)	4))))))	MAINE HAZARDOUS WASTE, SEPTAGE AND SOLID WASTE MANAGEMENT ACT MINOR REVISION

THROUGH THE BUREAU OF GENERAL SERVICES, SUBJECT TO THE ATTACHED CONDITIONS and all applicable standards and regulations:

1. The Standard Conditions of Approval, a copy attached as Appendix A.

2. The invalidity or unenforceability of any provision, or part thereof, of this license shall not affect the remainder of the provision or any other provisions. This license shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

3. All other Findings of Fact, Conclusions and Conditions not otherwise addressed herein remain as approved in Department license #S-20700-WD-N-A, and subsequent modifications, and are incorporated herein.

DONE AND DATED AT AUGUSTA, MAINE, THIS 3rd DAY

OF March, 2015.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Melanie Loyzim for
Patricia W. Aho, Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

Date of initial receipt of application: February 7, 2014
Date of application acceptance: March 3, 2014

Date filed with Board of Environmental Protection:

Filed
MAR 04 2015
State of Maine
Board of Environmental Protection

XMP77352/dlp

Appendix A

STANDARD CONDITIONS TO ALL SOLID WASTE FACILITY LICENSES

STRICT CONFORMANCE WITH THE STANDARD AND SPECIAL CONDITIONS OF THIS APPROVAL IS NECESSARY FOR THE PROJECT TO MEET THE STATUTORY CRITERIA FOR APPROVAL. VIOLATIONS OF THE CONDITIONS UNDER WHICH A LICENSE IS ISSUED SHALL CONSTITUTE A VIOLATION OF THAT LICENSE AGAINST WHICH ENFORCEMENT ACTION MAY BE TAKEN, INCLUDING REVOCATION.

1. **Approval of Variations from Plans.** The granting of this approval is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed by the license. Any consequential variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.
2. **Compliance with All Applicable Laws.** The licensee shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.
3. **Compliance with All Terms and Conditions of Approval.** The licensee shall submit all reports and information requested by the Department demonstrating that the licensee has complied or will comply with all terms and conditions of this approval. All preconstruction terms and conditions must be met before construction begins.
4. **Transfer of License.** The licensee may not transfer the solid waste facility license or any portion thereof without approval of the Department.
5. **Initiation of Construction or Development Within Two Years.** If the construction or operation of the solid waste facility is not begun within two years of issuance of within 2 years after any administrative and judicial appeals have been resolved, the license lapses and the licensee must reapply to the Department for a new license unless otherwise approved by the Department.
6. **Approval Included in Contract Bids.** A copy of the approval must be included in or attached to all contract bid specifications for the solid waste facility.
7. **Approval Shown to Contractors.** Contractors must be shown the license by the licensee before commencing work on the solid waste facility.
8. **Background of key individuals.** A licensee may not knowingly hire as an officer, director or key solid waste facility employee, or knowingly acquire an equity interest or debt interest in, any person convicted of a felony or found to have violated a State or federal environmental law or rule without first obtaining the approval of the Department.
9. **Fees.** The licensee must comply with annual license and annual reporting fee requirements of the Department's rules.
10. **Recycling and Source Reduction Determination for Solid Waste Disposal Facilities.** This condition does not apply to the expansion of a commercial solid waste disposal facility that accepts only special waste for landfilling.

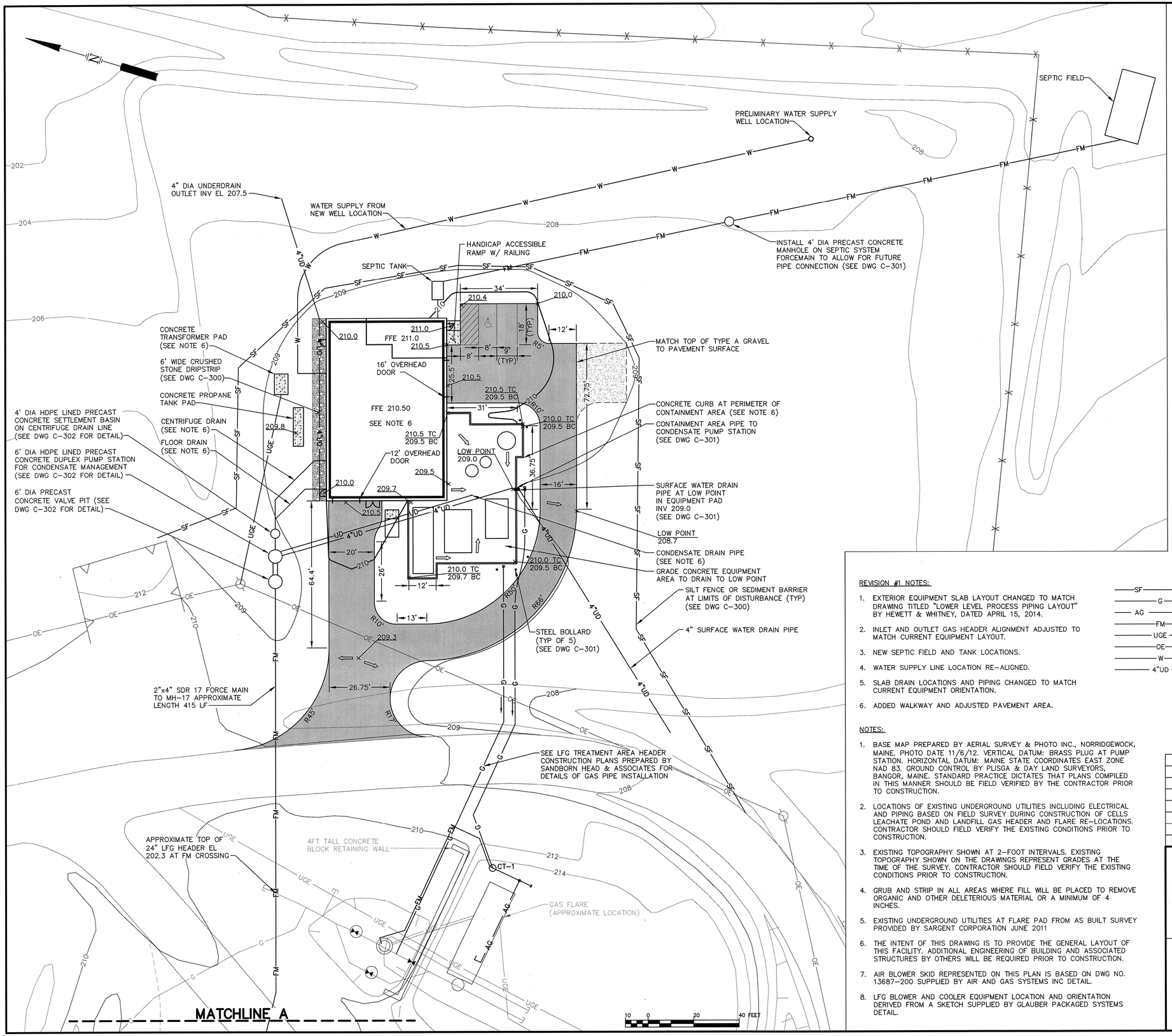
The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by 38 MRSA Chapter 13.

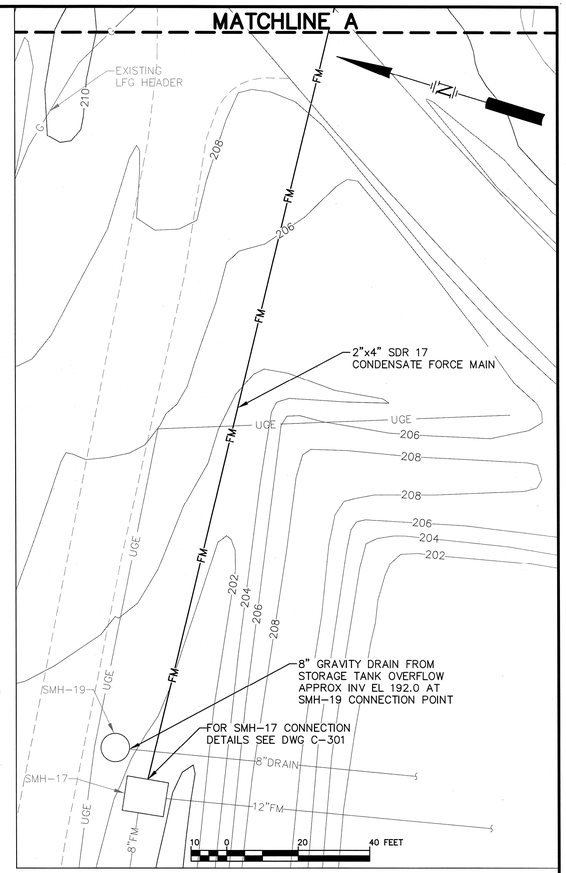
11. **Deed Requirements for Solid Waste Disposal Facilities.** Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following must be expressly stated in the deed:

A. The type of facility located on the lot and the dates of its establishment and closure.
B. A description of the location and the composition, extent, and depth of the waste deposited.
C. The disposal location coordinates of asbestos wastes must be identified.

APPENDIX B

FACILITY ELEVATIONS





REVISION #1 NOTES:

1. EXTERIOR EQUIPMENT SLAB LAYOUT CHANGED TO MATCH DRAWING TITLED "LOWER LEVEL PROCESS PIPING LAYOUT" BY HEWETT & WHITNEY, DATED APRIL 15, 2014.
2. INLET AND OUTLET GAS HEADER ALIGNMENT ADJUSTED TO MATCH CURRENT EQUIPMENT LAYOUT.
3. NEW SEPTIC FIELD AND TANK LOCATIONS.
4. WATER SUPPLY LINE LOCATION RE-ALIGNED.
5. SLAB DRAIN LOCATIONS AND PIPING CHANGED TO MATCH CURRENT EQUIPMENT ORIENTATION.
6. ADDED WALKWAY AND ADJUSTED PAVEMENT AREA.

NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 11/6/12. 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.
2. LOCATIONS OF EXISTING UNDERGROUND UTILITIES INCLUDING ELECTRICAL AND PIPING BASED ON FIELD SURVEY DURING CONSTRUCTION OF CELLS LEACHATE POND AND LANDFILL GAS HEADER AND FLARE RE-LOCATIONS. CONTRACTOR SHOULD FIELD VERIFY THE EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. EXISTING TOPOGRAPHY SHOWN AT 2-FOOT INTERVALS. EXISTING TOPOGRAPHY SHOWN ON THE DRAWINGS REPRESENT GRADES AT THE TIME OF THE SURVEY. CONTRACTOR SHOULD FIELD VERIFY THE EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
4. GRUB AND STRIP IN ALL AREAS WHERE FILL WILL BE PLACED TO REMOVE ORGANIC AND OTHER DELETERIOUS MATERIAL OR A MINIMUM OF 4 INCHES.
5. EXISTING UNDERGROUND UTILITIES AT FLARE PAD FROM AS BUILT SURVEY PROVIDED BY SARGENT CORPORATION JUNE 2011
6. THE INTENT OF THIS DRAWING IS TO PROVIDE THE GENERAL LAYOUT OF THIS FACILITY. ADDITIONAL ENGINEERING OF BUILDING AND ASSOCIATED STRUCTURES BY OTHERS WILL BE REQUIRED PRIOR TO CONSTRUCTION.
7. AIR BLOWER SKID REPRESENTED ON THIS PLAN IS BASED ON DWG NO. 13687-200 SUPPLIED BY AIR AND GAS SYSTEMS INC DETAIL.
8. LFG BLOWER AND COOLER EQUIPMENT LOCATION AND ORIENTATION DERIVED FROM A SKETCH SUPPLIED BY GLAUBER PACKAGED SYSTEMS DETAIL.

LEGEND

LINETYPES

SF	SILT FENCE
G	BELOW GRADE GAS PIPE
AG	ABOVE GRADE GAS PIPE
FM	FORCE MAIN
UGE	UNDER GROUND ELECTRIC
OE	OVERHEAD ELECTRIC
W	WATER LINE
4"UD	UNDER DRAIN

ABBREVIATIONS AND SYMBOLS

BC	BOTTOM OF CURB
TC	TOP OF CURB
FFE	FINISH FLOOR ELEVATION
	PIPE SLOPE DIRECTION
209.5	SPOT GRADE
	UTILITY POLE
	SURFACE DRAINAGE ARROW
CT-1	LANDFILL GAS CONDENSATE PUMP STATION
	CONCRETE HATCH
	PAVEMENT HATCH
	GRAVEL HATCH

REV.	BY	DATE	STATUS
1	PLM	5/9/14	UPDATES TO SITE PLAN TO REFLECT EQUIPMENT MODIFICATIONS
	PLM	1/23/14	ISSUED FOR PERMITTING AND CONSTRUCTION

STATE OF MAINE GUY H. COTE, JR. No. 5144 LICENSED PROFESSIONAL ENGINEER

LANDFILL GAS TREATMENT FACILITY
SITE PLAN, PUMP STATION, AND FORCE MAIN DESIGN
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS, LLC
OLD TOWN, MAINE

SITE 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:	PLM
DRAWN BY:	JRL
DATE:	11/13/2013
CHECKED BY:	
LMN:	C-101
CTB:	SME-STD
JOB NO. 13159	DWG FILE BASE
	C-101

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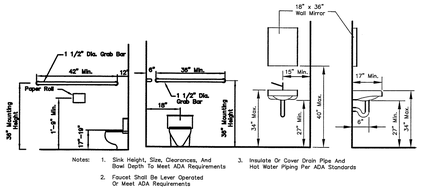
APPENDIX C

FACILITY FLOOR PLAN

DOOR SCHEDULE

DOORS							HARDWARE									
NO.	LOCATION	SIZE	HAND	MATERIAL	FRAME	GLASS	DEAD BOLT	LOCKSET	PASSAGE	PRIVACY	PUSH/PULL	MORTISE	PANIC	CLOSER	DUMMY	DR. STOP	LABEL	REMARKS
1	OPERATING AREA FROM CE-7500	3'-0"x 7'-0"	RHR	STEEL	STEEL			X				X		X				INTERIOR FLUSH STEEL DOOR AND FRAME
2	OPERATING AREA FROM ELECTRICAL	3'-0"x 7'-0"	LHR	STEEL	STEEL			X				X	X	X				INTERIOR FLUSH STEEL DOOR AND FRAME
3	OFFICE TO ELECTRICAL	3'-0"x 7'-0"	RHR	STEEL	STEEL			X				X	X	X				INTERIOR FLUSH STEEL DOOR AND FRAME
4	OPERATING AREA FROM OFFICE	3'-0"x 7'-0"	LHR	STEEL	STEEL	24"x36"		X				X		X				INTERIOR FLUSH STEEL DOOR AND FRAME
5	OPERATING AREA TO BATHROOM	3'-0"x 7'-0"	LH	STEEL	STEEL					X		X		X				INTERIOR FLUSH STEEL DOOR AND FRAME
6	OFFICE TO BATHROOM	3'-0"x 7'-0"	RH	STEEL	STEEL					X		X		X				INTERIOR FLUSH STEEL DOOR AND FRAME
7	CATWALK TO CE-7500	3'-0"x 7'-0"	RH	STEEL	STEEL			X				X		X				INTERIOR FLUSH STEEL DOOR AND FRAME
8	EXTERIOR TO OPERATING AREA	16'-0"x 16'-0"		STEEL	STEEL	X		X										OVERHEAD DOOR w/ MANUAL AND ELECTRIC LIFT SYSTEM
9	EXTERIOR TO CE-7500	12'-0"x 16'-0"		STEEL	STEEL	X		X										OVERHEAD DOOR w/ MANUAL AND ELECTRIC LIFT SYSTEM
10	OFFICE TO EXTERIOR	3'-0"x 7'-0"	RHR	STEEL	STEEL			X				X		X				EXTERIOR DOOR UNIT (INSULATED)
11	OPERATING AREA TO EXTERIOR	3'-0"x 7'-0"	RHR	STEEL	STEEL			X				X		X				EXTERIOR DOOR UNIT (INSULATED)
12	OPERATING AREA TO EXTERIOR	6'-0"x 7'-0"	RHR ACTIVE	STEEL	STEEL			X				X		X				EXTERIOR DOUBLE DOOR UNIT (INSULATED)
13	CE-7500 TO EXTERIOR	3'-0"x 7'-0"	RHR	STEEL	STEEL			X				X		X				EXTERIOR DOOR UNIT (INSULATED)
14	OPERATING AREA TO EXTERIOR	3'-0"x 7'-0"	LHR	STEEL	STEEL			X				X		X				EXTERIOR DOOR UNIT (INSULATED)

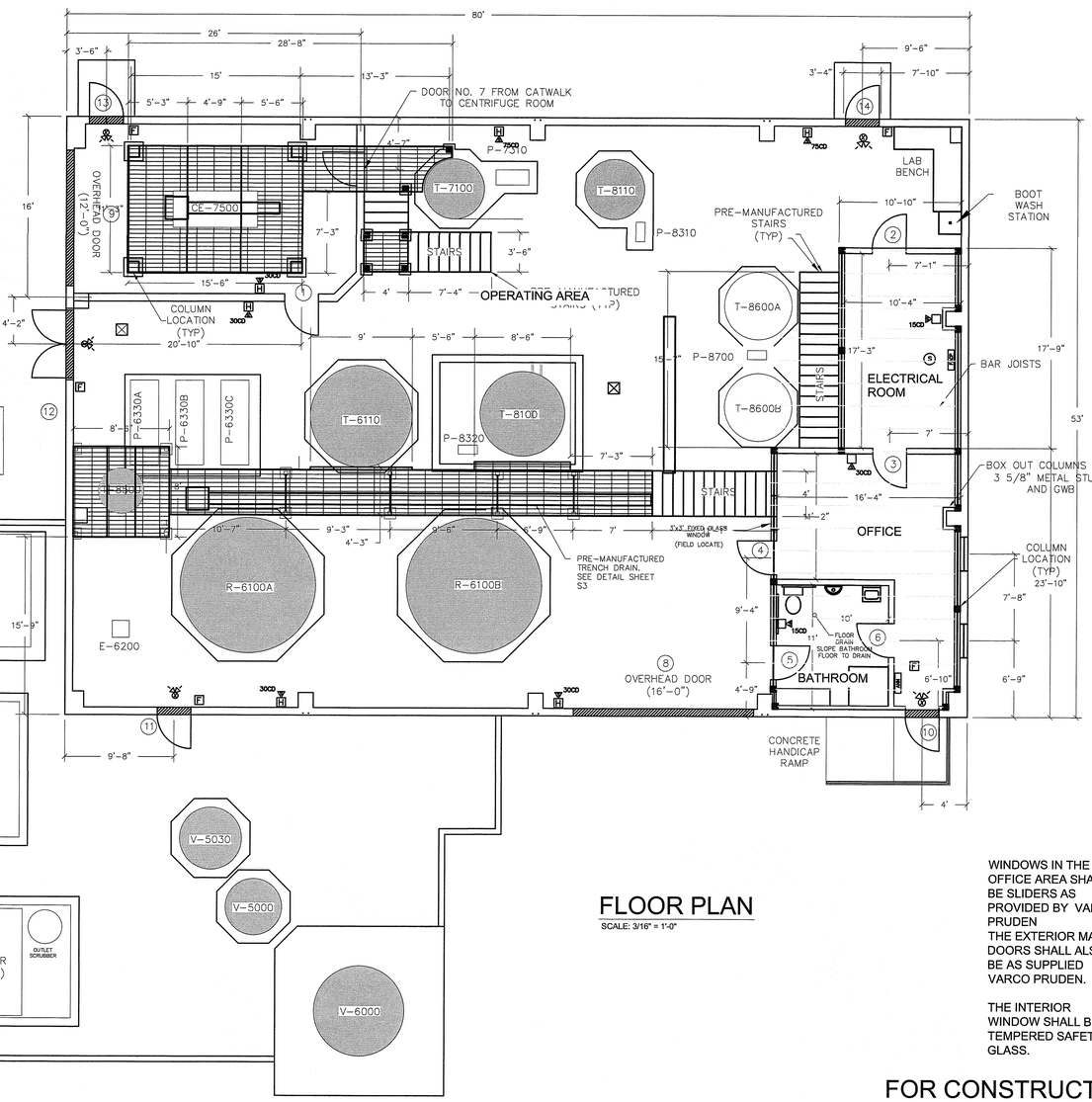
NOTE: All Doors to Meet A.D.A and Maine State Access Requirements.
1. DOOR HARDWARE IS TO BE OPERABLE WITH SINGLE EFFORT (E.G. LEVER TYPE) PER THE AMERICANS WITH DISABILITIES ACT OF 1990.
2. ALL EXIT DOORS SHALL HAVE AN EXIT SIGN COMPLYING WITH SECTIONS 4.30.1, 2.30.4, 4.30.5 AND SECTION 4.30.6 OF THE ADA ACT OF 1990.
3. WHEN DEAD BOLTS ARE PROVIDED ON (PRIMARY) EXIT DOORS, BOLT MUST BE ACTIVATED BY A ONE QUARTER (1/4) TURN THUMB LATCH FROM INSIDE. A SIGN PROVIDED BY OWNER SHALL BE DISPLAYED ON, OR AT LATCH SIDE, OF DOOR STATING "DOOR IS TO REMAIN UNLOCKED DURING NORMAL BUSINESS HOURS". ANY DEAD BOLTS ON SECONDARY EXIT DOORS SHALL BE KEYED ON BOTH SIDES.
4) ALL INTERIOR DOORS SHALL HAVE LEVER TYPE HANDLES MODEL #8500 AS MANUFACTURED BY SARGENT OR APPROVED EQUAL.
5) ALL EXTERIOR DOORS SHALL HAVE THRU BOLTS AS MANUFACTURED BY "VON DUPRIN" OR APPROVED EQUAL.
6) ALL EGRESS DOORS SHALL HAVE EXIT HARDWARE COMPLYING WITH 7.2.1.7 OF THE LIFE SAFETY CODE.



Typical ADA Bathroom Fixtures

Not To Scale

NOTE: SLOPE CONCRETE EQUIPMENT PAD TO DRAIN TO LOW POINT. SEE SITE PLAN FOR ADDITIONAL DETAILS.



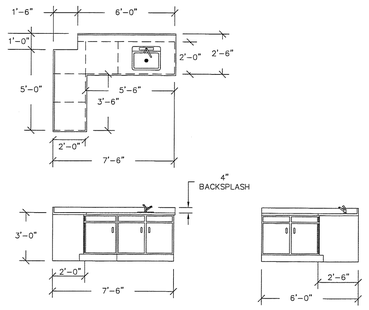
SEE PLAN SHEETS S1 AND S2 FOR EXTERIOR SLAB DETAILS

FLOOR PLAN

SCALE: 3/16" = 1'-0"

WINDOWS IN THE OFFICE AREA SHALL BE SLIDERS AS PROVIDED BY VARCO PRUDEN
THE EXTERIOR MAN DOORS SHALL ALSO BE AS SUPPLIED VARCO PRUDEN.

THE INTERIOR WINDOW SHALL BE TEMPERED SAFETY GLASS.

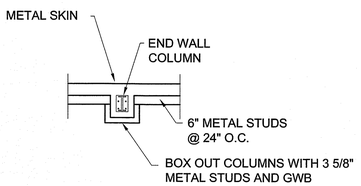


LABORATORY CABINET DETAIL

N.T.S.

LABORATORY CABINETS SHALL BE AS MANUFACTURED BY HANN MANUFACTURING INC. OR APPROVED EQUAL. COUNTERTOPS SHALL BE DURCON CHEMICAL RESISTANT TOPS OR APPROVED EQUAL.

FINISH SCHEDULE						
ROOM	CEILING TYPE	CEILING HEIGHT	WALLS	COLOR	FLOORING	Base
OFFICE	2' x 4' Suspended Acoustical Tiles	8'-0"	FRP		VCT	VINYL
BATHROOM	2' x 4' Suspended Acoustical Tiles	8'-0"	FRP		VCT	VINYL
ELECTRICAL ROOM	Bar Joists and Exposed Metal Pan	9'-5 3/4"	FRP		EXPOSED CONCRETE	
PROCESS ROOM	Open to girts / insulation	Varies	LINER PANEL		EXPOSED CONCRETE	
CENTRIFUGE ROOM	Open to girts / insulation	Varies	LINER PANEL		EXPOSED CONCRETE	



FRAMING @ COLUMNS IN OFFICE AND ELECTRICAL ROOM DETAIL

N.T.S.

FOR CONSTRUCTION 6/24/14

No.	Revisions	Date	App'd.
3	Revised tanks, concrete pads, and columns	8/4/14	MEM
2	Added Locations Dimensions 3' Pass Doors	7/1/14	MEM
1	Revisions per HE Callahan Review 5/16/14	5/22/14	MEM

JUNIPER RIDGE LANDFILL

CASELLA RESOURCE SOLUTIONS — OLD TOWN, MAINE

FLOOR PLAN

STATE OF MAINE ALBERT E. HODSDON, III No. 2926 LICENSED PROFESSIONAL ENGINEER

AEHodsdon CONSULTING ENGINEERS
10 Common St. Waterville, Me. 04901 (207) 873-5164

Drawn By:	MEM	Scale:	3/16" = 1'-0"
Checked By:	MEM	Date:	5/12/14
Approved By:	AEH	Date:	5/12/14
F.N.	8-14-working2.DWG	Project No.	8-14

Sheet No. A1

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APPENDIX R

ARCHAEA GAS TREATMENT FACILITY MONITORING AND SSM PLAN

SME
SEVEE & MAHER
ENGINEERS

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Gas Treatment System Monitoring and SSM Plan

AHJRLLFG, LLC Facility

November 2024

Prepared For:

AHJRLLFG, LLC

2828 Bennoch Rd. Alton, ME 04468

Docusign Envelope ID: 819C7091-9339-4691-B4DA-F76568F876F7

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Section 1.0 Plan Certification

Gas Treatment System Monitoring and SSM Plan AHJRLLFG, LLC

2828 Bennoch Rd. Alton, ME 04468

Material and data in this report were prepared under the supervision and direction of the undersigned

- -

Archaea Energy
201 Helios Way, Floor 6
Houston, TX 77079

Signed by:
Jake Padula
5AB36D66451A427...

Jake Padula
AHJRLLFG, LLC Manager

DocuSigned by:
Emily Zambuto
CEC234DE6F13486...

Emily Zambuto
Manager of Environmental Programs

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Section 2.0 Purpose

The Gas Treatment System Monitoring and Startup, Shutdown, and Malfunction (SSM) Plan establishes appropriate monitoring, operating, and malfunction response procedures for the AHJRLLFG, LLC (Juniper RNG) Facility.

Documents including the latest, original and subsequent revisions/addendums of this Plan will be kept on file at the Juniper RNG Facility for the entire length of time that the facility is in operation.

Section 2.1 Implementation of the Plan

This plan has been prepared by Juniper RNG to meet the NSPS and Maine DEP treatment system requirements and to establish appropriate monitoring, operating, and malfunction response procedures for the treatment system at the Juniper RNG Facility located near the Juniper Ridge Landfill.

The overall goals of this plan are to provide assurance to the Maine DEP that the treatment system is being operated and maintained in a manner that complies with the NSPS while allowing Juniper RNG the operational flexibility to maximize the processing of the landfill gas.

This plan is not intended to comprehensively address every possible monitoring or maintenance activity that could be conducted on the treatment system, but this plan does establish the following:

1. A general understanding of the function of each piece of equipment in the treatment system.
2. Operational parameters that will be observed and documented throughout the treatment system to indicate proper performance.
3. Appropriate monitoring procedures of the treatment system.
4. Appropriate startup, shutdown, and malfunction procedures including the necessary reports to document those events.

If the plan fails to address or inadequately addresses regulatory requirements set forth by Maine DEP, or 40 CFR 60, Subpart XXX and 40 CFR 63, Subpart AAAA, the plan shall be revised within 45 days.

Section 2.2 Updates to the Plan

This Plan will be updated within 60 days of replacing or expanding the components of the landfill gas treatment system. If no components of the plant are replaced or expanded with components described herein, the Plan will be reviewed and updated as needed at least once every year.

Section 3.0 Facility Overview and Applicability

This document pertains only to the landfill gas treatment system that is operated at the Juniper RNG Facility, which is located near the Juniper Ridge Landfill located in Alton, ME.

This section identifies regulatory overview for the Juniper RNG Facility.

Section 3.1 Facility Overview

Gas received from the Juniper Ridge Landfill is initially de-watered in knockouts that are located upstream of the Juniper RNG landfill gas treatment system, where portions of the condensate in the landfill gas are removed.

After the initial knockout tank de-watering, landfill gas is treated in equipment and processes operated by Juniper RNG.

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Section 3.1.1 Facility Capacity and Landfill Gas Collection

The Juniper RNG Facility is designed to accept up to 3,200 scfm of landfill gas from the Juniper Ridge Landfill to beneficially utilize treated landfill gas and refine to pipeline grade natural gas, which is compressed and loaded onto trucks for sale as renewable natural gas.

LFG generated at the Juniper Ridge Landfill is collected using a system of wells, gas headers, and blowers, which have been installed and are operated by the landfill owner. Gas is then routed to the Juniper RNG facility where it is processed through the gas treatment system. Treated landfill gas can then be routed to either the thermal oxidizer, candlestick flare or loaded onto trucks for sale as product gas.

Section 3.1.2 Gas Treatment

Prior to combustion in the thermal oxidizer/flare or product gas truck loading, the LFG passes through the LFG pretreatment section, which consists of gas compression and coalescing filtration with moisture separators and mechanical coolers.

Step 1. Landfill Gas arrives at a primary filter vessel, where a coalescing filter collects any condensate particles larger than 5.0 micron (µ), removing them from the gas stream.

Filtered condensate particles fall to the bottom of the vessel and are immediately transferred by gravity feed to a sump that transfers the liquid to a holding tank which is sent for offsite disposal.

Step 2. A gas compressor is used to compress the gas for upstream processing.

Step 3. A gas cooler reduces the temperature of the gas.

Step 4. A polishing filter vessel uses a coalescing filter designed to remove any condensate particles larger than 1.0 micron (µ).

Filtered condensate particles fall to the bottom of the filter vessels and are routed to a condensate sump.

Step 5. Landfill gas then passes through a hydrogen sulfide removal system.

Step 6. Treated LFG is routed to the Juniper RNG facility where it is either processed through the renewable natural gas (RNG) refining system, is sent to a candlestick flare or a thermal oxidizer.

Section 3.2 Agreements and Standards

Section 3.2.1 Maine Department of Environmental Protection (Maine DEP)

The Juniper Ridge Landfill has been issued Air License A-921 (and accompanying amendments) by the Maine DEP, which expires May 24, 2026.

The Juniper RNG Facility has been issued Air License A-1150 (and accompanying amendments), which expires February 24, 2030.

Archaea Energy, the owner of Juniper has a contract with the landfills to use the collected landfill gas and refine to pipeline grade natural gas for injection onto product gas trucking skid.

United States Environmental Protection Agency, (USEPA) New Source Performance Standards (NSPS)

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This Site-Specific Treatment System Monitoring Plan is being prepared because the Juniper Ridge Landfill is subject to control requirements under 40 CFR 60, Subpart XXX and 40 CFR 63, Subpart AAAA. Because the reported generation rate of non-methane organic compounds at JRL is greater than 50 megagrams per year (Mg/yr), the site is required to follow the operational procedures of 40 CFR 63, Subpart AAAA. As part of the landfill gas collection and control system (GCCS) on-site, all or a portion of the landfill gas is "treated" as part of its overall management prior to sale or beneficial use. It has been modeled that the facility has the potential to emit greater than 50 megagrams per year of non-methane organic compounds (NMOCs).

Per §63.1990, a treatment system is one that filters, de-waters, and compresses landfill gas for sale or beneficial use. A treatment system is one of the acceptable "control systems" under the NSPS/NESHAP rule as set forth in §63.1959(b)(2)(iii)(C), which read that the owner may:

Route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-Btu gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to §63.1959(b)(2)(iii)(A) or (B).

Since Juniper RNG receives a portion of the landfill gas collected from the Site and it processes it through a LFG pretreatment system which will act as a control system for the landfill gas subject to NSPS/NESHAP control, the monitoring requirements, specifically §63.1961(g) require that:

The treatment system must maintain and operate all monitoring systems associated with the treatment system in accordance with the site-specific treatment system monitoring plan required in §63.1983(b)(5)(ii).

This site-specific treatment system monitoring plan satisfies the requirements of §63.1983(b)(5)(ii).

Section 3.2.2 NSPS, 40 CFR Part 60, Subpart XXX and NESHAP, 40 CFR Part 63, Subpart AAAA).

This plan has been developed in accordance with provisions of the Municipal Solid Waste (MSW) Landfill New Source Performance Standards (NSPS, 40 CFR Part 60, Subpart XXX) and the MSW Landfill National Emissions Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Part 63, Subpart AAAA). 40 CFR §60.765(d) of the MSW Landfill NSPS specifies that if a device other than an open flare or an enclosed combustor is used as the control system for landfill gas emissions, then information is to be prepared describing the operation of the control device, the operating parameters that indicate proper performance and appropriate monitoring procedures. The MSW Landfill NESHAP requires owners of affected facilities to document standard procedures for equipment startup and shutdown and to develop procedures for responding to equipment malfunctions.

Section 3.3 Regulatory Summary

This site-specific treatment system monitoring plan satisfies the requirements of §63.1983(b)(5)(ii).

Each element of the monitoring plan is listed here, followed by site-specific information related to this specific treatment system. The requirement will be shown in bold, italicized text followed by the site-specific response.

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§63.1983(b)(5)(ii)(A) Monitoring records of parameters that are identified in the treatment system monitoring plan and that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. At a minimum, records should include records of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas.

Per §63.1961(g)(1), flow must be continuously (at least once every 15 minutes) monitored into the treatment system. The flow measurement device will be maintained and calibrated per manufacturer's recommendations.

Also, per §63.1961(g)(2) if there is a bypass line from the treatment system, it must be secured in the closed position and inspected at least monthly to verify that gas is not being diverted to the bypass line and circumventing appropriate NSPS control.

Per §63.1983 all records must be 5 years up-to-date, readily accessible, on-site. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

The person(s) performing the inspection as per the frequency listed in Table 1 - Landfill Gas Treatment System Monitoring Plan on page 11, will record the observed value and determine if the value is within the range of operation.

If the recorded value is out of the range of operation, they will immediately take corrective action, including contacting all relevant staff, as necessary. Furthermore, collected data and a description of the actions taken will be placed into the plant file.

§63.1983(b)(5)(ii)(B) Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas.

Table 1 - Landfill Gas Treatment System Monitoring Plan on page 11 describes monitoring methods, frequencies, and operating ranges for each monitored treatment operating parameter.

§63.1983(b)(5)(ii)(C) Documentation of the monitoring methods and ranges, along with justification for their use.

Justification for monitoring methods and ranges of each monitored treatment operating parameter is based on operational experience and/or manufacturer recommendation. This section is required because ranges of these treatment parameters are not prescribed by the NSPS rules; rather, they are to be set on a site-specific basis (because different beneficial uses and gas sales require different levels of treatment).

§63.1983(b)(5)(ii)(D) Identify who is responsible (by job title) for data collection.

The following job titles that are authorized to take these readings: Regional Manager, Lead Operator Technician, Operator Technician.

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§63.1983(b)(5)(ii)(E) Processes and methods used to collect the necessary data.

Table 1 - Landfill Gas Treatment System Monitoring Plan on page 11 demonstrates how each type of treatment parameter (filtration, de-watering, and compression) will be monitored.

§63.1983(b)(5)(ii)(F) Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems.

Data and equipment are reviewed regularly during the month, to verify accuracy and to evaluate for trends that may be characteristic of diminishing performance. Additionally, staff will perform visual inspections of the equipment and note issues as they arise.

Repairs will be made as necessary. At a minimum, filters will be cleaned and or replaced as needed to maintain the listed differential pressures.

Section 4.0 Records

The following information will be maintained to verify proper operation of the gas treatment systems and that proper procedures were implemented in response to equipment startup, shutdown and malfunction requirements:

1. Daily records of the equipment monitoring parameters that are presented in this document (Section 7.0 Gas Treatment Equipment and Monitoring).
2. Equipment maintenance and/or modification records that affect the operation of the gas treatment system.
3. Startup, shutdown and/or malfunction occurrence records with details on the duration of each event (appropriate SSM reporting forms and documents are provided in Appendix C).
4. Startup, shutdown and/or malfunction records that document the actions taken during these events, when such actions are different from those specified in this document (Section 8.1 Startup Operating Procedures, Section 8.2 Shutdown Operating Procedures, Section 8.3 Malfunction Operating Procedures).
5. A deviation report will be completed when startup, shutdown and/or malfunction actions occur that are different than those specified in this document.

Section 5.0 Monitoring

Data related to inlet landfill gas flow/methane content is monitored continuously and recorded by the facility's Supervisory Control And Data Acquisition (SCADA) system.

- Juniper RNG responsible personnel also compile and distribute this information **daily**, to ensure abnormalities are identified in a timely manner.
- Monthly Production Data is finalized and submitted for QA/QC review **no later than the 15th of the following month**.

Each piece of equipment performs a specific function in the treatment process utilized in the approved Landfill Gas Treatment System:

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1. Initial knockout filter
2. Gas compressor for initial compression
3. Gas cooler
4. Polishing knockout filter
5. Hydrogen Sulfide Removal System

Juniper RNG has developed a set of operating parameters to be routinely checked, recorded, and monitored on a scheduled basis to determine that the equipment is performing its intended function. These are subject to change and revision through the operation and balancing of the plant.

Section 6.0 Roles and Responsibilities

Juniper RNG responsible personnel observe and document operation of the treatment system at regular intervals.

Section 6.1 Maintenance

Regular preventative maintenance and non-routine maintenance will be performed on the Landfill Gas Treatment System in accordance with the Spill Prevention, Control and Countermeasures, which is maintained onsite.

Various alarms will signal if a piece of equipment experiences a malfunction and is no longer able to function correctly.

Section 6.2 Supervisors

Supervisory personnel responsible for overseeing the inspection, maintenance, and repair of the plant are listed below:

Jake Padula	Plant Manager	570.885.5617
Luis Gonzales	Lead Operations Technician	207.356.8260
David Jaenike	Environmental Advisor	585.738.7693

Section 6.3 Plant Operator

The Plant Operator is required to document the gas treatment system monitoring parameters at least once daily and will keep a maintenance and downtime log for the gas treatment system.

Section 6.4 Lead Operator

The Lead Operator is required to maintain daily records of appropriate system operations, and will manually record the times that any of the specified alarms are observed or phone call notifications of alarms are received and all appropriate gas treatment system corrective actions.

Section 6.5 Operators

If an operator observes that equipment is operating abnormally, or if an operator observes/documents that an operating parameter is out of its recommended/ normal range, then maintenance actions will be taken.

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Section 7.0 Gas Treatment Equipment and Monitoring

The following equipment is utilized in the approved Landfill Gas Treatment System:

1. Initial knockout filter
2. Gas compressor for initial compression
3. Gas cooler
4. Polishing knockout filter
5. Hydrogen Sulfide Removal System

The following sections summarize the function of each piece of equipment and what Juniper RNG monitors to determine it is operating properly.

Section 7.1 Primary Filter Vessel

A primary filter vessel that contains a coalescing filter designed to remove particles in the gas stream that are 5.0 microns and larger. Condensate collected by this coalescing filter falls to the bottom of the vessel, where it is immediately transferred by gravity feed to a sump that returns the liquid back to the landfill for processing.

Pressure drop across the primary coalescing filter (inlet and outlet of the gas flow through the vessel) is continuously monitored with a pressure differential switch. Differential pressure should be equal to or less than 5.0 psid. If the pressure drop across the primary coalescing filter is observed to be greater than 5.0 psid, the filter will be replaced and/or investigations will be performed to evaluate potential malfunctions of upstream landfill gas de-watering equipment.

Section 7.2 Gas Compressor Compression

Gas pressure in the treatment system is continuously monitored with a pressure switch that is located before (upstream) of the polishing filter vessel. The landfill gas treatment system (blowers) should be operated so that the minimum pressure observed at the specified monitoring location is at least 1.0 psig.

Pressures measured after the compressor that are less than 1.0 psig are an indication of problems with the gas compression system. If the pressure of the gas in the treatment system monitored after the gas compressor is less than 1.0 psig, an investigation of the equipment will be performed and corrective actions will be implemented.

Section 7.3 Gas Cooler Outlet Temperature

A gas cooler reduces the temperature of gas that is heated by the compressor during gas compression.

Gas temperature in the treatment system is continuously monitored with a temperature switch that is located after (downstream of) the heat exchanger. The gas cooler should be operated so that the maximum temperature observed at the specified monitoring location is equal to or less than 130°F.

Gas temperatures after the polishing filter vessel that measure greater than 130°F indicate problems with the operation of the gas cooler. In these instances, an investigation of the gas cooler will be performed and corrective actions will be implemented.

Section 7.4 Polishing Filter Vessel

A polishing filter vessel contains a coalescing filter, which is designed to remove particles that are 1.0 micron and larger. Condensate collected by this coalescing filter falls to the bottom of the vessel, where it is immediately transferred by gravity feed to a sump that routes the liquid to holding tanks for offsite disposal.

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Pressure drop across the polishing coalescing filter (inlet and outlet of the gas flow through the vessel) is continuously monitored with a pressure differential switch. The dP across the polishing filter should be equal to or less than 5 psid. If the pressure drop across the polishing coalescing filter is greater than 5 psid, the filter will be replaced, and gas treatment system investigated. The replacement filters will be of comparable designed for critical air or gas service applications where high-efficiency removal of oil or water droplets and particulate solids is required.

Section 7.5 Hydrogen Sulfide Removal System

Juniper RNG is equipped with a hydrogen sulfide removal system. The removal system consists of two activated carbon beds configured in a lead/lag configuration which landfill gas passes through prior to downstream processing. Hydrogen sulfide is measured at least weekly on the inlet landfill gas, outlet of the lead tank and outlet of the lag tank. The system reduces hydrogen sulfide to a concentration less than 25 ppm prior to going to the RNG refining process and all emission control devices (thermal oxidizer & flare). If an H2S concentration greater than or equal to 25 ppm is measured on the outlet of the **lead tank**, then the lead vessel is isolated (and activated carbon media replaced) and the lag tank moves to the lead position.

Additionally, differential pressure across the hydrogen sulfide removal system is measured weekly. If the differential pressure across the inlet of the lead tank and outlet of the lag tank is greater than 10 psid, then the system will be investigated and corrective measures (i.e. reconfiguring lead/lag configuration, or performing a media changeout on lead or lag vessel) will be performed as needed.

During periods where only one tank is operational (i.e. tank is offline to facilitate media changeout), Juniper RNG operations will monitor H2S concentrations **daily** on the outlet of the operational tank.

Table 1 - Landfill Gas Treatment System Monitoring Plan

Equipment	Parameter	Inspection Frequency	Monitoring Device	Range of Operation	Basis
Primary filter vessel	Differential Pressure (filtration)	Weekly	Pressure monitoring device	0.0 – 5.0 psi (Differential pressure between inlet & outlet of filter vessel)	Manufacturer Recommendation
Gas Compressor	Discharge Pressure (compression)	Weekly	Pressure monitoring device	1.0-40 psi	Manufacturer Recommendation
Gas Cooler (moisture removal)	Outlet Temperature (de-watering)	Weekly	Temperature gauges	Gas Cooler outlet temperature less than or equal to 130°F	Manufacturer Recommendation
Polishing filter vessel	Differential Pressure (filtration)	Weekly	Pressure monitoring device	0.0 - 5.0 psi (Differential pressure between inlet & outlet of filter vessel)	Manufacturer Recommendation

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Equipment	Parameter	Inspection Frequency	Monitoring Device	Range of Operation	Basis
Hydrogen Sulfide Removal System	H2S Outlet Concentration	-**Weekly** when operating both tanks -**Daily** when operating on single tank	Drager Tubes	<25 ppm H2S on outlet of lag tank	Permit Requirement
Hydrogen Sulfide Removal System	Differential Pressure	Weekly	Pressure monitoring device	0.0 – 10.0 psi (Differential pressure between inlet of lead tank and outlet of lag tank)	Manufacturer Recommendation

Reviewed and approved by: Jake Padula, Juniper RNG Plant Manager

Section 8.0 Startup, Shutdown & Malfunction Operating Procedures

This section summarizes each procedure so a new Operator can easily envision it.

- Procedure 1 – Controlled Startup of Facility
- Procedure 2 – Controlled Shut Down of Facility
- Procedure 3 – Emergency Shutdown

Section 8.1 Procedure 1 Summary – Controlled Start Up of Facility

"Startup means the setting in operation of an affected source or portion of an affected source for any purpose." (40 CFR §63.2)

The standard operating procedure for the startup of the landfill gas treatment system is to:

1. Ensure that no unsafe conditions are present.
2. Prior to startup, contact the Lead Operator.
3. Ensure that the system is ready to start by one or more of the following:
    a. Valves are positioned in their proper operating locations.
    b. Appropriate gas and fluid levels, pressures and temperatures are within the values of their normal starting range.
    c. Alarms are cleared.
    d. Power is on, and available to the control panel and to energized equipment.
    e. Emergency Stop is de-energized.
4. Initiate the proper equipment, process and system start sequences.

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5. Observe that the system achieves normal operating ranges for appropriate gas and fluid levels, pressures and temperatures (see Section 7.0, Gas Treatment Equipment and Monitoring).
6. Complete appropriate SSM reporting forms and documents (examples are provided in Appendix C).
7. Refer to Operations and Maintenance Manuals as determined to be necessary.

Section 8.2 Procedure 2 Summary – Controlled Shut Down of Facility

"Shutdown means the cessation of an affected source or portion of an affected source or portion of an affected source for any purpose." (40 CFR §63.2).

The standard operating procedure for shutdown of the landfill gas treatment system is to:

1. Ensure that no unsafe conditions are present.
2. Prior to shutdown,
   a. Contact the Lead Operator
   b. Notify appropriate Landfill representatives that the landfill gas treatment and electricity generation processes will be shutdown.

   Note: Extended shutdowns of the specified equipment will require startup of the landfill gas flaring processes.
3. Initiate the proper equipment, process and system shutdown sequence by one or more of the following:
   - Press Emergency Stop as determined to be necessary.
   - Close On / Off switch(es) or Push On / Off button(s).
   - Close adjacent valves as determined to be necessary.
4. Observe that system achieves normal shutdown ranges for appropriate gas and fluid levels, pressures and temperatures.
5. Complete the appropriate SSM reporting forms and documents (examples are provided in Appendix C). Refer to Operations and Maintenance Manuals as determined to be necessary.
6. A deviation report will be completed when shutdown actions occur that are different than those specified in this document.

Section 8.3 Procedure 3 Summary – Malfunction

"Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." (40 CFR §63.2).

If landfill gas is determined to be venting from the gas treatment system, the equipment and processes will be immediately isolated from the Landfill gas collection system.

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1. Appropriate Landfill representatives will be contacted to inform them that the gas treatment and electricity generation processes are off-line.
2. An investigation of the equipment that caused the malfunction will be performed and corrective actions implemented.
3. After the cause of the malfunction has been identified and corrective actions implemented, the fuel use and electricity generation processes will be restarted using the procedures specified above, Section 8.0.
4. The appropriate SSM reporting forms and documents will be completed (examples are provided in Appendix C).
5. Duration is the time it takes from discovery of the malfunction to Step 3 specified in the preceding text (unless continuous monitoring records indicate the malfunction started earlier). Refer to Operations and Maintenance Manuals as determined to be necessary.

Section 9.0 Annual Gas Sampling Event

Once per year, the Juniper RNG facility will perform gas sampling. Treated landfill gas will be sampled at a sample port following the gas treatment portion of the plant (outlet of the hydrogen sulfide removal system) and analyzed for the following constituents:

1. Total Sulfur by Method ASTM D5504 (or similar)
2. Hydrogen Sulfide by Drager Tube Method (or similar)
3. Moisture by Drager Tube Method (or similar)
4. Speciated VOCs by Method TO-15 (or similar)
5. Major Gases and Heating Value by Method ASTM 1945 (or similar)

See Appendix D, for Site-Specific Monitoring Plan for Annual Hydrogen Sulfide and Total Sulfur Analysis

Section 10.0 Attachments

The following documents and materials are included as part of the Gas Treatment System Monitoring and SSM Plan:

Appendix A: Simplified Block Flow Diagram

Appendix B: Gas Treatment Inspection Checklist

Appendix C: Startup / Shutdown / Malfunction Report Form

Appendix D: Site-Specific Monitoring Plan for Annual Hydrogen Sulfide and Total Sulfur Analysis

Section 11.0 Revision Dates and Descriptions

This Gas Treatment System Monitoring and SSM Plan will be:

1. Amended or modified if equipment or processes are added that are not covered under the Plan; or
2. Revised within 45 days of a nonconforming event if the procedures described in the document do not adequately address any startup, shutdown and/or malfunction event that occur at the facility.

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Plan revisions will be documented using the revision history log (an example is provided in Appendix C).

Date	Task	Subtask	Step	Description
11/18/2024	NA	NA	NA	Initial Issue.

Section 12.0 Approval and Review

Approval and Review	Details
Approval Authority	Archaea Director of Compliance
Initial Creation Date	11/18/2024
Last Revision Date /Revision Number	11/18/2024
Next Review Date	November, 2025

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Appendix A. Simplified Block Flow Diagram

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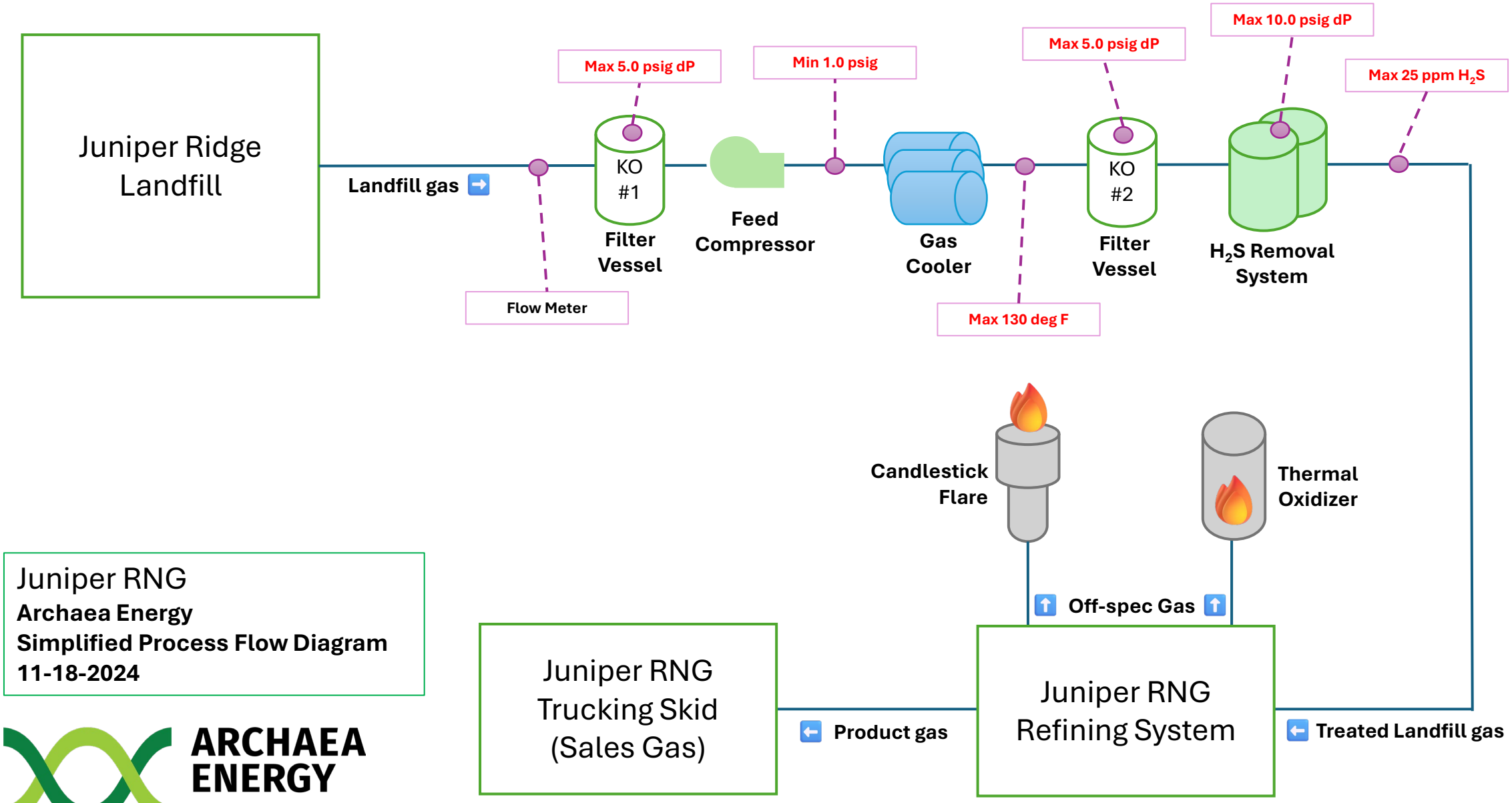
Juniper RNG Facility



Juniper RNG
Archaea Energy
Simplified Process Flow Diagram
11-18-2024

ARCHAEA ENERGY
a bp company

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Appendix B. Gas Treatment Inspection Checklist

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Date	Initial Knockout Filter Differential (ΔP) psi or "WC	Compresor Dicharge Pressure	Gas Cooler Outlet Temp.	Polishing Knockout Filter Differential (ΔP) psi or "WC	H2S Hydrogen Sulfide ppm on outlet of Lead Tank	H2S Hydrogen Sulfide ppm on outlet of Lag Tank	H2S Removal System Differential (ΔP) psi or "WC

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Appendix C. Startup / Shutdown / Malfunction Report Form

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ARCHAEA ENERGY

Audit & Inspection

Scoping

Business Entity	Juniper
Date Performed	10/28/2024
Question Set / Route	Startup, Shutdown & Malfunction Report

Details

Audit Time	12:17 PM

Questions

1.1. Date & Time of Event

1.1.1	Date & Time of Shutdown (MM/DD/YYYY HH:MM)
1.1.2	Date & Time of Startup (MM/DD/YYYY HH:MM)
1.1.3	Duration of Event (hours)

1.2. Equipment Description

1.2.1	Equipment Affected
1.2.2	Reason for Startup/Shutdown

1.3. Event Categorization

1.3.1	Type of Shutdown
1.3.2	Was this a malfunction (i.e. was uncombusted gas released into the atmosphere)?
1.3.3	Was the facility shutdown procedure followed, and all plant controls and interlocks working as expected?
1.3.4	Was the facility startup procedure followed, and all plant controls and interlocks working as expected?

Comments

Comments

Signatures

Auditor's Signature

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Appendix D. Site-Specific Monitoring Plan for Annual Hydrogen Sulfide and Total Sulfur Analysis

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SANBORN HEAD

Site-Specific Monitoring Plan
Annual Gas Testing to Analyze Hydrogen Sulfide and Total Sulfur

ARCHAEA RENEWABLE NATURAL GAS FACILITY AT JUNIPER RIDGE LANDFILL

Old Town, Maine

Prepared for AHJRLLFG, LLC

File No. 4546.03

September 2023

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1.0 INTRODUCTION

On behalf of AHJRLLFG, LLC (Archaea), Sanborn, Head & Associates, Inc. (Sanborn Head) prepared this sampling protocol to describe the methodologies for sampling landfill gas (LFG) at the Archaea renewable natural gas (RNG) facility located at the Juniper Ridge Landfill (JRL) in Old Town, Maine. The sampling is required by Air Emission License, A-1150-71-A-N, issued by the State of Maine Department of Environmental Protection (Maine DEP) to Archaea on February 24, 2020. The license was extended on August 24, 2021 (A-1150-71-B-M, Amendment #1) and revised to include eight diesel engines to generate electricity on October 21, 2022 (A-1150-71-C-A, Amendment #2).

Section II, Part C, Item 1.b of A-1150-71-C-A requires annual testing to measure the concentrations of hydrogen sulfide (H_2S) and total sulfur. Total sulfur includes total reduced sulfur [TRS] compounds (including H_2S) and other sulfur compounds which may include sulfur dioxide (SO_2) or carbonyl sulfide (COS). The license requires the owner or operator to submit to the department analytical test results from annual gas testing within thirty (30) days from date of test completion (i.e., within 30 days of receiving analytical results from the laboratory). The sampling methodologies and test methods for each LFG constituent included in the sampling program are described in the sections below.

2.0 FACILITY DESCRIPTION

The location of JRL is shown in Figure 1, the Locus Plan. JRL is owned by the State of Maine and operated by NEWSME Landfill Operations, LLC. The Archaea RNG facility is located adjacent to the existing JRL flare and sulfur removal system. The Archaea RNG facility is designed to convert up to approximately 3,200 standard cubic feet per minute (scfm) of LFG (at 50% methane) to RNG with over 90% methane. Waste gas removed from the LFG during the filtering processes is directed to the thermal oxidizer for control.

JRL uses vacuum blowers to extract LFG from the landfill and treats the LFG to a TRS level of 1,000 parts per million by volume on a dry basis (ppmdv) or less prior to delivery to the Archaea RNG facility. Archaea further removes contaminants from the gas stream, including H_2S, through use of non-regenerative carbon scrubbers. The carbon scrubbers operate in a parallel “lead/lag” formation to reduce the H_2S concentration in the exhaust gas to 25 ppmdv or less prior to combustion in any additional control device. Annually, Archaea is required to test the gas exiting the carbon scrubbers three times during a single day using ASTM Test Method D5504, or other methods as approved by Maine DEP, to analyze for H_2S and total sulfur.

3.0 TRS SAMPLING

The TRS sampling will consist of collecting three LFG samples in general accordance with either ASTM Method D5504 or South Coast Air Quality Management District (SCAQMD) Method 307-91 (a copy of the SCAQMD method is included in Appendix A). As described in section 9.2.1 of ASTM Method D5504, gas samples should be collected in either Tedlar bags with inert fittings or Summa canisters that are lined with an inert coating (e.g., Silonite™, Silcosteel™, Silco™). According to ASTM Method D5504, analysis of TRS samples should be conducted within 24 hours of sample collection for samples collected in Tedlar bags or within seven (7) days of sample collection for samples collected in lined Summa canisters. It is recommended in section

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2.7 of SCAQMD Method 307-91 that gas samples are collected in Tedlar bags with inert fittings, however, consistent with ASTM Method D5504, non-reactive Summa canisters that are lined with an inert coating and backfilled with helium will be used as an alternative sampling container to eliminate the need for dangerous goods shipping and to provide for a longer sample hold time.

Sanborn Head will collect TRS samples in 6-liter, Silonite-lined Summa canisters backfilled with approximately 3-liters of helium, and submit them to a qualified laboratory, (e.g., AtmAA, Inc. in Calabasas, California or equivalent), for analysis. The helium backfill will dilute the LFG samples down to a non-hazardous level for dangerous goods shipment related purposes. The laboratory will supply the Summa canisters and sampling train. TRS analysis will be conducted within seven days of sample collection for these samples.

The protocol requires that the laboratory provide the 6-liter Summa canisters backfilled with helium under a vacuum of approximately 18 inches of mercury (in. Hg). During sample collection, each canister will be connected to the sampling train, that will consist of inert tubing (e.g., polypropylene, Nylon, or similar) and will be kept as short as possible. The sampling duration required to fill each canister at a rate of about 150 cubic centimeters per minute (cc/min) to a final canister vacuum of approximately 5 in. Hg is estimated to be approximately 30-45 minutes. Laboratory literature includes the following Summa canister sampling instructions for negative pressure source gas:

> *Remove the brass cap from the top of the canister and connect the flow controlling manifold to this port. Next, connect the sample line from the source to the manifold. Turn on the gas flow from the source sampling port; since the source is under vacuum, the ambient air contained in the sampling lines and manifold will start to normalize with the source gas, priming everything prior to sampling. The canister will not begin to sample until the Summa canister valve is opened.*
>
> *After priming for at least five minutes, open the valve on the Summa canister. The canister will then start to fill and you will be able to monitor the progress on the gauge as it does. Eventually the canister and source will come to an equilibrium vacuum.*
>
> *Once sampling is complete, close the source sampling port valve, close the valve on the canister, and release any excess pressure/vacuum in the manifold. Disconnect the tubing from the manifold and the manifold from the canister and replace the brass cap on the canister and tighten. Proceed to the next sample.*

During the sampling event, summa canister identification, sample number, and sample flow rate will be recorded for each sample collected. The initial vacuum of the summa canister and the sampling start time and the final vacuum of the summa canister and the sampling end time will also be noted. Sanborn Head will record these sampling parameters on the field data form included in Appendix B.

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Alternatively, Sanborn Head may elect to collect TRS samples in Tedlar bags (e.g., if summa canisters are unavailable). For these samples, the TRS sampling should be conducted in the afternoon and the samples should be delivered to the laboratory the following morning so the analysis may be completed within 24 hours of sample collection. Additional information about the bag sampling procedure is included in Section 3.1.

3.1 Bag Sampling Procedure Alternative

If bags are used to collect the gas samples instead of summa canisters, Sanborn Head will conduct bag sampling in general accordance with USEPA Method 18, Section 8.2.1.1 – Evacuated Container Sampling Procedure. The sampling event will consist of collecting three gas samples from the LFG sampling port. Samples will be collected in 1-liter opaque Tedlar (or equivalent) bags provided by SKC, Inc (or similar).

As described in USEPA Method 18 Section 8.2.1.1.2, sampling will be conducted using an integrated bag sampling train similar to that depicted in USEPA Method 18, Figure 18-9. A rigid container "Vac-U-Chamber" manufactured by SKC, Inc. will be used as part of the sampling train. SKC, Inc. literature includes the following description of sample collection using the "Vac-U-Chamber:"

> *An air sample bag is connected to the inside sample inlet port and the chamber is closed, providing an airtight seal. An air sample pump is connected to the outside vacuum outlet port. When activated, the pump evacuates air from inside the chamber. The sample bag inflates as a result of the interior pressure drop. This pneumatic technique allows the air sample to enter the bag directly without passing through the pump, protecting the pump from sample contaminants and the sample from pump contaminants.*

Inert unions and fittings will be used for components of the sampling train. The sample line will consist of inert tubing (e.g., polypropylene, Nylon, or similar) and will be kept as short as possible. A Dwyer (or equivalent) rotameter fitted with a needle valve will be used to measure and adjust the sample flow rate.

Prior to sampling, Sanborn Head will leak check the Tedlar bags and the rigid container. The Tedlar bags will be leak checked by connecting the vacuum pump to each bag and evacuating the bag's contents until a "no-flow" condition is achieved. A similar procedure will be performed to leak check the rigid container. When the leak check is complete, we will connect the vacuum pump to the sample line and pump a volume of LFG equivalent to at least three times the volume of the sample line to purge the line. Sample collection will begin after purging the sample line. The three LFG samples will be collected at a flow rate of approximately 1.0 liter per minute from the LFG sampling port. During the sampling event, Sanborn Head will record sampling parameters on the field data form included in Appendix B.

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4.0 QUALITY CONTROL PROCEDURES

A Sanborn Head field technician familiar with LFG sampling will visit the site to collect the samples. Each sampling event will include collecting one set of LFG samples (e.g., three Silonite-lined Summa canisters).

Following the sampling event, Sanborn Head will complete and sign the chain-of-custody (COC) forms and deliver the samples to AtmAA or other qualified laboratory via an express carrier such as United Parcel Service (UPS). AtmAA or other qualified laboratory will perform Summa canister preparation and subsequent laboratory analysis.

During the sampling event, Sanborn Head will use a portable LFG monitor to measure the concentrations of methane, carbon dioxide, oxygen, and balance gas in the LFG at the sampling port. In addition, Sanborn Head will use colorimetric gas detection tubes to measure the concentration of hydrogen sulfide in the LFG at the sampling port. This field-measured data will be used as part of the quality control procedures described below.

Quality control procedures related to the oxygen concentration of the LFG samples will be used as an indication of potential air infiltration and dilution of LFG constituent concentrations. If there is a leak in the sampling train, air infiltration may occur, rendering the sample as non-representative of the LFG at the site. AtmAA or other qualified laboratory will analyze the oxygen concentration (as well as other compounds included in USEPA Method 3C) and the heat content (in accordance with ASTM Method D3588) of each of the three LFG samples, and these values will be compared to the concentrations measured with a portable LFG monitor during sample collection.

Based on our sampling experience, the laboratory result for oxygen concentration is typically not more than 1.0 percent (by volume) greater than the value measured in the field with the field-portable monitor; however, differences greater than 1.0 percent are not uncommon. If the laboratory result for oxygen concentration is greater than 1.0 percent (by volume) more than the oxygen concentration measured in the field and the oxygen concentration in the Summa canister is 5.0 percent or greater, Sanborn Head will consult the Maine DEP to determine whether re-sampling should be conducted, or if correcting the concentrations (e.g., correcting to 50 percent methane) is sufficient. If the oxygen concentration in the Summa canister is less than 5.0 percent, the sample will be considered valid.

Neither audit samples nor sample blanks are required by SCAQMD Method 307-91 and we do not propose to include them as part of this project.

5.0 SAMPLING REPORT

Sanborn Head will prepare a sampling report including a sample location plan, a description of the sampling procedure, field data forms, field sample results, process description (e.g., LFG flow rate and flare operating temperature), gas certification sheets for calibration gases used to calibrate the portable LFG monitor, laboratory results, laboratory quality control/quality assurance reports, completed COCs, sample calculations, and text summarizing the sampling

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results. The sampling report will be submitted to Maine DEP within 30 days after the laboratory analytical reports become available (i.e., within approximately 60 days of the sampling date).

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Figure

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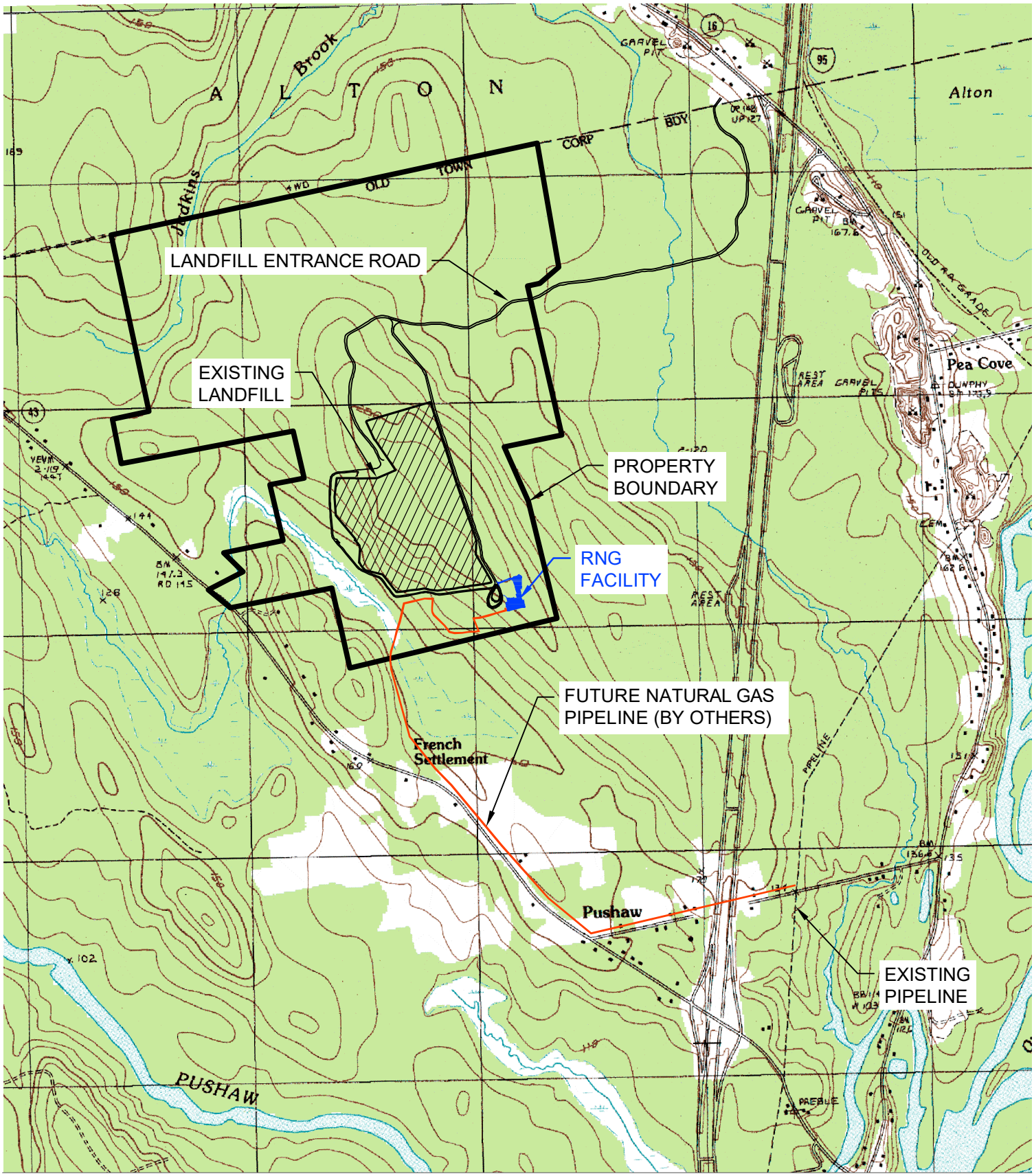

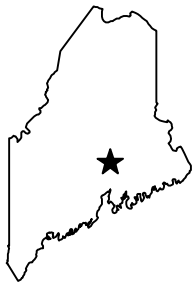

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W E
S

NOTE:
USGS Topo map downloaded from ESRI through ArcGIS Online.

Drawn By: L. Tracy
Designed By: L. Tracy
Reviewed By: H. Little
Project No: 4546.03
Date: July 2023

SCALE: 1" = 2,000'

SANBORN HEAD

Figure 1

Site Location Map

Juniper Ridge Landfill
Old Town, Maine

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Appendix A

Sampling Method

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SCAQMD METHOD 307-91

DETERMINATION OF SULFUR IN A GASEOUS MATRIX

1. Principle

1.1 Reduced sulfur compounds and SO_2 are separated by gas chromatography. These compounds are then combusted in a hydrogen-rich flame to yield sulfur monoxide and other products. The sulfur monoxide is reacted with ozone to yield sulfur dioxide, oxygen and light. The light is detected with a photomultiplier and the response is calibrated against previously run standards.

2. Instrumentation and Equipment

2.1 Gas chromatograph, standard manufacture, with oven temperature ramp capability and hardware necessary for interfacing to a chemiluminescence detector

2.2 Detector, chemiluminescence, possessing a linear response over at least two orders of magnitude and of sufficient range and sensitivity to meet method criteria

2.3 Injection valve, six-port, gas, fitted with a sulfur conditioned sample injection loop of appropriate volume to meet the range of this method

2.4 G.C. column, Chromosil^R 310 packed in Teflon^R, 6' X 1/8" O.D. or SPB-1 Capillary Column.

2.5 Integrator, variable scale, capable of plotting full scale data over the range of this method

2.6 Syringe, gas tight, 100 mL, fitted with an inert valve

2.7 Minimum one-liter Tedlar^R bags fitted with polypropylene valves or the equivalent for sample transportation and storage

3. Gases

3.1 Helium, chromatographic grade

3.2 Hydrogen, chromatographic grade

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3.3 Nitrogen, chromatographic grade

3.4 Compressed air, breathing grade

3.5 Compressed oxygen, medical grade

3.6 Standards

3.6.1 Standard gas mixtures in nitrogen containing:

Hydrogen sulfide (H_2S)
Carbonyl sulfide (COS)
Sulfur dioxide (SO_2)
Methyl mercaptan (CH_2SH)
Ethyl mercaptan (CH_3CH_2SH)
1-propanethiol ($CH_3CH_2CH_2SH$)
2-propanethiol ($CH_3CHSHCH_3$)
Carbon disulfide (CS_2)
Dimethyl sulfide (CH_3SCH_3)
Dimethyl disulfide (CH_3SSCH_3)

The concentrations range from 10 to 300 ppm (v/v). These standards are to be recertified at six (6) month intervals.

3.6.2 Alternatively, gas permeation devices containing compounds listed in 3.6.1 may be used.

4. Procedure

4.1 Many operating conditions can be used to perform sulfur gas speciation and quantitation. The following operating conditions are recommended:

Carrier Flow	35 mL/min helium
Injector Temperature	60^{o}C
Sample Loop Volume	1 mL
Sample Aliquot	100 mL
Column	Chromosil^{R} 310/Teflon^{R} 6' X 1/8" O.D.

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Hydrogen Flow Rate	200 mL/min
Air Flow Rate	260 mL/min
Oven Program	Initial temperature 40^{o}C for 2.5 min Ramp to 110^{o}C at 6.0^{o}C/min Hold at 110^{o}C for 10 min.

4.2 Prior to analysis and on a monthly basis, a five-point calibration curve including a point for zero for each analyte must be prepared. If linearity is verified a single-point calibration may be used subsequent to preparation of those curves until a new set is necessary. If linearity is not confirmed, on a daily basis, a three-point calibration curve must be prepared bracketing anticipated analyte concentrations for each sulfur compound present in samples.

4.3 Appropriate standards are analyzed until three (3) consecutive trials yield results that are within 5% of the mean of the three (3) injections. Standard concentrations must lie within 50% of anticipated sample concentrations.

4.4 A nitrogen blank is analyzed before samples are analyzed at an integrator attenuation where the baseline noise is an average of 1 mm in height. Lack of sample carry-over is verified by a featureless baseline. Additional nitrogen blanks may be analyzed to meet this requirement.

4.5 Samples must be analyzed the same day or within 24 hours of collection in duplicate.

4.6 The response (peak area or peak height) for components of greater than 1 ppm concentration must lie within ten (10) percent of each other in duplicate samples.

4.7 Either a spiked sample or a standard is analyzed at the end of a batch run as part of a QA/QC program.

4.8 Retention times of peaks in the sample chromatogram are compared to those of peaks in the standard chromatogram in order to identify each sulfur compound.

4.9 Compounds for which a standard is not available are to be quantified using the methyl mercaptan response factor.

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5. Calculations

5.1 Concentration of reduced sulfur compounds or SO_2 is by the following:

$$\text{Analyte concentration, ppm} = \frac{\text{pksamp}}{\text{pkstd}} \text{ X Std}$$

Where:

Analyte concentration = concentration of individual reduced sulfur compounds or SO_2
Pksamp = Peak area in the sample
Pkstd = Peak area in the standard
Std = concentration of analyte in the standard, ppm
Peak heights may be substituted for peak areas.

5.2 The concentrations of the monatomic sulfur compounds are added to twice the concentrations of each diatomic sulfur compound except where these substances are quantified using the response of methyl mercaptan standard. In this case total sulfur is the summation of all compounds. This value is the total sulfur content reported as H_2S in ppm by volume.

6. Range and Sensitivity

6.1 The minimum range for this method is from 0.5 ppm (v/v) to 100 ppm (v/v). The upper limit may be expanded by dilution of the sample using chromatographic grade nitrogen. With a 1 mL sample loop, a lower detection limit of at least 0.03 ppm is obtained with this method for all sulfur compounds examined.

7. Quality Control

7.1 After analysis of all samples, a final analysis of either a spiked sample or a standard is to be done. Results for spike or standard components must lie within 10% of the theoretical amounts based on the original standards.

7.2 Reproducibility

Interlaboratory studies demonstrated that the allowable range among laboratories is the greater of 4 ppm or 10% of the average value. These values were based on the Rule 431.1 limit of 40 ppm total sulfur in fuel gas and the allowed 10% variability in duplicate analyses of samples specified in Section 4.6.

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8. References

8.1 EPA Method 16, "Semicontinuous Determination of Sulfur Emissions from Stationary Sources".

8.2 GC Detection of Volatile Sulfur Compounds: An Evaluation of Sulfur Chemiluminescence Detectors, SCAQMD, Technical Services Division Report, March 1990.

8.3 The Detection of Volatile Sulfur Compounds in Gas Samples, SCAQMD,. Applied Science & Technology Division Report, In Preparation.

8.4 Total Sulfur Analyzer Demonstration Project: Report of Data Collected, Western States Petroleum Association, June, 1993.

8.5 Dominguez, R. Jr. and Wadley, M.W., "The Chemiluminescent Detection of Volatile Sulfur Compounds", Sampling and Analysis of Airborne Pollutants, Lewis Publishers, Ann Arbor, MI, 1993.

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Appendix B

Field Data Forms

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Facility _____ Date _____

Site _____

	Sample_1	Sample_2	Sample_3
Source Temperature (F)			
Barometric pressure (in Hg)			
Ambient temperature (F)			
Landfill gas flow rate (scfm)			
Sample flow rate (appr.) (l/min)			
Sample number			
Summa Canister Identification			
Start time			
Initial Canister Vacuum (in Hg)			
Finish time			
Initial Canister Vacuum (in Hg)			

Field sample data sheet - Summa canister collection method

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Plant_____ Date_____
Site _____

	Sample_1	Sample_2	Sample_3
Source temperature (°C)			
Barometric pressure (mm Hg)			
Ambient temperature (°C)			
Sample flow rate (appr.)			
Bag number			
Start time			
Finish time			

Figure 18-10. Field sample data sheet - Tedlar bag collection method.