NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 6/23/23. 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.
2. GROUND CONTROL BY SEVEE & MAHER ENGINEERS, INC (SME) OF CUMBERLAND, MAINE USING PROPELLER AEROPOINTS, DATED NOVEMBER 15, 2019:
   HORIZONTAL DATUM - NAD83 MAINE, WEST, US FT.
   VERTICAL DATUM - NAVD 88, US FT.
3. WETLAND BOUNDARIES DELINEATED BY WOODLOT ALTERNATIVES, INC. IN 2004 AND STANTEC CONSULTING SERVICES 2008, 2014, AND 2015.
4. THE GRADES SHOWN IN THE AREA OF CELL 15 ARE THE FINAL CELL OPERATIONAL WASTE GRADES AT THE COMPLETION OF WASTE FILLING OPERATIONS IN CELL 15.
5. BASEGRADES WITHIN CELL 16 LIMITS REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY LAYER AND CONSTRUCTION OF LINER SYSTEM.
6. JUNIPER RIDGE LANDFILL IS AN ACTIVE LANDFILL FACILITY AND TOPOGRAPHY WITHIN ACTIVE LIMITS OF CELL ARE SUBJECT TO CHANGE.
7. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
8. 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

- AREA WITH EXISTING GEOMEMBRANE INTERMEDIATE COVER
- AREA WITH PROPOSED GEOMEMBRANE INTERMEDIATE COVER
- LC — EXISTING LEACHATE COLLECTION PIPING
- LEACHATE CLEANOUT
- LEACHATE COLLECTION INLET
- CATCH BASIN AND CULVERT WITH RIPRAP APRON
- CULVERT WITH RIPRAP APRON
- CLEAN STORMWATER DITCH AND DIRECTION OF FLOW
- DB — INTERMEDIATE COVER STORMWATER DIVERSION BERM

ESTIMATED STAGE 3 CAPACITY = 344,000 CY

40 0 80 160 FEET

FIGURE 16-4
CELL 16 DEVELOPMENT
STAGE 3 DEVELOPMENT
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

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DWG: C16-CELLDEV LMN: STAGE-3 CTB: SME-STD.CTB REV: 4/26/2024

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NOTES:

1. BASE MAP PREPARED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 6/23/23. 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.
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7. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
8. 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

- AREA WITH EXISTING GEOMEMBRANE INTERMEDIATE COVER
- AREA WITH PROPOSED GEOMEMBRANE INTERMEDIATE COVER
- LC — EXISTING LEACHATE COLLECTION PIPING
- LEACHATE CLEANOUT
- LEACHATE COLLECTION INLET
- CATCH BASIN AND CULVERT WITH RIPRAP APRON
- CULVERT WITH RIPRAP APRON
- CLEAN STORMWATER DITCH AND DIRECTION OF FLOW
- DB — INTERMEDIATE COVER STORMWATER DIVERSION BERM

TEMPORARY LEACHATE COLLECTION INLET SEE FIGURE 16-8

CELL 12

CELL 13

CELL 14

CELL 15 STAGE 5 DEVELOPMENT

CELL 15

CELL 16

CELL 16 STAGE 4 OPERATIONAL WASTE GRADES (TYP)

LOWER ACCESS TO BE FILLED

EXISTING CELL 16 INTERMEDIATE COVER

GRAVEL MAINTENANCE ROAD (TYP)

CELL 16 LINER LIMIT (TYP)

CELL 16 TEMPORARY CONTAINMENT BERM

24" DIA HDPE TEMPORARY CULVERT

LEVEL SPREADER

CELL 16 PUMPSTATION

CATCH BASIN

24" DIA HDPE CULVERT

CULVERT (TYP)

WEST ACCESS ROAD

CULVERT (TYP)

CELL 15 PUMPSTATION

ESTIMATED STAGE 4 CAPACITY = 379,800 CY

40 0 80 160 FEET

FIGURE 16-5
CELL 16 DEVELOPMENT
STAGE 4 DEVELOPMENT
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

DWG: C16-CELLDEV LMN: STAGE-4 CTB: SME-STD.CTB REV: 4/26/2024

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NOTES:

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7. A FIVE FOOT/SOFT LAYER/FROST PROTECTION LAYER SHALL BE PLACED OVER THE LEACHATE COLLECTION SYSTEM.
8. 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

- AREA WITH EXISTING GEOMEMBRANE INTERMEDIATE COVER
- AREA WITH PROPOSED GEOMEMBRANE INTERMEDIATE COVER
- LC — EXISTING LEACHATE COLLECTION PIPING
- LEACHATE CLEANOUT
- LEACHATE COLLECTION INLET
- CATCH BASIN AND CULVERT WITH RIPRAP APRON
- CULVERT WITH RIPRAP APRON
- CLEAN STORMWATER DITCH AND DIRECTION OF FLOW
- DB — INTERMEDIATE COVER STORMWATER DIVERSION BERM

CELL 12
CELL 13
CELL 14
CELL 15
CELL 15 STAGE 5 DEVELOPMENT
CELL 16 STAGE 5 OPERATIONAL WASTE GRADES (TYP)
CELL 15 DEVELOPMENT GRADES (TYP)
INSTALL CELL 16 INTERMEDIATE COVER (STAGES 4 AND 5) (TYP)
WEST ACCESS ROAD
GRAVEL MAINTENANCE ROAD (TYP)
CELL 16 LINER LIMIT (TYP)
CELL 16 TEMPORARY CONTAINMENT BERM
24" DIA HDPE TEMPORARY CULVERT
CELL 16 PUMPSTATION
CELL 15 PUMPSTATION
CATCH BASIN
24" DIA HDPE CULVERT
LEVEL SPREADER

ESTIMATED STAGE 5 CAPACITY = 357,900 CY

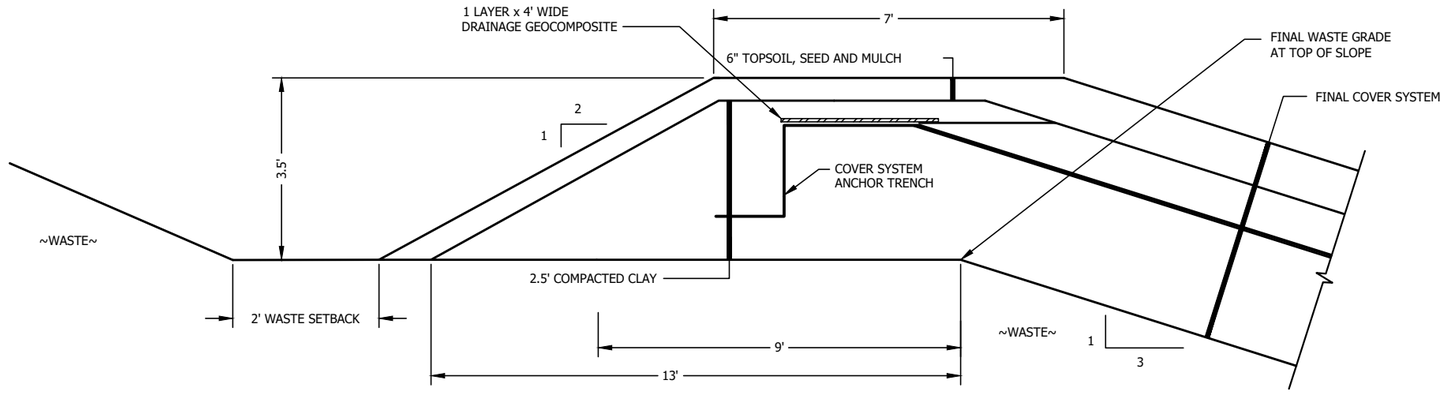
40 0 80 160 FEET

FIGURE 16-6
CELL 16 DEVELOPMENT
STAGE 5 DEVELOPMENT
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

DWG: C16-CELLDEV LMN: STAGE-5 CTB: SME-STD.CTB REV: 4/26/2024

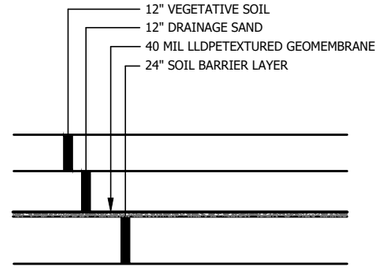
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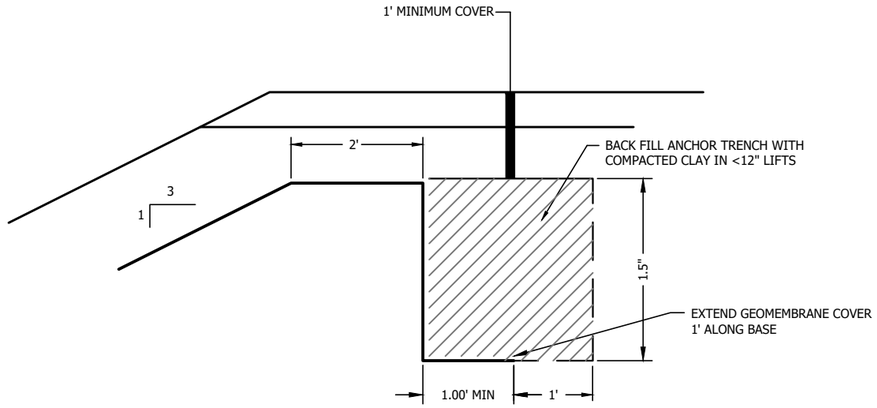
FINAL COVER TERMINATION AT TOP OF SLOPES (TYP)

NTS



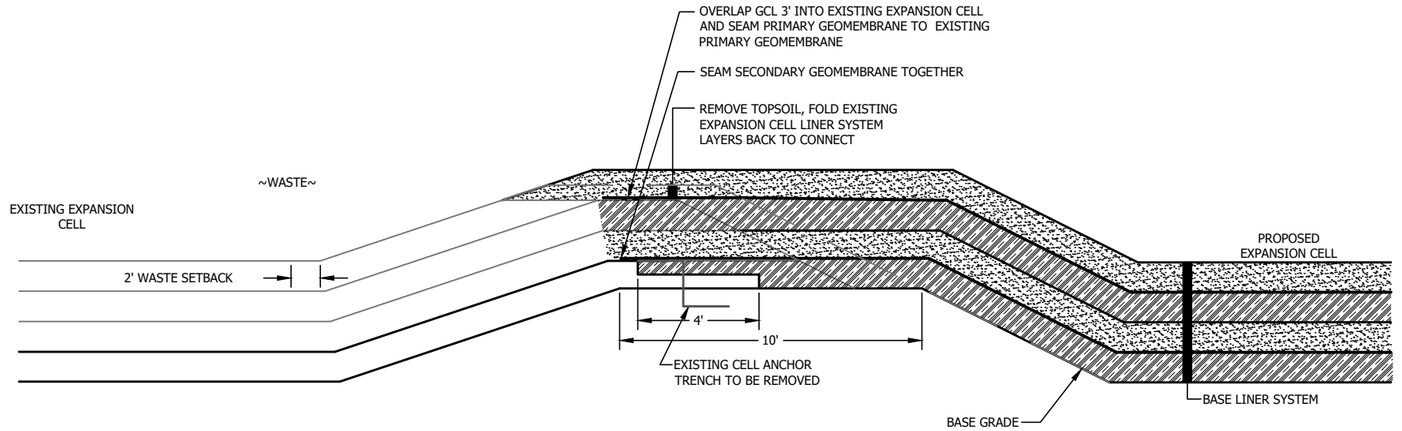
FINAL COVER SYSTEM

NTS



COVER SYSTEM ANCHOR TRENCH AT TOP OF SLOPES AND SIDESLOPE PERIMETER BERMS (TYP)

NTS



INTERMEDIATE BERM BASE LINER CONNECTION

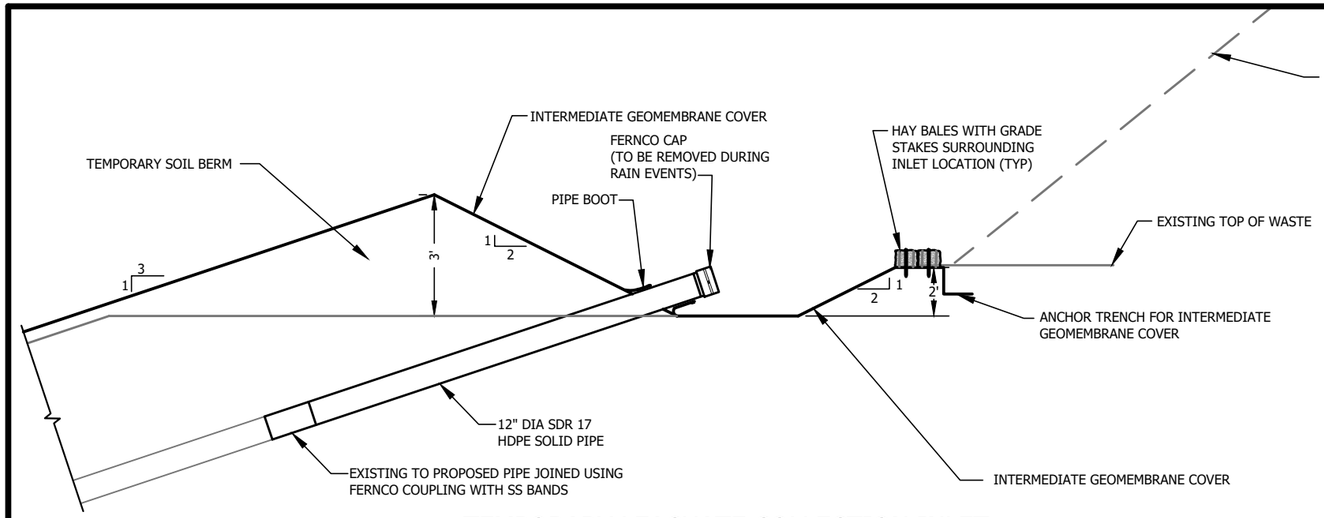
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FIGURE 16-7
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

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ENGINEERS

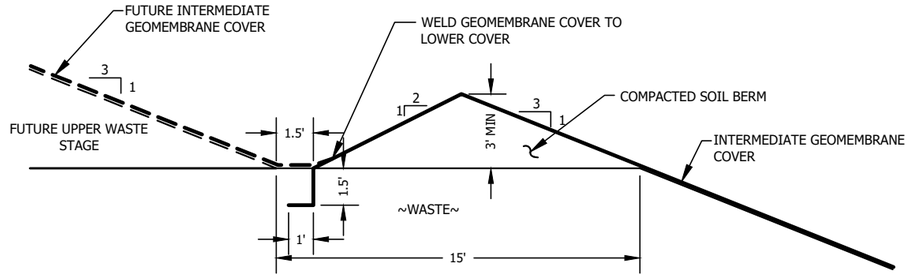
DWG: C16-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 3/20/2024

\\Server\cfs\Caselia\OldTownLandfill\Cell16\Acad\Figures\C16-CELLDEV-DETAILS.dwg, FIG 16-7, 3/20/2024 10:18:41 AM, sjm



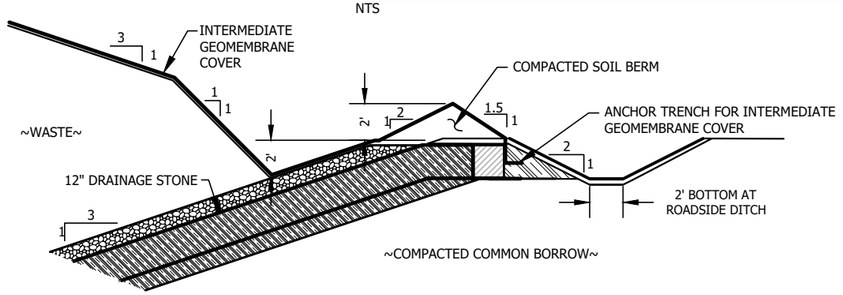
TEMPORARY LEACHATE COLLECTION INLET

NTS



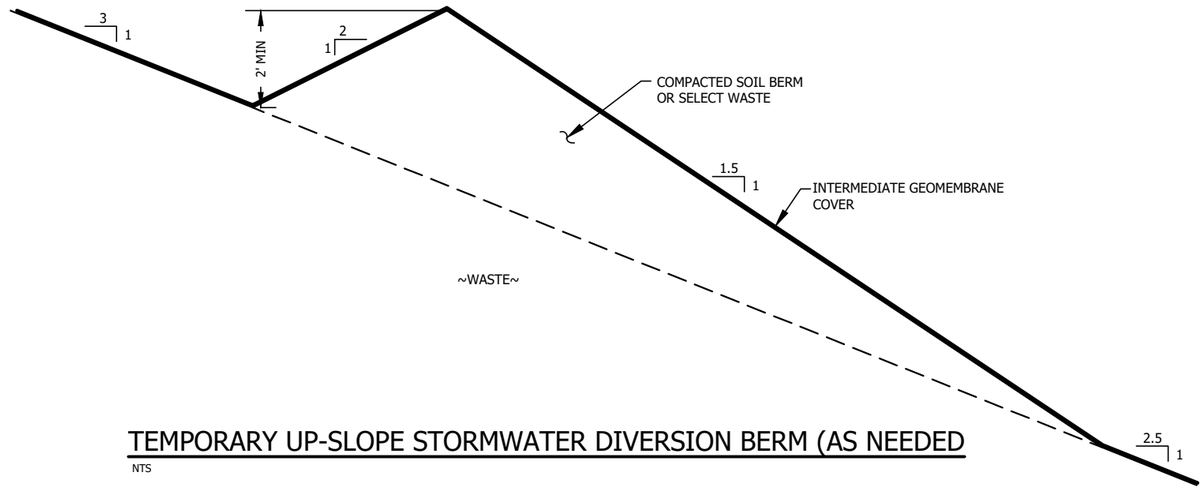
TEMPORARY MID-SLOPE INTERMEDIATE BERM (AS NEEDED)

NTS



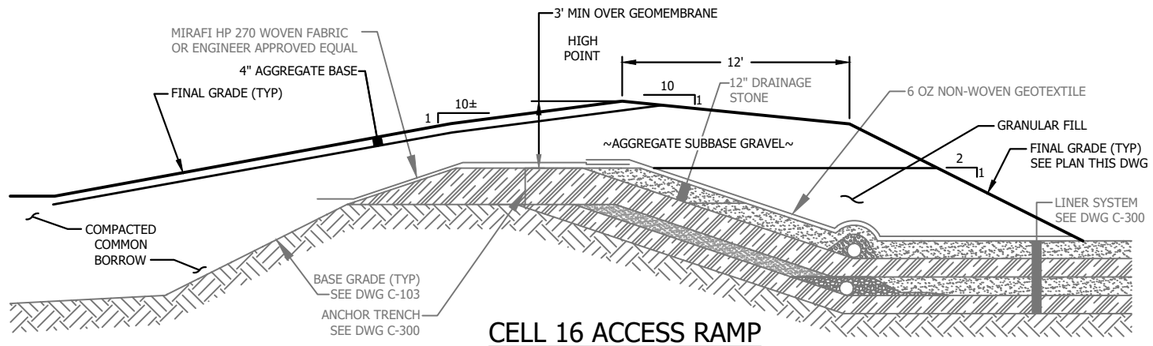
PERIMETER BERM INTERMEDIATE GEOMEMBRANE COVER DETAIL

NTS



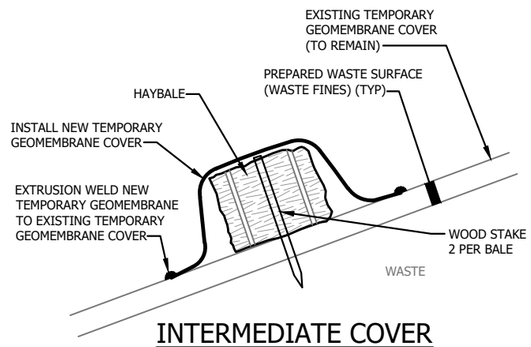
TEMPORARY UP-SLOPE STORMWATER DIVERSION BERM (AS NEEDED

NTS



CELL 16 ACCESS RAMP

NTS



INTERMEDIATE COVER STORMWATER DIVERSION BERM

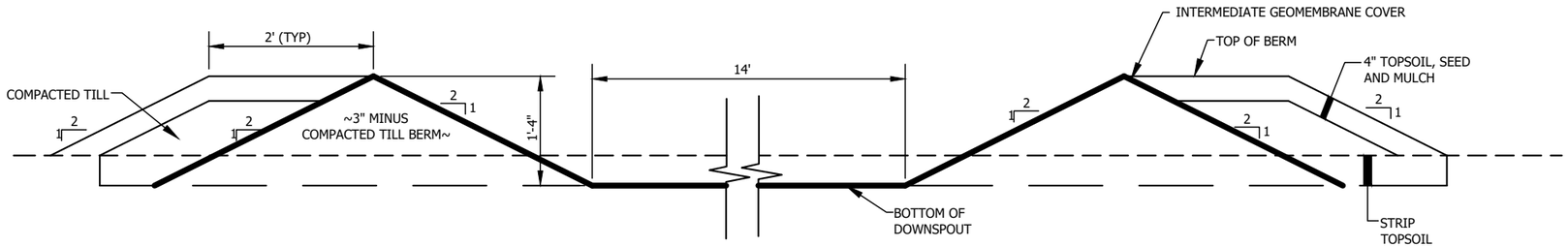
NTS

FIGURE 16-8
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

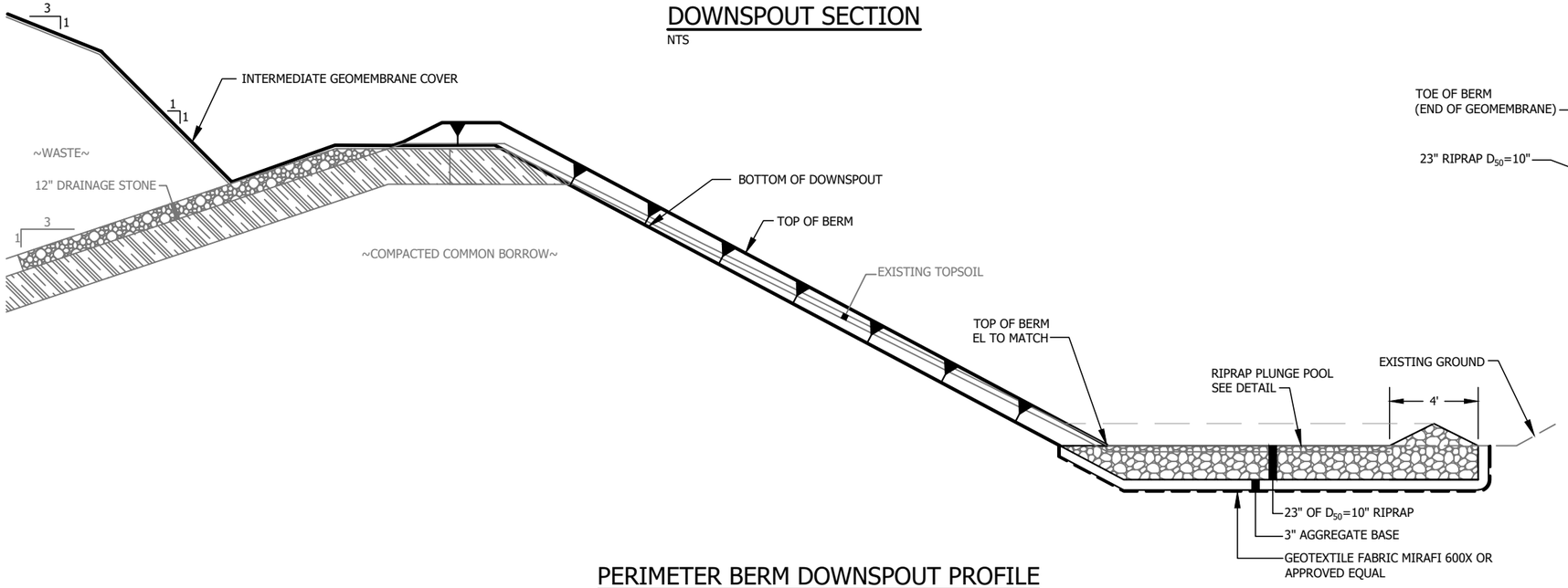
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ENGINEERS

DWG: C16-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 3/20/2024

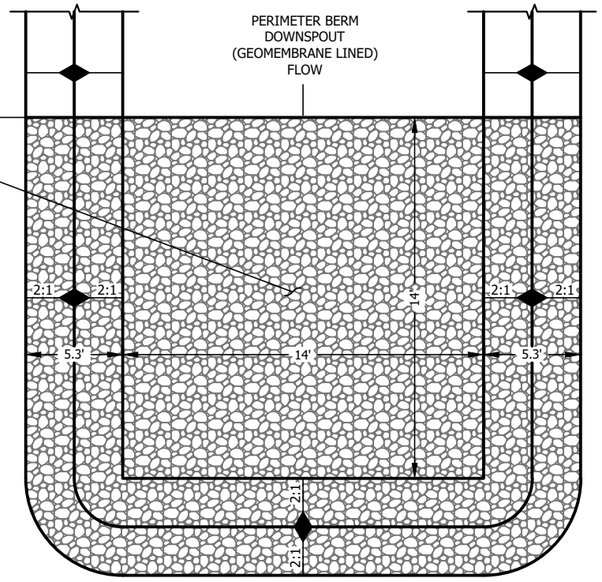
\\Server\cds\Casella\OldTownLandfill\Cell16\Acad\Figures\C16-CELLDEV-DETAILS.dwg, FIG 16-8, 3/20/2024 10:18:48 AM, sjm



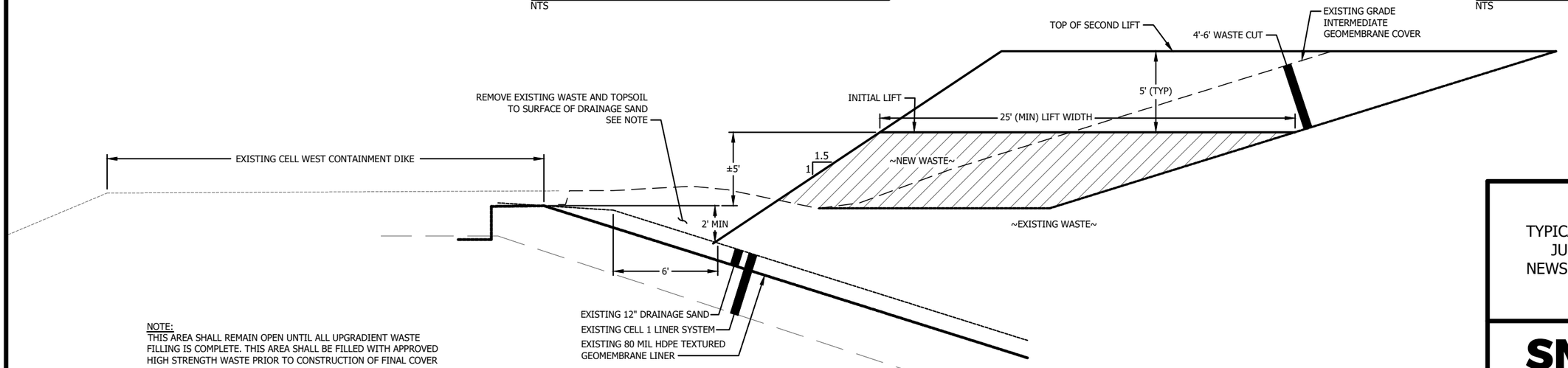
DOWNSPOUT SECTION
NTS



PERIMETER BERM DOWNSPOUT PROFILE
NTS



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 16-9
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

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DWG: C16-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 3/20/2024

\\Nserver\cfs\Casella\OldTownLandfill\Cell16\Acad\Figures\C16-CELLDEV-DETAILS.dwg, FIG 16-9, 3/20/2024 10:18:58 AM, sjm

Technical Specifications

Cell 16 Landfill Gas System Expansion

Juniper Ridge Landfill

Old Town, Maine

Prepared for

NEWSME Landfill Operations, LLC

Old Town, Maine

Prepared by

Sanborn, Head & Associates, Inc.

20 Foundry Street

Concord, New Hampshire

File 2536.40

March 2024



CONTENTS

DIVISION 2 - SITE WORK

Section 02560 - Landfill Gas Extraction Wells
Section 02565 - Landfill Gas Trenches

SECTION 02560

LANDFILL GAS EXTRACTION WELLS

PART 1 - GENERAL

1.1 SCOPE OF APPLICATION

A. Supply all equipment, materials, and labor needed to install landfill gas extraction wells as specified herein and as indicated on the Drawings.

1.2 SUBMITTALS

A. Submit to ENGINEER Certificates of Compliance on materials furnished, and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, and inspection of pipe and appurtenances furnished.

B. Submit to ENGINEER well logs within 7 days of the completion of well installations.

C. The well logs shall depict a construction diagram for each well drilled, including the total depth of the well, the temperature of spoils, depth, thickness, and description of soil or waste strata, and the occurrence of any water bearing zones.

1.3 SITE CONDITIONS

A. Obstructions and saturated conditions such as sludges, and foundry sands are sometimes encountered when drilling in landfills, many of which can be drilled through. CONTRACTOR is expected to make reasonable effort to drill through obstructions and saturated conditions and will be paid for offset redrilling and boring abandonment only with prior written approval from OWNER.

B. Well drilling shall be performed on a level surface. CONTRACTOR shall provide a level surface at each drilling location as required. The size of the level area shall be acceptable to the drilling subcontractor. Any soil placed to level the drilling location shall be removed following well installation. If soil placed for leveling contacts refuse, it shall be disposed of in the active area of the landfill.

PART 2 - PRODUCTS

2.1 BALLAST STONE

A. Ballast Stone shall be hard, durable, and resistant to weathering and to water action, free from overburden, spoil, and organic materials. Ballast Stone shall be

washed, and uniformly blended according to the particle size distribution requirements shown below.

Sieve Size	Percent Passing by Weight
2-inch	100
1½-inch	90 - 100
1-inch	30 - 40
¾-inch	10 - 15
½-inch	0 - 5
⅜-inch	0 - 5

2.2 BENTONITE SEAL

A. Bentonite Seal shall be constructed using hydrated bentonite chips or pellets.

2.3 SAND/GRAVEL FILTER

A. Sand/Gravel Filter should conform to the following particle size distribution.

Sieve Size	Percent Passing by Weight
1½-inch	100
No. 4	70 - 100
No. 40	30 - 80
No. 200	0 - 15

2.4 COMMON FILL

A. Common Fill should be soil containing no stone larger than 4 inches, and shall have a maximum of 75 percent passing the No. 40 sieve and a minimum of 35 percent passing the No. 200 sieve.

2.5 PVC PIPE

A. Refer to Specification Section 15212.

2.6 WELLHEAD

A. Wellheads should be nominal 2-inch size QED Quick Change Orifice Plate wellhead, with elastomer adapter kits, or equivalent approved by OWNER. The wellhead components are indicated on the Drawings.

B. Wellhead and flow measurement tube shall be compatible with the CES/LANDTEC GEM-2000™ and GEM-5000™ Landfill Gas Monitors.

PART 3 - EXECUTION

3.1 DRILLING

A. ENGINEER shall observe all drilling operations.

B. Wells shall be drilled to the minimum diameter and the specific depths shown on the Drawings. CONTRACTOR shall drill the wells using bucket-type augers and dry drilling equipment; wet rotary drilling equipment may not be used.

C. Well depths shown on the Drawings are estimated based on projected top of waste elevations and may be adjusted in the field by ENGINEER. At no time shall the drilling extend deeper than the bottom of well screen elevation.

D. If water is encountered in a borehole, then CONTRACTOR may be directed to drill beyond the point that it was encountered. If wet conditions remain, then drilling may be terminated and the length of perforated pipe adjusted by ENGINEER, or the well may be relocated. If wet conditions cease (e.g., due to trapped water layer), then drilling will continue to the design depth.

E. As soon as drilling is completed, a safety screen shall be placed over the top of the borehole. This screen shall stay in place until backfilling is within 4 feet of the surface. Safety screen size should be large enough to accommodate all backfill materials and any tools used during backfill yet not large enough for any human to accidentally fall through.

F. Wells shall be drilled straight and plumb and the well pipe shall be installed in the center of the borehole. CONTRACTOR will take all compression off of the pipe by mechanical means and center the pipe in the middle of the borehole before starting to backfill.

G. PVC well pipe shall be solvent cemented and mechanically fastened with stainless steel fasteners.

3.2 BACKFILLING

A. Backfilling the borehole shall commence immediately after drilling is completed and the PVC pipe has been installed. Backfill materials shall be installed as indicated on the Drawings and as approved by ENGINEER.

B. Ballast Stone shall be poured or scooped through the safety screen at a rate that will not endanger the integrity of the well casing and limits the potential for bridging.

C. The Sand/Gravel Filter shall be poured through the safety screen until a layer at least 1-foot thick above the Ballast Stone is formed.

D. The Bentonite Seal will be formed by evenly distributing bentonite around the annulus of the well until a minimum plug thickness of 1 foot has been achieved.

E. Common Fill shall be rodded in the boring to provide even distribution and compaction.

3.3 DISPOSAL

A. Refuse from well drilling operations shall be hauled to the active face of the landfill operation the same day it is excavated.

[END OF SECTION 02560]

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SECTION 02565

LANDFILL GAS TRENCHES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall provide all labor, materials, equipment, and incidentals necessary to excavate and backfill trenches for the landfill gas management system as shown on the Drawings and specified herein, including, but not limited to: excavation of waste; placement of soil, aggregate, and pipe; compaction of soil; and grading.

PART 2 – PRODUCTS

2.1 GENERAL

A. All soil, unless otherwise specified, shall consist of clean soil substantially free from organic materials, wood, trash, and other objectionable materials that may be compressible or that cannot be properly compacted. Soil shall not contain stone blocks, broken concrete, masonry rubble, or other similar materials. Soil shall have physical properties such that it can be readily spread and compacted to the specified density. Snow, ice, and frozen soil shall not be permitted.

B. Unless otherwise specified, the maximum soil particle size shall be no larger than two-thirds the loose lift thickness.

2.2 MATERIALS

A. Drainage Stone used as backfill shall be hard, durable, resistant to weathering, free from overburden, spoil, and organic materials. Drainage Stone shall be washed, and uniformly blended according to the following gradation requirements.

Sieve Size	**Percent (%) Passing by Weight**
2-inch	100
1½-inch	80-100
1-inch	50 – 85
½-inch	0 – 50
No. 4	0 – 15
No. 10	0 – 5

B. HDPE pipe and fittings refer to Specification Section 15210.

PART 3 - EXECUTION

3.1 GENERAL EXCAVATION BELOW GRADE

A. CONTRACTOR shall plan and perform earthwork activities to prevent damage to existing structures, safeguard people and property, minimize disruptions to site traffic, protect the structures to be installed, and provide safe working conditions in compliance with local safety regulations and provisions of the Occupational Safety and Health Act (OSHA).

B. Excavation shall be made to the elevations and dimensions shown on the Drawings. Excavate sufficient material to provide suitable room for construction providing bracing and support as required.

3.2 EXCAVATION IN WASTE

A. CONTRACTOR shall take safety precautions during construction activities that conform to all OSHA regulations and the safety requirements of OWNER and the Specifications.

B. Trenches shall be excavated to the depths, widths, and alignments shown on the Drawings.

C. CONTRACTOR shall separate cover soil from excavated refuse to the extent possible. Cover soil may be used to backfill trenches. Excavated material not suitable for use as soil shall be transported to the working face as directed by OWNER.

D. Pockets of perched leachate may be encountered during waste excavation activities. CONTRACTOR shall immediately notify OWNER and ENGINEER when leachate is encountered. ENGINEER will provide CONTRACTOR with directions on how to manage the leachate in narrative and/or drawing form. Potential leachate management techniques may include one or a combination of the following.
   1. Backfilling the affected area.
   2. Realigning the trench.
   3. Installing a French drain.

E. To the extent possible, the trench invert shall slope uniformly as indicated on the Drawings.

F. CONTRACTOR shall not excavate more trench than can be backfilled in one day after placement of the pipe. Excavations shall not be left open overnight.

3.3 BACKFILL

A. Excavated material shall be placed in loose layers and compacted to the extent possible with the goal of establishing a firm, even surface. The loose lift thickness shall not exceed 12 inches.

B. ENGINEER does not have to be present, and does not supervise or direct the actual Work by CONTRACTOR, his/her employees, or agents. Neither the presence of ENGINEER nor any observations and testing performed by ENGINEER shall excuse CONTRACTOR from defects discovered in their Work.

[END OF SECTION 02565]

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CONTENTS

DIVISION 15 - MECHANICAL

Section 15210 – High-Density Polyethylene Pipe (HDPE), Fittings, and Appurtenances

Section 15212 - Polyvinyl Chloride (PVC) Pipe and Fittings

SECTION 15210

HIGH DENSITY POLYETHYLENE (HDPE) PIPE, FITTINGS, AND APPURTENANCES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish and install HDPE pipe and fittings for the landfill gas extraction system.

B. Pressure test HDPE pipe.

1.2 DELIVERY, STORAGE, AND HANDLING

A. The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport by commercial carrier. When delivered, CONTRACTOR shall inspect the shipment and report any damage to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed, and tested in accordance with manufacturer's recommendations, and the requirements of this Section.

B. Pipe Storage:
   1. Store or stack pipe to prevent damage from marring, crushing or puncture. Limit maximum stacking height to 6 feet or manufacturer's recommended maximum height, whichever is less.
   2. Store in accordance with manufacturer's recommendations.

C. Pipe Handling:

   1. Protect pipe from excessive heat or harmful chemicals.
   2. Handle pipe and use equipment needed to avoid gouging of the pipe surfaces.

PART 2 - PRODUCTS

2.1 PHYSICAL PROPERTIES:

A. Materials used for the manufacture of PE pipe and fittings shall meet the following physical property requirements:

Property	Unit	Test Procedure	Value
Material Designation	-	PPI/ASTM	-
PPI Material Listing	-	PPI TR-4	PE 4710
Cell Classification	-	ASTM D3350	445474C
Density	g/cm3	ASTM D1505	>0.941
Melt Index [E]	g/10 min	ASTM D1238	<0.15
Flexural Modulus	psi	ASTM D790	110,000 and <160,000 3000 to 3500
Tensile Strength	psi	ASTM D638	>100
PENT	hours	ASTM F1473	1600 at 23^{O} C
HDB	psi	ASTM D2837	2 to 3
UV Stabilizer [C]	% Carbon Black	ASTM D1603	
	psi		110,000
Elastic Modulus	^{o}F	ASTM D638	<-180
Brittleness Temperature	^{o}F	ASTM D746	255
Vicat Softening Temperature		ASTM D1525	
Thermal Expansion	in/in/ ^{o}F		8 x 10E-5
Hardness	Shore D	ASTM D696	64
Molecular Weight Category	-	ASTM D2240	Extra High
		-	

B. There shall be no evidence of splitting, cracking, or breaking when the pipe is tested.

C. Ring Stiffness Constant (RSC) values for the pipe shall be 90 percent of the nominal.

D. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density, and other physical properties.

E. Clean rework or recycled material generated by the manufacturer's own production may be used so long as the pipe or fittings produced meet all the requirements of this Section.

2.2 PIPE AND FITTINGS

A. Dimensions:
   1. Pipe Dimensions: The nominal inside diameter of the pipe shall be true to the specified pipe size in accordance with ASTM D2513. Standard laying lengths shall be 40 feet $\pm$ 2 inches.
   2. Fitting Dimensions: Fittings such as couplings, wyes, tees, adaptors, etc. for use in laying pipe shall have standard dimensions that conform to ASTM D3261.
   3. Pipe shall be SDR-17. Fitting shall be SDR-11 or SDR-17.

B. Pipe and fittings shall be produced from identical materials meeting the requirements of this Section. Special or custom fittings may be exempted from this requirement.

C. Pipe and fittings shall be pressure rated to meet the service pressure requirements specified. Fittings shall be fully pressure rated to at least the same service pressure rating as the joining pipe.

D. Molded fittings shall meet the requirements of ASTM D3261 and this Section. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the diameter and wall thickness specifications of the mating system pipe. Fitting markings shall include a production code that identifies the location and date of manufacture. Upon request, the manufacturer shall provide an explanation of his production code.

E. Marking:
   1. Each standard and random length of pipe and fitting shall be clearly marked with the following information:
      a. Manufacturer's Name or Trademark;
      b. ASTM Standard Designation;
      c. Nominal Pipe Size;
      d. Class & Profile Number;
      e. Production Code, including Extrusion Date, and Lot or Batch Number; and
      f. Standard Dimension Ratio.

F. The pipe and fitting manufacturer shall certify that samples of production pipe have undergone stress regression testing, evaluation, and validation in accordance with ASTM D2837 and PPI TR-3. Under these procedures, the minimum hydrostatic design basis shall be certified by the pipe and fitting manufacturer to be 1600 psi at 73.4° F and 800 psi at 140° F.

G. Material shall be listed in the name of the pipe and fitting manufacturer by the Plastics Pipe Institute (PPI) in PPI TR-4 with the following Standard Grade ratings:

		73.4° F	140° F
1.	Hydrostatic Design Basis (HDB)	1,600 psi	800 psi
2.	Hydrostatic Design Stress (HDS)	800 psi	400 psi

H. PPI material listing in the name of the resin supplier is not acceptable in meeting this requirement.

I. Certification:
   1. As the basis of the acceptance of the material, the manufacturer shall furnish a certificate of conformance of this Section upon request. When prior agreement is being made in writing between CONTRACTOR and the

manufacturer, the manufacturer shall furnish other conformance certification in the form of affidavit of conformance, test results, or copies of test reports.

2.3 GASKETS AND HARDWARE

A. All gaskets shall be Viton or other similar materials approved by OWNER. Joint hardware shall be Type 304 stainless steel.

2.4 FITTINGS

A. Fittings shall be manufactured from polyethylene compound having cell classification equal to or exceeding compound used in pipe to ensure compatibility of polyethylene resins.

B. Dimensions of fittings conforming to standard dimensions and tolerances in accordance with ASTMD 3261.

C. Fittings shall have the same or higher pressure rating as pipe.

D. Markings:
1. Manufacturer's name or trademark.
2. Nominal size.
3. Type of plastic pipe (i.e., PE 4710).
4. Standard dimension ratio.
5. Extrusion date, lot number or batch number.

E. The Drawings do not show all fittings that may be required. Provide all fittings required for a complete installation.

PART 3 – EXECUTION

3.1 FIELD QUALITY CONTROL

A. Pipe may be rejected for failure to conform to any of the following:
1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 inches in length at either end of pipe, which may be cut off and discarded. All pipes within one shipment shall be rejected if defects exist in more than five percent of shipment or delivery.
2. Cracks sufficient to impair strength, durability, or service ability of pipe.
3. Defects indicating improper proportioning, mixing, and molding.
4. Damaged ends, where such damage prevents making satisfactory joint.
5. Damage due to handling or installation. Scratches and gouges exceeding five percent of the wall thickness shall be considered excessive, and may be rejected by ENGINEER or OWNER.

B. Acceptance of fittings, stubs, or other specially fabricated pipe sections shall be based on visual inspection by ENGINEER and documentation of conformance to this Section.

C. Prior to backfilling trench CONTRACTOR shall obtain as-built top of pipe coordinates and elevations at grade changes, terminations, fittings, and at least every 50 feet along the pipe.

3.2 INSTALLATION

A. Trench, backfill, and compact in accordance with Specification Section 02565.

B. Heat Fusion of Pipe:

1. Weld pipe in accordance with manufacturer's recommendation for butt fusion methods. The pipe manufacturer shall certify fusion machine operators.
2. Butt fusion equipment for joining procedures shall be capable of meeting conditions recommended by pipe manufacturer including, but not limited to, temperature, alignment, and fusion pressures.
3. Branch saddle fusions shall be joined in accordance with manufacturer's recommendations and procedures. Branch saddle fusion equipment shall be of a size to facilitate saddle fusion within the trench.
4. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations. Solvents shall not be used unless approved by OWNER.
5. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.
6. Do not subject pipe to strains that will overstress or buckle pipe or impose excessive stress on joints.
7. Before butt fusing pipe, observe inside of each pipe length for presence of dirt, sand, mud, shavings, and other debris or animals. Remove debris from pipe prior to fusing.
8. Cap open ends of fused pipe at end of each working day to prevent entry by animals, debris, or stormwater.
9. Use compatible fusion techniques when polyethylenes of different melt indexes are fused together. Refer to manufacturer's specifications for compatible fusion.

C. Flange Jointing:
1. Use on flanged pipe connection sections.
2. At a minimum convoluted stainless steel backup rings shall be used for joining HDPE pipes below grade, and epoxy-coated carbon steel backup flanges shall be used above grade, unless stainless steel is specified by OWNER.
3. Butt fuse fabricated flange adapters to pipe or use electrofusion couplings.
4. Observe the following precautions in connection of flange joints:

a. Use full-face gaskets only.
b. All fasteners and back-up rings shall be Type 18-8 or Type 304 stainless steel below grade, and zinc-plated steel above grade.
c. Align flanges or flange/valve connections to provide tight seal.
d. U.S. Standard round washers may be used on some flanges when in accordance with manufacturer's recommendations. Bolts shall be lubricated prior to installation.

5. Protect below grade bolts and flanges by covering with a 6-mil thick PE wrap. Duct tape wrap to HDPE pipe.
6. Electrofusion couplers, where used, shall be installed per manufacturer's specifications. The outside diameter of the HDPE pipe and face shall be prepared in accordance with manufacturer's recommendations prior to installing the coupler.

D. Pipe Placement:
1. Grade control equipment shall be of the type to accurately maintain design grades and slopes during installation of pipe.
2. Unless otherwise specifically stated, install pipe in accordance with manufacturer's recommendations.
3. Maximum lengths of fused pipe to be handled as one section shall not exceed 400 feet and shall be placed according to the manufacturer's recommendations as to pipe size, pipe SDR, and topography so as not to cause excessive gouging or surface abrasion. Pipe wall gouges deeper than 3/16-inch may be cause for rejection of the pipe.
4. Cap pipe sections longer than single joint (usually 40 feet) on both ends during placement except during fusing operations.
5. Remove dirt or debris from inside of pipe before backfilling.
6. Notify ENGINEER prior to installing pipe into trench and allow time for observation. CONTRACTOR shall correct irregularities identified during observation.
7. Complete connections within trench whenever possible to prevent overstressed connections.
8. Allow pipe sufficient time to adjust to trench temperature prior to testing, fusion welding, making segment connections, or backfilling activity.
9. To reduce branch saddle stress, install saddles at slope equal to and continuous with connecting pipe.
10. Install reducers adjacent to laterals and tees unless directed otherwise.
11. Place pipe system in trench allowing at least 12 in./100 ft. for thermal contraction and expansion.

3.2 PIPE TESTING

A. CONTRACTOR shall perform a pneumatic test of the non-perforated pipe and fittings, with the exception of the 50-feet of solid pipe installed in the horizontal collection trenches, after placement in the trench, in accordance with manufacturer's recommendations.

B. Pipes shall be pressure tested in presence of ENGINEER. Provide adequate notice to ENGINEER before performing test.

C. Pneumatic testing shall be performed as follows:
   1. The test period at the test pressure shall last no more than 10 minutes.
   2. Provide all necessary connections, bulkheads, flanges, bracing, and blocking, as well as all required test equipment.
   3. Test pressure gauge shall have a recommended range of 20 psig, with minor gradations no greater than 0.1 psig.
   4. Pipe to be tested shall be exposed in the trench, except bends, reduced pressure rated fittings and components, which shall be buried or restrained. Flange connections shall be visible to check for leaks.
   5. Test pressure shall be 10 psig.
   6. Acceptance
      a. Test shall be accepted if the pressure drop over 10 minutes is less than 5 percent of the pressure at the beginning of the test period.

D. Test Report
   1. ENGINEER shall prepare and submit to OWNER a test report using the attached forms for each pipe system tested. Include following information in test report.
      a. Date of test.
      b. Description and identification of pipe system tested.
      c. Type of test performed.
      d. Test fluid.
      e. Test pressure.
      f. Results of test.
      g. Type and location of leaks detected.
      h. Corrective action taken to repair leaks.
      i. Results of retesting.
      j. Name of person performing test.

[END OF SECTION 15210]

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ATTACHMENT 1 TO SECTION 15210
PIPE PRESSURE AIR TEST LOG

SANBORN HEAD		Project No.:	
		Project Name:	
		Project Location:	
		Weather:	
Contractor:		Test No.:	
CQA Personnel:		Person/Company Performing the Test:	
Date of Test:		Time of Test:	Finish:
Pipe Length: ~ ft.	Pipe Diameter: in.	Pipe Material:	Pipe SDR/Sch.:
Rated Working Pressure:		Test Pressure: psi	
Location/designation of pipe tested:			

t Time (min.)	T Pipe Temperature (ºC)	P_t Pressure Gauge Reading (psig)	P_c Pressure Drop (%)
0			
5			
10			
15			
30			
60			

Pass	Fail	Retest?	Yes	No

Description of leaks and repairs of retested pipe segments:

P_c = Percent Pressure Drop $\frac{P_o - P_t}{P_o} \times 100$

P_o = Initial Pressure Gauge Reading

P_t = Pressure Gauge Reading at Time *t*

Comments:

Signature:

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SECTION 15212

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Supply polyvinyl chloride (PVC) Schedule 80 pipe and fittings as shown on the Drawings.

1.2 SUBMITTALS

A. Submit to ENGINEER manufacturer's technical product data and installation instructions for PVC pipe and fittings.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. Pipe and fittings shall be manufactured from a PVC compound which meets the requirements of Cell Classification 12454-B PVC as outlined in ASTM D1784.

B. PVC pipe used in the construction of landfill gas extraction system shall meet the requirements of ASTM D1784 and ASTM D1785 for Schedule 80 PVC pipe.

C. PVC fittings used in the construction of landfill gas extraction system shall meet the requirements of ASTM D2464 and ASTM D2467.

D. All PVC cements shall meet the requirements of ASTM D2564 for solvent cemented PVC joints.

E. Clean rework or recycle material generated by the manufacturer's own production may be used so long as the pipe or fittings produced meet all the requirements of this Section.

F. Fittings shall be industrial, heavy duty, hub style.

G. Socket fittings shall be pressure rated the same as the corresponding size pipe prescribed by ASTM D1785. Threaded fittings shall be pressure rated to at least 50 percent of the rating for socket fittings.

2.2 FLANGES

A. Flanges shall be one piece solid design or two-part Van Stone type that use the tapered, serrated face and full face gasket technique for joining and are compatible with ANSI B16.5 Class 150 metal flanges.

B. Flanges shall be pressure rated at 150 psi for water service at 73°F, non-shock and have a minimum burst requirement of 3.3 times the rated pressure.

C. Bolts shall be zinc-plated ASTM A193, Grade B8M hex head, and nuts shall be zinc-plated ASTM A194, Grade 8M hex head.

D. Gaskets shall be ⅛-inch thick, full face Viton or other similar materials approved by OWNER.

PART 3 - EXECUTION

3.1 PVC PIPE HANDLING

A. PVC pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Derricks, ropes, or other suitable equipment shall be used for lowering the pipe into well borings. Pipe and pipe fittings shall not be dropped or dumped.

3.2 PVC PIPE INSTALLATION

A. PVC pipe installation shall conform to the requirements of this Section, the manufacturer's recommendations, and as outlined in ASTM D2774V.

3.3 JOINING OF PVC PIPES

A. Pipes shall be joined in accordance with ASTM D2855.

B. Pipe shall be inspected for cuts, scratches, or other damages prior to installation. Pipe with imperfections shall not be used.

C. Burrs, chips, etc., shall be removed from pipe interior and exterior.

D. Loose dirt and moisture shall be wiped from the interior and exterior of the pipe end and the interior of the fitting.

E. Pipe cuts shall be square and perpendicular to the center line of pipe.

F. A coating of CPS primer, as recommended by pipe supplier, shall be applied to the entire interior surface of the fitting socket, and to an equivalent area on the exterior of the pipe prior to applying solvent cement.

G. The solvent cement shall comply with the requirements of ASTM D2564 and shall be applied in strict accordance with manufacturer's specifications.

H. Pipe and pipe fittings shall be selected so that there will be as small a deviation as possible at the joints, and so that inverts present a smooth surface. Pipe and fittings that do not fit together to form a tight fitting shall be rejected.

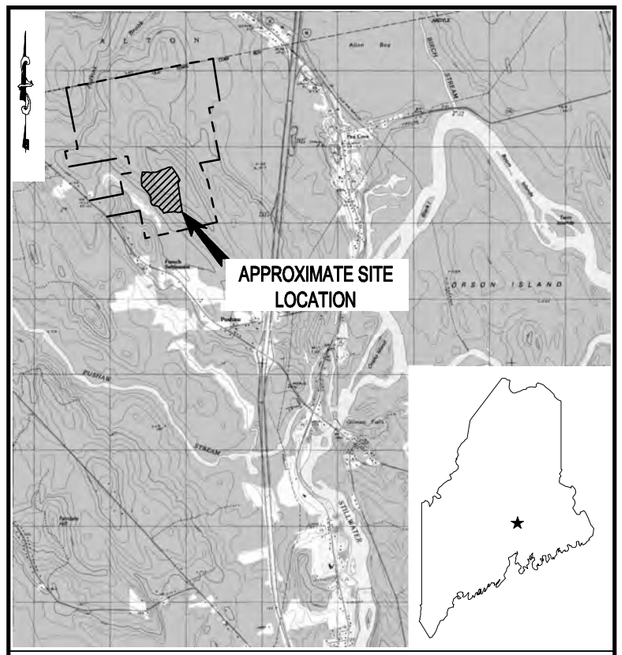
[END OF SECTION 15212]

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CELL 16 LANDFILL GAS SYSTEM EXPANSION DRAWINGS

JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE
MARCH 2024



FROM: USGS TOPOGRAPHIC MAP- OLD TOWN, MAINE (1988)

LOCUS PLAN
SCALE: 1"=1000'

SHEET INDEX

	SHEET 1	OVERALL SITE PLAN
⚠	SHEET 2	LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 1
⚠	SHEET 3	LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 2
⚠	SHEET 4	LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 3
⚠	SHEET 5	LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 4
⚠	SHEET 6	LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 5
⚠	SHEET 7	CROSS-SECTION
	SHEET 8-12	DETAILS

REVISION TABLE			
⚠	03/08/24	REVISED LOCATION OF THE TERMINATION OF	RLC
		PROPOSED 24"Ø HEADER.	
NO.	DATE	DESCRIPTION	BY



PREPARED FOR:

NEWSME LANDFILL OPERATIONS, LLC

JUNIPER RIDGE LANDFILL

OLD TOWN, MAINE

PREPARED BY:

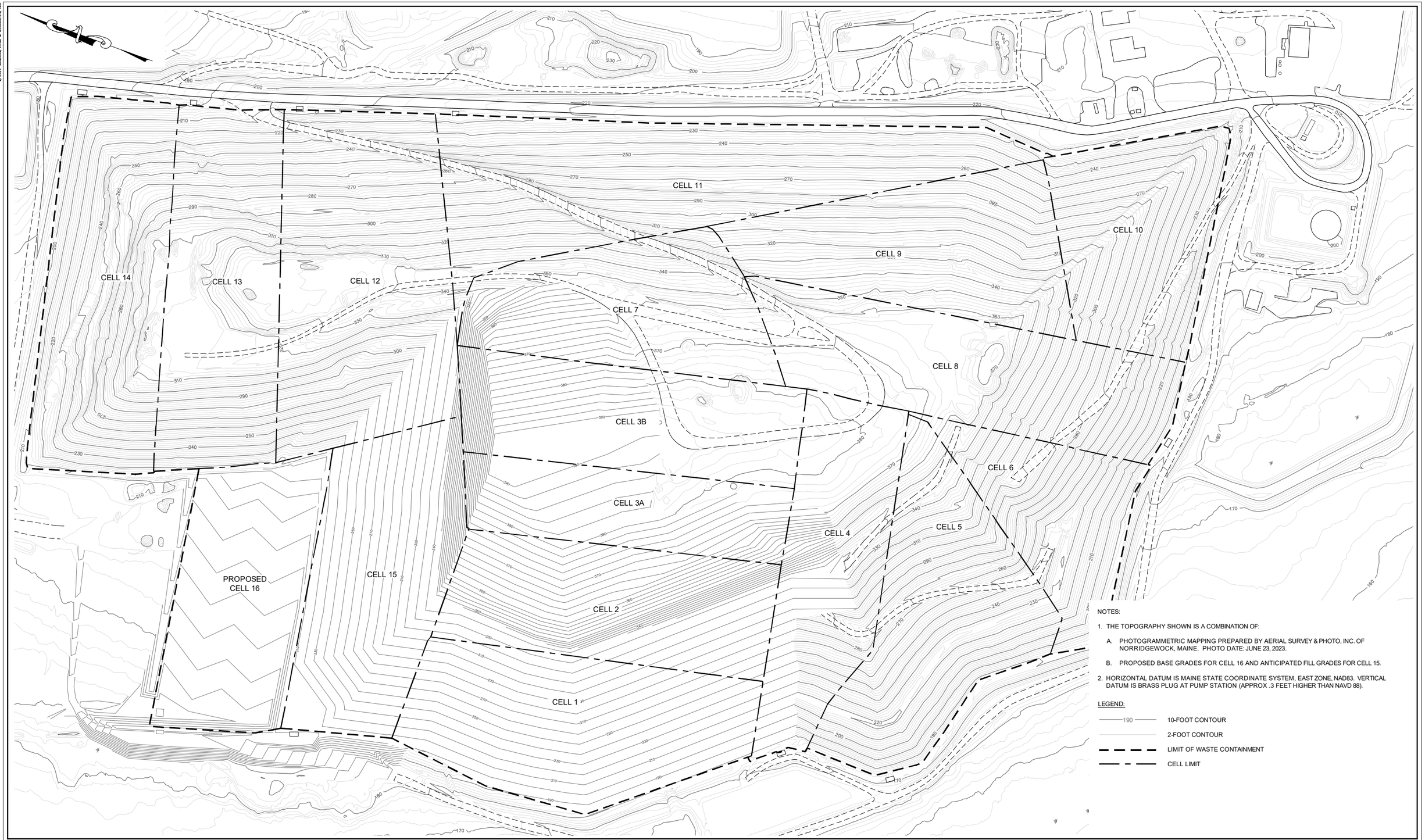
SANBORN HEAD

6 BEFORD FARMS DRIVE, SUITE 201, BEDFORD, NEW HAMPSHIRE 03110
(603) 229-1900 FAX (603) 229-1919

PROJ.#: 2536.40 "CELL 16 LANDFILL GAS SYSTEM EXPANSION DRAWINGS, JUNIPER RIDGE LANDFILL, OLD TOWN, MAINE," DATED MARCH 2024.

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NOTES:

1. THE TOPOGRAPHY SHOWN IS A COMBINATION OF:
   A. PHOTOGRAMMETRIC MAPPING PREPARED BY AERIAL SURVEY & PHOTO, INC. OF NORRIDGEWOCK, MAINE. PHOTO DATE: JUNE 23, 2023.
   B. PROPOSED BASE GRADES FOR CELL 16 AND ANTICIPATED FILL GRADES FOR CELL 15.
2. 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:

- 190 — 10-FOOT CONTOUR
- 2-FOOT CONTOUR
- LIMIT OF WASTE CONTAINMENT
- CELL LIMIT

SANBORN HEAD

GRAPHICAL SCALE
120' 60' 0' 120' 240'

STATE OF MAINE
RYAN L. CLAY
16411
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

OVERALL SITE PLAN

SHEET NUMBER: 1 OF 12

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NOTES:

1. REFER TO SHEET 1 FOR ADDITIONAL NOTES AND LEGEND.
2. PROPOSED GRADES FOR CELL 16 WERE PROVIDED ELECTRONICALLY BY SEVEE & MAHER, (SME) INC. OF CUMBERLAND, MAINE ON JANUARY 22, 2024.
3. ACTUAL LOCATIONS OF PROPOSED INFRASTRUCTURE MAY CHANGE BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
4. SOLID LANDFILL GAS CONVEYANCE PIPES LOCATED WITHIN 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.
5. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR-11 OR SDR-17.
6. 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.

LEGEND:

EXISTING		PROPOSED
190	10-FOOT CONTOUR	190
	2-FOOT CONTOUR	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
	LANDFILL GAS CONVEYANCE PIPE	
	LANDFILL GAS COLLECTION TRENCH (PERFORATED PIPE)	
GW-23R	LANDFILL GAS EXTRACTION WELL	
	COLLECTION TRENCH WELLHEAD	GCT-1601
	COLLECTION TRENCH TERMINATION	
	PIPE END CAP	
	LEACHATE COLLECTION PIPE CLEANOUT	
	VERTICAL RISER	
	TEE PIPE CONNECTION STUB	
HP	HIGH POINT	HP
	ROAD CROSSING CULVERT	
	ISOLATION VALVE	

CELL 14
CELL 13
CELL 12
CELL 7
CELL 3B
CELL 3A
CELL 15
LFG INFRASTRUCTURE SHOWN IN CELL 15 INCLUDES ANTICIPATED INFRASTRUCTURE THAT MAY NOT BE CONSTRUCTED YET
CELL 2
CELL 1
PROPOSED CELL 16

TEMPORARY GAS COLLECTION TRENCH TERMINATION (3/11)
TEMPORARY WELLHEAD (2/11) GCT-1607S
COLLECTION TRENCH TERMINATION (TYP) (5/9)
TEMPORARY PIPE TERMINATIONS (12"Ø) (2/9)
CONDENSATE TRAP CT-16 (1/12)
ANCHOR TRENCH CROSSING (2/12)
BLIND FLANGE (7/10)
CONNECT TO EXISTING 24"Ø BLIND FLANGE N 479399 E 925249 ELEV. = 191.08'
45° ELBOWS (2)
8"Ø DRAIN
24"Ø
GCT-1620
GCT-1601
GCT-1602
GCT-1603
CT-16
CT-15A
CT-15B
2% MIN
50' MIN.
100' (TYP)

SANBORN HEAD

GRAPHICAL SCALE
80' 40' 0' 80' 160'

STATE OF MAINE
RYAN L. CLAY
16411
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
1	03/08/24	REVISED LOCATION OF THE TERMINATION OF PROPOSED 24"ø HEADER.	RLC

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 1

PROJECT NUMBER: 2536.40
SHEET NUMBER: 2 OF 12

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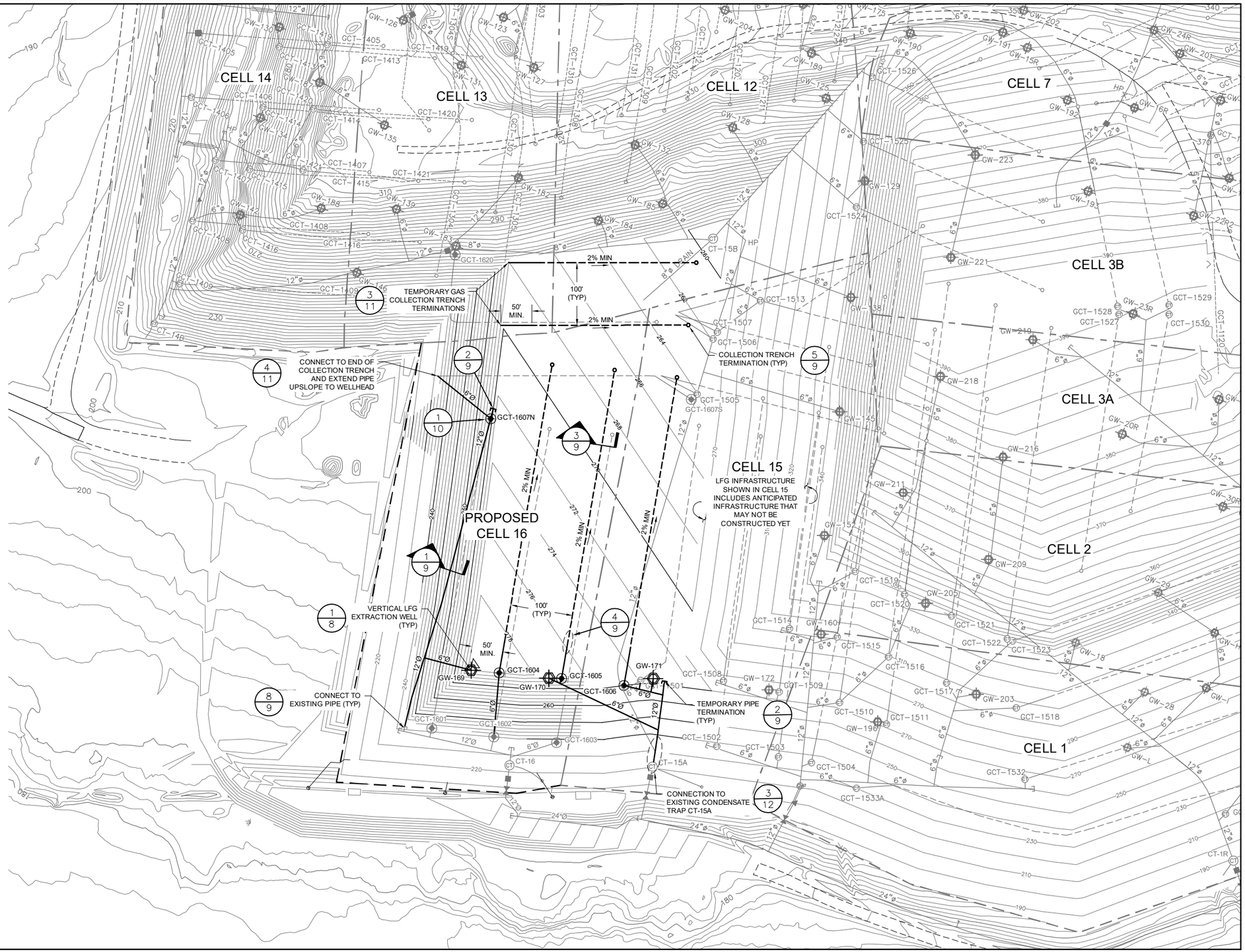
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NOTES:

1. REFER TO SHEET 1 FOR ADDITIONAL NOTES AND LEGEND.
2. PROPOSED GRADES FOR CELL 16 WERE PROVIDED ELECTRONICALLY BY SEVEE & MAHER, (SME) INC. OF CUMBERLAND, MAINE ON JANUARY 22, 2024.
3. ACTUAL LOCATIONS OF PROPOSED INFRASTRUCTURE MAY CHANGE BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
4. SOLID LANDFILL GAS CONVEYANCE PIPES LOCATED WITHIN 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.
5. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR-11 OR SDR-17.
6. 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.

LEGEND:

EXISTING		PROPOSED
190	10-FOOT CONTOUR	190
	2-FOOT CONTOUR	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
	LANDFILL GAS CONVEYANCE PIPE	
	LANDFILL GAS COLLECTION TRENCH (PERFORATED PIPE)	
GW-23R	LANDFILL GAS EXTRACTION WELL	GW-169
	COLLECTION TRENCH WELLHEAD	GCT-1604
	COLLECTION TRENCH TERMINATION	
	PIPE END CAP	
	LEACHATE COLLECTION PIPE CLEANOUT	
	VERTICAL RISER	
	TEE PIPE CONNECTION STUB	
HP	HIGH POINT	
	ROAD CROSSING CULVERT	
	ISOLATION VALVE	



SANBORN HEAD

GRAPHICAL SCALE
80' 40' 0' 80' 160'

STATE OF MAINE — RYAN L. CLAY — 16411 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
1	03/08/24	REVISED LOCATION OF THE TERMINATION OF PROPOSED 24"ø HEADER.	RLC

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 2

PROJECT NUMBER: 2536.40

SHEET NUMBER: 3 OF 12

FILE: P:\2500s\2536.40\Graphics\Final\CAD\Cell 16 LFG Design\02 - CP - Development Plans -Rev 1.dwg
LAYOUT: 03 - STAGE 2
USER: ohg
PLOT DATE: 3-8-24 - 3:49 PM

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NOTES:

1. REFER TO SHEET 1 FOR ADDITIONAL NOTES AND LEGEND.
2. PROPOSED GRADES FOR CELL 16 WERE PROVIDED ELECTRONICALLY BY SEVEE & MAHER, (SME) INC. OF CUMBERLAND, MAINE ON JANUARY 22, 2024.
3. ACTUAL LOCATIONS OF PROPOSED INFRASTRUCTURE MAY CHANGE BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
4. SOLID LANDFILL GAS CONVEYANCE PIPES LOCATED WITHIN 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.
5. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR-11 OR SDR-17.
6. 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.

LEGEND:

EXISTING		PROPOSED
190	10-FOOT CONTOUR	190
	2-FOOT CONTOUR	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
	LANDFILL GAS CONVEYANCE PIPE	
	LANDFILL GAS COLLECTION TRENCH (PERFORATED PIPE)	
GW-23R	LANDFILL GAS EXTRACTION WELL	GW-162
	COLLECTION TRENCH WELLHEAD	GCT-1611
	COLLECTION TRENCH TERMINATION	
	PIPE END CAP	
	LEACHATE COLLECTION PIPE CLEANOUT	
	VERTICAL RISER	
	TEE PIPE CONNECTION STUB	
HP	HIGH POINT	
	ROAD CROSSING CULVERT	
	ISOLATION VALVE	

CELL 14
CELL 13
CELL 12
CELL 7
CELL 3B
CELL 3A
CELL 15
CELL 2
CELL 1
PROPOSED CELL 16

CONNECT TO VACUUM SOURCE AT EXISTING WELLHEAD (8/10)
TEMPORARY PIPE TERMINATION (TYP) (2/9)
CUT AND CAP EXISTING 8"Ø PIPE (5/11)
COLLECTION TRENCH TERMINATION (TYP) (5/9)
CONNECT TO END OF COLLECTION TRENCH AND EXTEND PIPE UPSLOPE TO WELLHEAD (4/11)
REMOTE WELLHEAD (2/11)
CONVERT TO REMOTE WELL (1/11)
CONNECT TO EXISTING PIPE (TYP) (8/9)
VERTICAL LFG EXTRACTION WELL (TYP) (1/8)
2% MIN
100' (TYP)
50' MIN.

GCT-1614, GCT-1613, GCT-1612, GCT-1611, GCT-1607N, GCT-1609, GCT-1608, GCT-1610, GW-162, GW-207, GW-161, GW-138R, GW-145R, GW-223, GW-221, GW-219, GW-218, GW-216, GW-211, GW-209, GW-205, GW-203, GW-160, GW-172, GW-169, GW-170, GW-171, GW-196, CT-16, CT-15A, CT-1R

GRAPHICAL SCALE
80' 40' 0' 80' 160'

SANBORN HEAD

STATE OF MAINE — RYAN L CLAY 16411 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
1	03/08/24	REVISED LOCATION OF THE TERMINATION OF PROPOSED 24"ø HEADER.	RLC

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 3

SHEET NUMBER: 4 OF 12

FILE: P:\2500s\2536.40\Graphics\FinalCAD\Cell 16 LFG Design\02 - 07 - Development Plans - Rev 1.dwg
LAST SAVED BY: rclay
USER: rclay
PLOT DATE: 3-8-24 4:47PM

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NOTES:

1. REFER TO SHEET 1 FOR ADDITIONAL NOTES AND LEGEND.
2. PROPOSED GRADES FOR CELL 16 WERE PROVIDED ELECTRONICALLY BY SEVEE & MAHER, (SME) INC. OF CUMBERLAND, MAINE ON JANUARY 22, 2024.
3. ACTUAL LOCATIONS OF PROPOSED INFRASTRUCTURE MAY CHANGE BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
4. SOLID LANDFILL GAS CONVEYANCE PIPES LOCATED WITHIN 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.
5. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR-11 OR SDR-17.
6. 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.

LEGEND:

EXISTING		PROPOSED
190	10-FOOT CONTOUR	190
	2-FOOT CONTOUR	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
	LANDFILL GAS CONVEYANCE PIPE	
	LANDFILL GAS COLLECTION TRENCH (PERFORATED PIPE)	
GW-23R	LANDFILL GAS EXTRACTION WELL	GW-208
	COLLECTION TRENCH WELLHEAD	GCT-1615
	COLLECTION TRENCH TERMINATION	
	PIPE END CAP	
	LEACHATE COLLECTION PIPE CLEANOUT	
	VERTICAL RISER	
	TEE PIPE CONNECTION STUB	
HP	HIGH POINT	
	ROAD CROSSING CULVERT	
	ISOLATION VALVE	



SANBORN HEAD

GRAPHICAL SCALE
80' 40' 0' 80' 160'

STATE OF MAINE — RYAN L. CLAY 16411 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
1	03/08/24	REVISED LOCATION OF THE TERMINATION OF PROPOSED 24"ø HEADER.	RLC

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 4

SHEET NUMBER: 5 OF 12

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USER: rlay
PLOT DATE: 3-8-24 8:49 AM

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NOTES:

1. REFER TO SHEET 1 FOR ADDITIONAL NOTES AND LEGEND.
2. PROPOSED GRADES FOR CELL 16 WERE PROVIDED ELECTRONICALLY BY SEVEE & MAHER, (SME) INC. OF CUMBERLAND, MAINE ON JANUARY 22, 2024.
3. ACTUAL LOCATIONS OF PROPOSED INFRASTRUCTURE MAY CHANGE BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
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6. 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.

LEGEND:

EXISTING		PROPOSED
190	10-FOOT CONTOUR	190
	2-FOOT CONTOUR	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
	LANDFILL GAS CONVEYANCE PIPE	
	LANDFILL GAS COLLECTION TRENCH (PERFORATED PIPE)	
GW-23R	LANDFILL GAS EXTRACTION WELL	GW-156
	COLLECTION TRENCH WELLHEAD	
	COLLECTION TRENCH TERMINATION	
	PIPE END CAP	
	LEACHATE COLLECTION PIPE CLEANOUT	
	VERTICAL RISER	
	TEE PIPE CONNECTION STUB	
HP	HIGH POINT	HP
	ROAD CROSSING CULVERT	
	ISOLATION VALVE	

CELL 14
CELL 13
CELL 12
CELL 7
CELL 3B
CELL 3A
CELL 15
CELL 2
CELL 1
PROPOSED CELL 16

CONNECT TO EXISTING PIPE (TYP)
VERTICAL LFG EXTRACTION WELL (TYP)
CONNECT TO EXISTING PIPE (TYP)

SANBORN HEAD

GRAPHICAL SCALE
80' 40' 0' 80' 160'

STATE OF MAINE
RYAN L. CLAY
16411
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
1	03/08/24	REVISED LOCATION OF THE TERMINATION OF PROPOSED 24"ø HEADER.	RLC

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

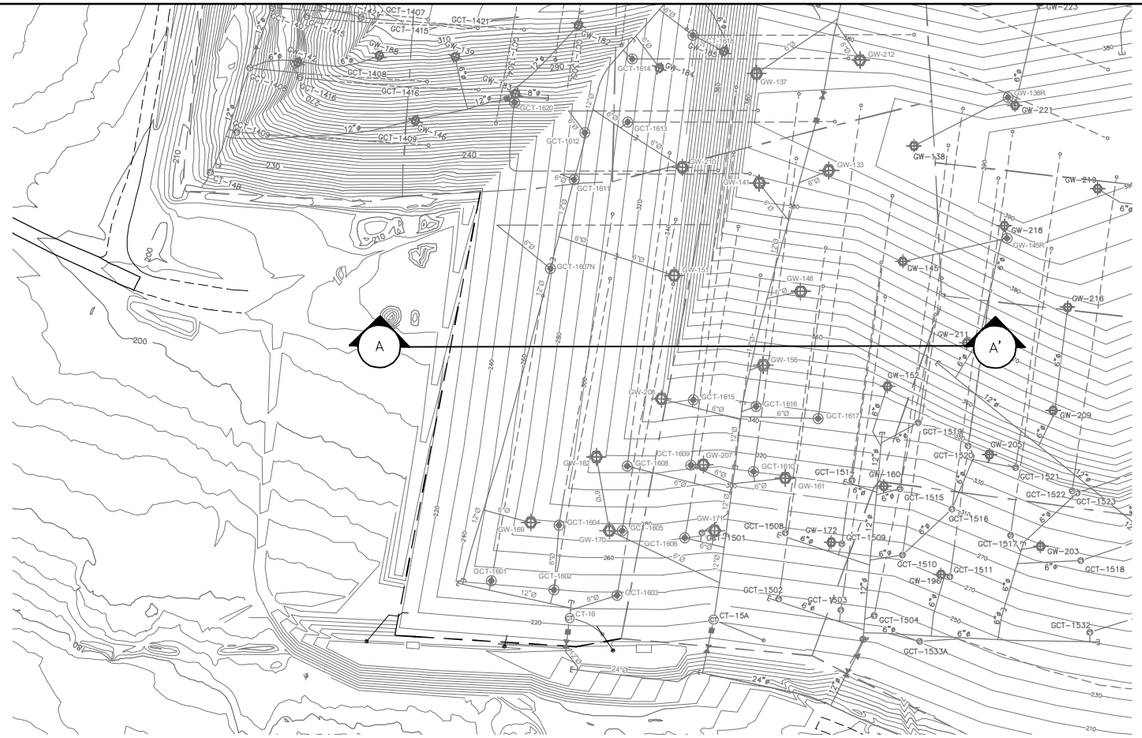
LFG INFRASTRUCTURE DEVELOPMENT PLAN - STAGE 5

SHEET NUMBER: 6 OF 12

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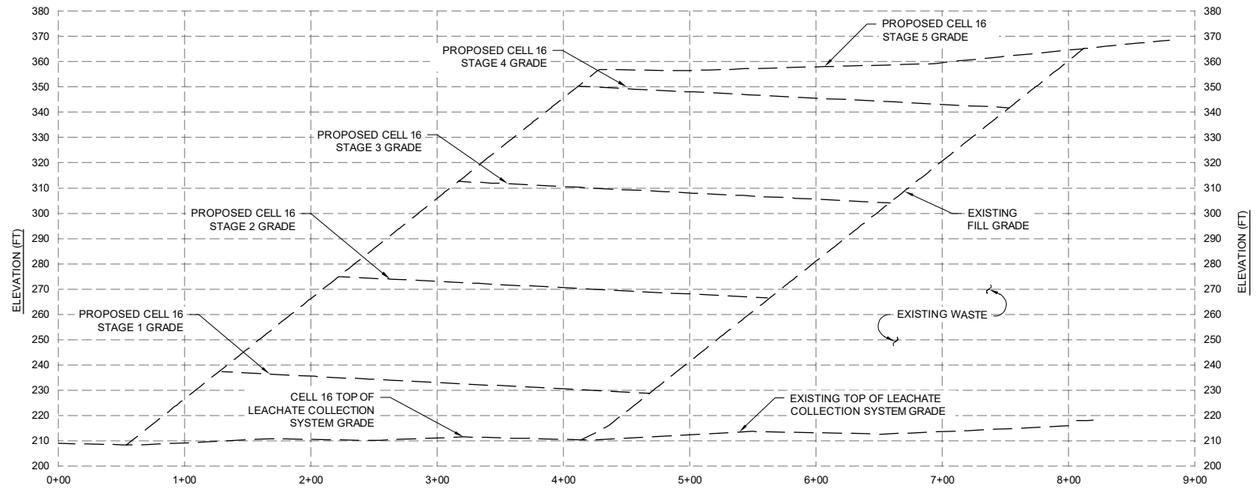
GRAPHICAL SCALE

120' 60' 0' 120' 240'

REFERENCE PLAN

NOTES:

1. THE CROSS SECTION SHOWN ON THIS SHEET ILLUSTRATES THE ANTICIPATED FILLING OF CELL 16 AND IS PROVIDED FOR REFERENCE ONLY.
2. REFER TO SHEET 1 FOR ADDITIONAL NOTES AND LEGEND.



VERTICAL SCALE

30.0' 15.0' 0' 30.0' 60.0'

60' 30' 0' 60' 120'

HORIZONTAL SCALE

STATION (FT)

SECTION A-A'

SANBORN HEAD

SCALE: AS NOTED

STATE OF MAINE RYAN L. CLAY 16411 LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY
1	03/08/24	REVISED LOCATION OF THE TERMINATION OF PROPOSED 24"ø HEADER.	RLC

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: O. HERNANDEZ / R. CLAY
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

CROSS-SECTION

PROJECT NUMBER: 2536.40

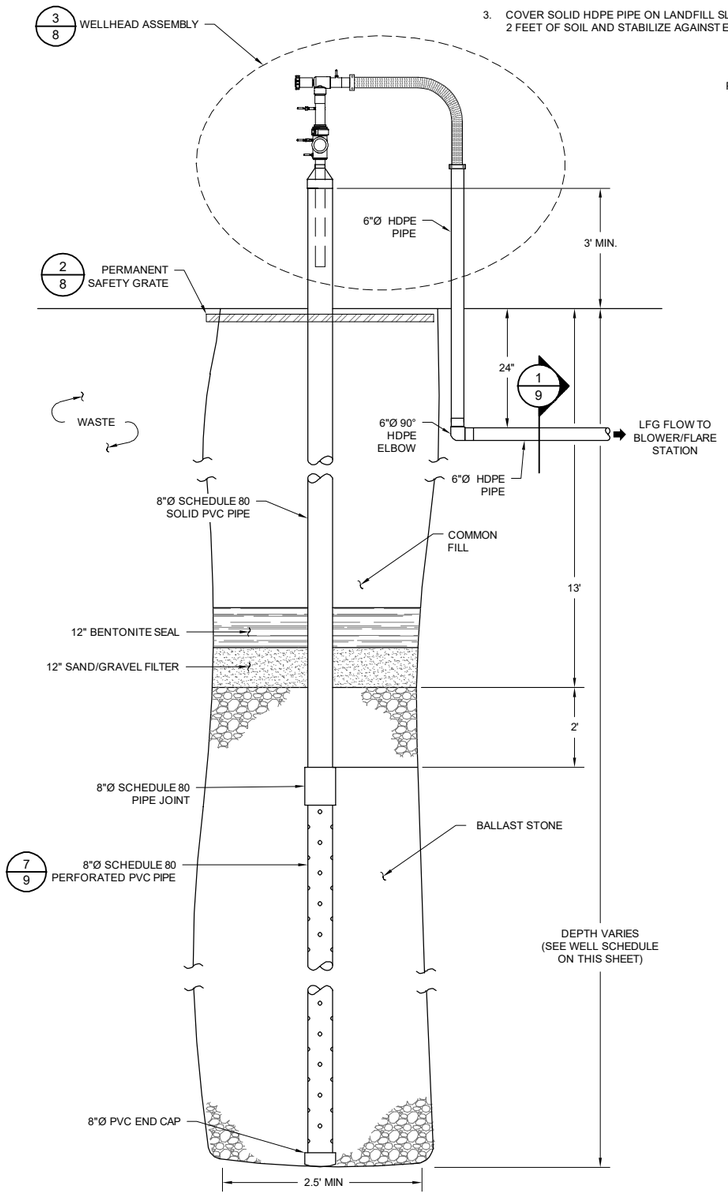
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PLOT DATE: 3-8-24 - 3:44 PM

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NOTES:

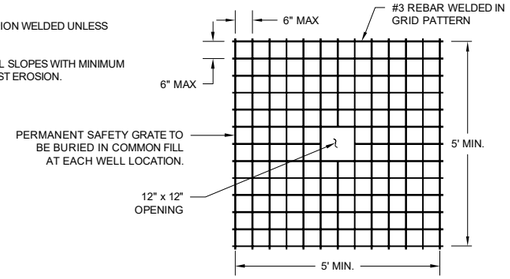
1. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR 11 OR SDR 17.
2. SOLID HDPE PIPE SHALL BE BUTT-FUSION WELDED UNLESS OTHERWISE INDICATED.
3. COVER SOLID HDPE PIPE ON LANDFILL SLOPES WITH MINIMUM 2 FEET OF SOIL AND STABILIZE AGAINST EROSION.



LFG EXTRACTION WELL DETAIL

1

NOT TO SCALE



PERMANENT SAFETY GRATE

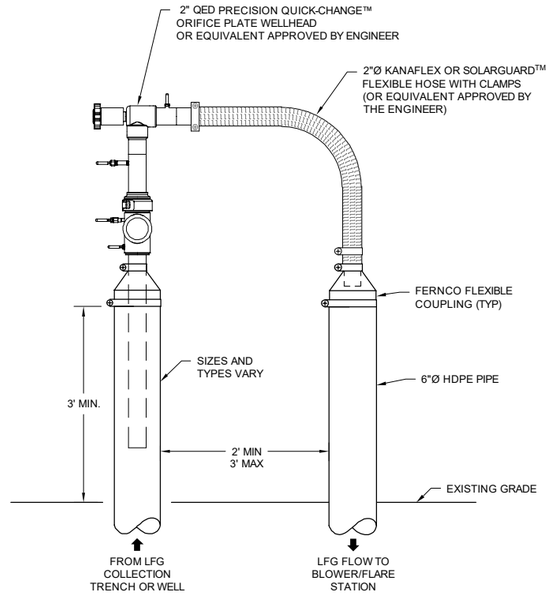
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NOT TO SCALE

WELL SCHEDULE									
WELL DESIGNATION	NORTHING	EASTING	BOTTOM OF WASTE (FT)	TOP OF EXISTING WASTE (FT)	TOTAL WELL DEPTH (FT)	BOTTOM OF WELL SCREEN (FT)	TOP OF WELL SCREEN (FT)	SCREEN LENGTH (FT)	TOP OF CASING ELEV. (FT)
GW-133	479475.0	926067.6	221.0	384.7	148.7	236.0	369.7	133.7	387.7
GW-137	479635.0	926172.9	217.0	383.3	151.2	232.0	368.3	136.2	386.3
GW-141	479571.8	926011.5	220.8	381.5	145.7	235.8	366.5	130.7	384.5
GW-148	479451.5	925872.6	215.6	366.8	136.2	230.6	351.8	121.2	369.8
GW-151	479648.4	925828.1	213.3	347.5	119.2	228.3	332.5	104.2	350.5
GW-156	479467.3	925742.9	212.9	354.5	126.6	227.9	339.5	111.6	357.5
GW-161	479373.6	925586.7	208.1	308.8	85.7	223.1	293.8	70.7	311.8
GW-162	479665.9	925516.0	207.5	314.1	91.7	222.5	299.1	76.7	317.1
GW-169	479728.3	925383.0	203.9	278.2	59.3	218.9	263.2	44.3	281.2
GW-170	479606.9	925413.5	204.4	276.0	56.6	219.4	261.0	41.6	279.0
GW-171	479450.1	925470.3	206.9	272.7	50.8	221.9	257.7	35.8	275.7
GW-207	479502.6	925562.3	208.2	311.8	88.5	223.2	296.8	73.5	314.8
GW-208	479600.7	925637.5	208.6	349.9	126.3	223.6	334.9	111.3	352.9
GW-210	479695.0	925993.2	220.1	343.9	108.9	235.1	328.9	93.9	346.9
GW-212	479488.4	926248.7	219.1	382.4	148.3	234.1	367.4	133.3	385.4

WELL SCHEDULE NOTES:

1. DRILLING SHALL NOT COMMENCE UNTIL ENGINEER IS PROVIDED AS-BUILT LINER SYSTEM GRADES FOR CELL 16 AND IS GIVEN THE OPPORTUNITY TO UPDATE THE WELL SCHEDULE ACCORDINGLY.
2. LFG EXTRACTION WELLS SHALL BE INSTALLED WITHIN ONE FOOT OF LISTED LOCATIONS AND TO THE NEAREST FOOT IN DEPTH.
3. A TEMPORARY BENCHMARK WITH GROUND SURFACE ELEVATION SHALL BE ESTABLISHED AT EACH WELL PRIOR TO DRILLING.
4. 15 FEET OF SOLID RISER IS TO BE PROVIDED BELOW INTERMEDIATE COVER GRADES. THE INTENT IS TO PROVIDE 3 FEET OF STICK UP ABOVE FILL GRADES.
5. BOTTOM OF WELL IS SET 15 FEET ABOVE THE TOP OF THE LEACHATE COLLECTION SYSTEM.



WELLHEAD NOTES:

A. WELLHEAD SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTION MANUAL. INSTRUCTIONS SHALL BE THOROUGHLY READ BEFORE ATTEMPTING ASSEMBLY AND INSTALLATION OF WELLHEAD.

B. WELLHEAD AND FLOW MEASUREMENT TUBE ASSEMBLY SHALL BE COMPATIBLE WITH LANDTEC GEM-2000 AND GEM-5000 LANDFILL GAS MONITORS.

C. FOR FLEXIBLE CONNECTIONS TO PIPE, USE "IPS WELD-ON 795" PLASTIC PIPE CEMENT OR EQUIVALENT APPROVED BY ENGINEER.

D. WARNING: DO NOT CUT THE FLOW MEASUREMENT TUBE ASSEMBLY. FAILURE TO HEED THIS WARNING WILL RESULT IN A DAMAGED OR INOPERATIVE WELLHEAD AND VOID THE WARRANTY. SUCH DAMAGE WOULD REQUIRE REPLACEMENT OF THE WELLHEAD.

E. ALLOW SUFFICIENT SLACK IN FLEX HOSE FOR PIPE EXPANSION AND CONTRACTION; AN EXTRA 8 TO 12 INCHES IS RECOMMENDED.

WELLHEAD ASSEMBLY

3

NOT TO SCALE

SANBORN HEAD

SCALE AS NOTED

STATE OF MAINE RYAN L. CLAY 16411 LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY

DRAWN BY: Z. SAGENDORF
DESIGNED BY: Z. SAGENDORF
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.40

DETAILS

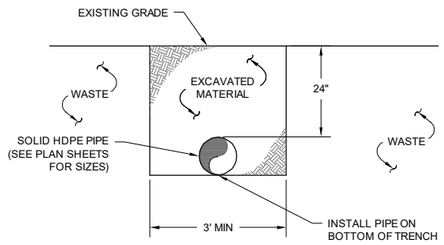
SHEET NUMBER: 8 OF 12

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LAYOUT: 8 of 12 - Details
LTB/ LE - BR A. Baldwin
PLOT DATE: 3424

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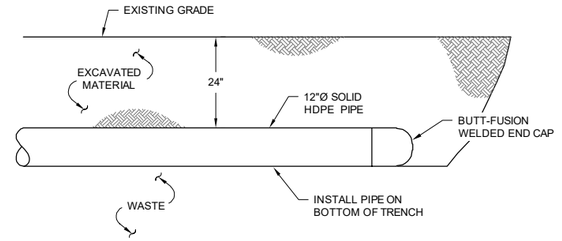
NOTES:

1. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR 11 OR SDR 17.
2. SOLID HDPE PIPE SHALL BE BUTT-FUSION WELDED UNLESS OTHERWISE INDICATED.
3. COVER SOLID HDPE PIPE ON LANDFILL SLOPES WITH MINIMUM 2 FEET OF SOIL AND STABILIZE AGAINST EROSION.



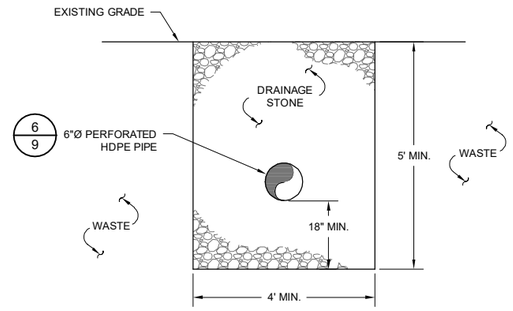
SOLID PIPE TRENCH (IN WASTE)

1 — NOT TO SCALE



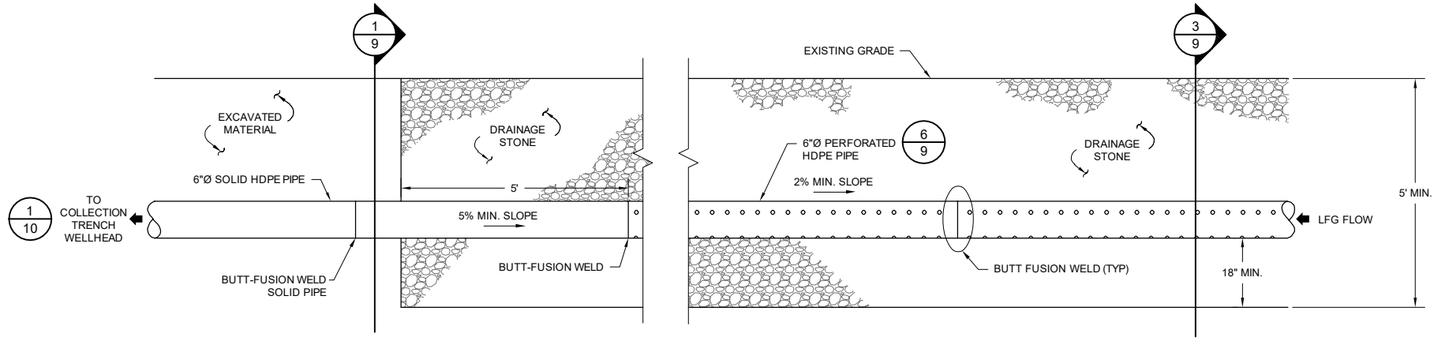
TEMPORARY SOLID PIPE TERMINATION

2 — NOT TO SCALE



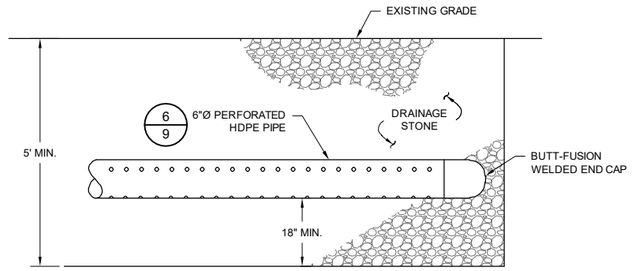
LFG COLLECTION TRENCH

3 — NOT TO SCALE



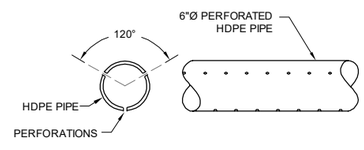
LFG COLLECTION TRENCH TRANSITION

4 — NOT TO SCALE



COLLECTION TRENCH TERMINATION

5 — NOT TO SCALE

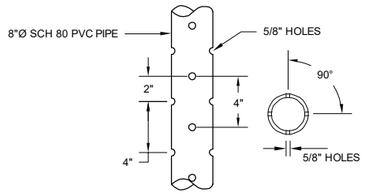


NOTE:

1. HOLES SHALL BE 1/2"Ø DRILLED HOLES SPACED 12" APART ALONG THE LENGTH OF THE PIPE OR APPROVED EQUIVALENT BY OWNER.

PERFORATED HDPE PIPE (GAS COLLECTION TRENCHES)

6 — NOT TO SCALE

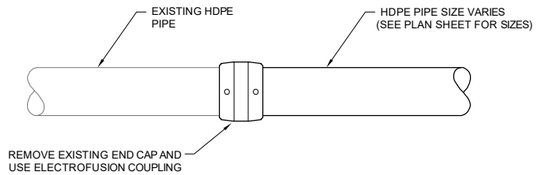


NOTES:

1. PERFORATIONS SPACED 90° APART HORIZONTALLY.
2. PERFORATIONS SPACED 4" APART VERTICALLY.
3. 90° AND 270° ROWS STAGGERED 2" BELOW 0° AND 180° ROWS.

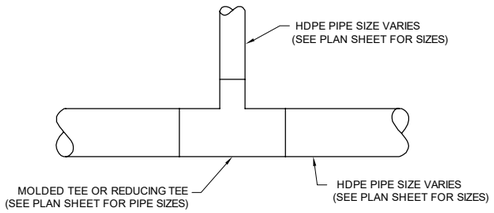
PERFORATED PVC PIPE (LFG EXTRACTION WELLS)

7 — NOT TO SCALE



CONNECTION TO EXISTING CONVEYANCE PIPE

8 — NOT TO SCALE



PLAN VIEW

"TEE" INSTALLATION

9 — NOT TO SCALE

SANBORN HEAD

SCALE AS NOTED

STATE OF MAINE — RYAN L CLAY — 16411 — LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY

DRAWN BY: Z. SAGENDORF
DESIGNED BY: Z. SAGENDORF
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

DETAILS

PROJECT NUMBER: 2536.40

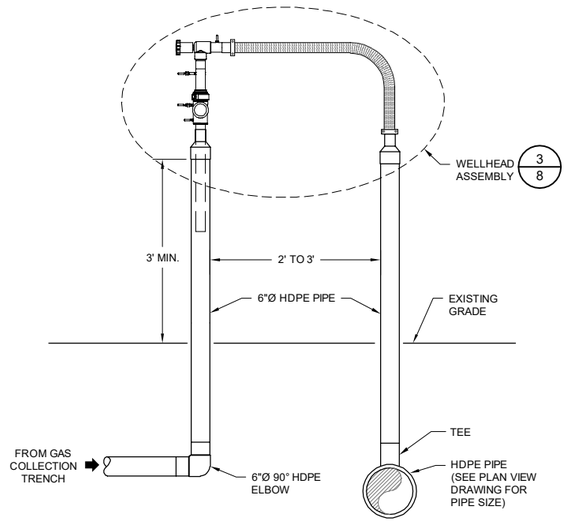
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CREATED: Brian.Rabassallo
PLOT DATE: 3/4/24

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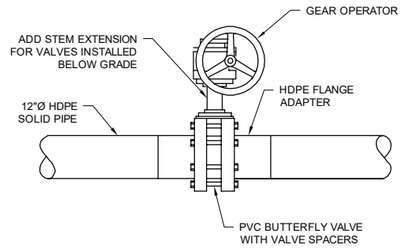
NOTES:

1. HDPE PIPE SHALL BE SDR 17. FITTINGS SHALL BE SDR 11 OR SDR 17.
2. SOLID HDPE PIPE SHALL BE BUTT-FUSION WELDED UNLESS OTHERWISE INDICATED.
3. COVER SOLID HDPE PIPE ON LANDFILL SLOPES WITH MINIMUM 2 FEET OF SOIL AND STABILIZE AGAINST EROSION.



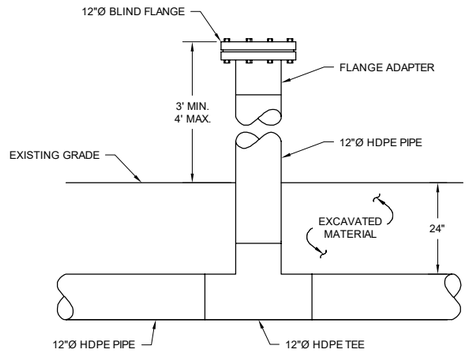
COLLECTION TRENCH WELLHEAD

1 NOT TO SCALE



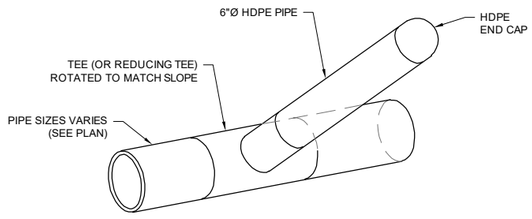
ISOLATION VALVE

2 NOT TO SCALE



VERTICAL RISER

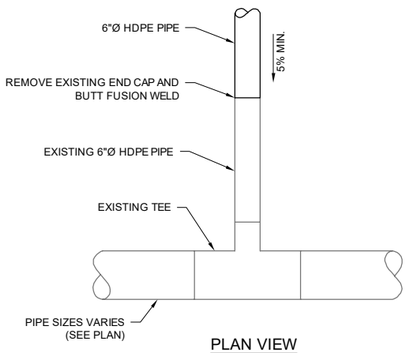
3 NOT TO SCALE



ISOMETRIC VIEW

6"Ø PIPE STUB

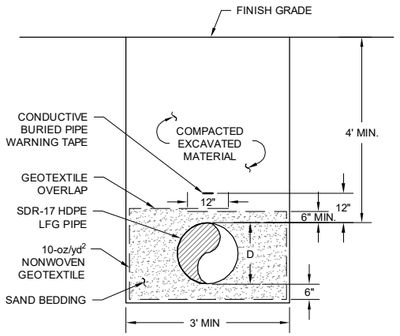
4 NOT TO SCALE



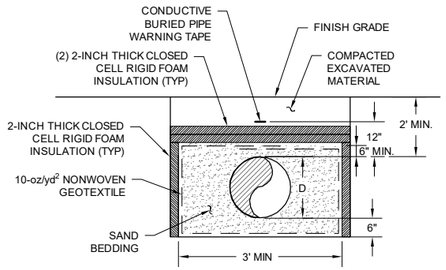
PLAN VIEW

CONNECTION TO EXISTING 6"Ø STUB

5 NOT TO SCALE



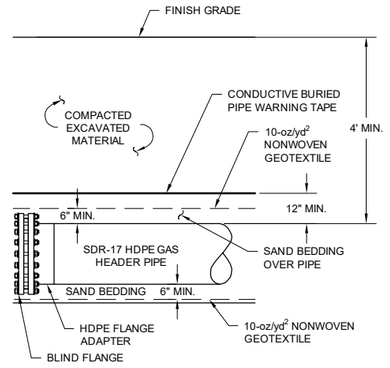
4' OF COVER PROVIDED



LESS THAN 4' OF COVER PROVIDED

GAS HEADER PIPE TRENCH OUTSIDE LIMIT OF WASTE

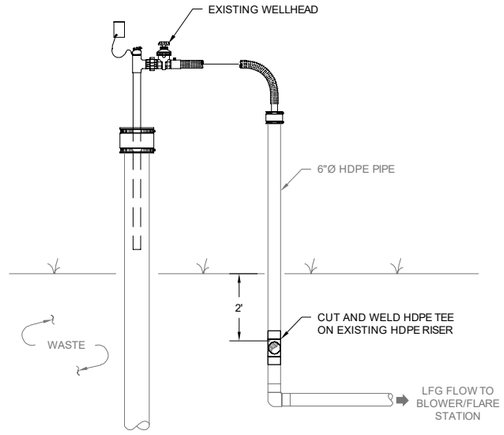
6 NOT TO SCALE



ELEVATION VIEW

HEADER TERMINATION OUTSIDE LIMIT OF WASTE

7 NOT TO SCALE



CONNECT TO VACUUM SOURCE AT EXISTING LFG WELL

8 NOT TO SCALE

SANBORN HEAD

SCALE AS NOTED

STATE OF MAINE — RYAN L CLAY — 16411 — LICENSED PROFESSIONAL ENGINEER

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DESIGNED BY: Z. SAGENDORF
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

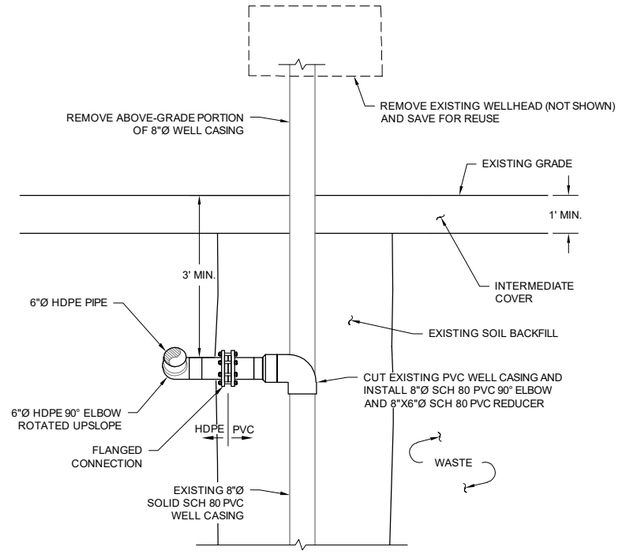
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C16 P.E. Stamp Standards
PLOT DATE: 04-04-24

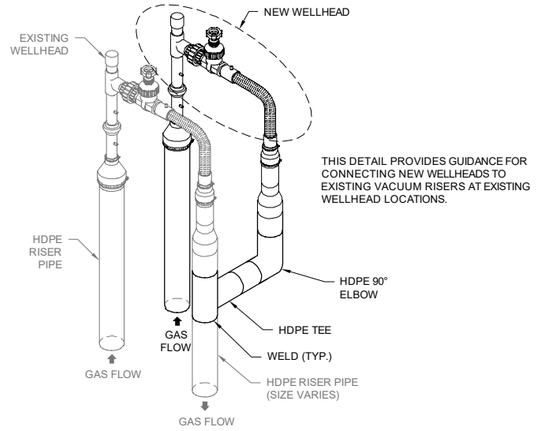
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CONVERT VERTICAL LFG WELL TO REMOTE WELL

1

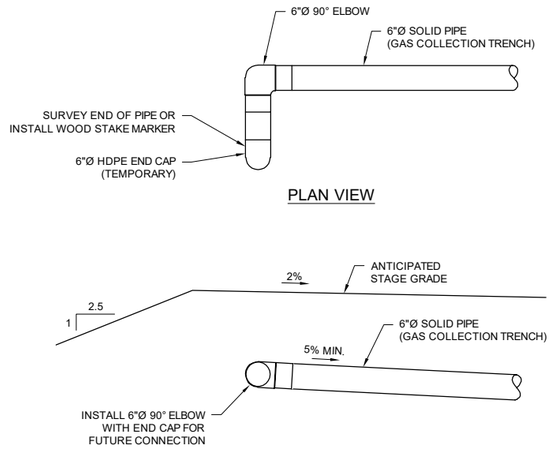
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WELLHEAD INSTALLATION ADJACENT TO EXISTING WELLHEAD

2

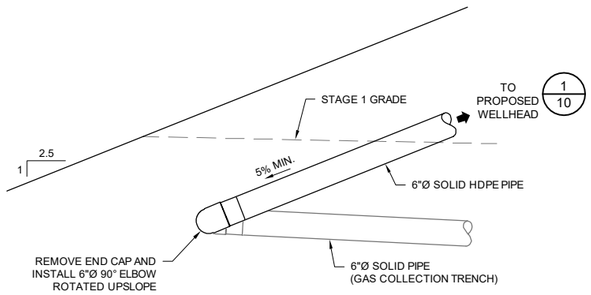
NOT TO SCALE



TEMPORARY GAS COLLECTION TRENCH TERMINATION

3

NOT TO SCALE

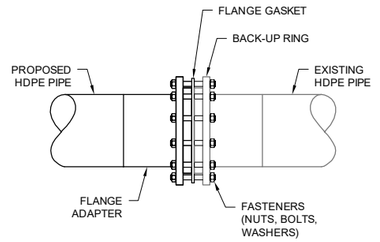


ELEVATION VIEW

COLLECTION TRENCH EXTENSION TO UPSLOPE WELLHEAD

4

NOT TO SCALE



CONNECTION TO EXISTING BLIND FLANGE

5

NOT TO SCALE

SANBORN HEAD

SCALE AS NOTED

STATE OF MAINE
RYAN L. CLAY
16411
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY

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DESIGNED BY: Z. SAGENDORF
REVIEWED BY: R. CLAY
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

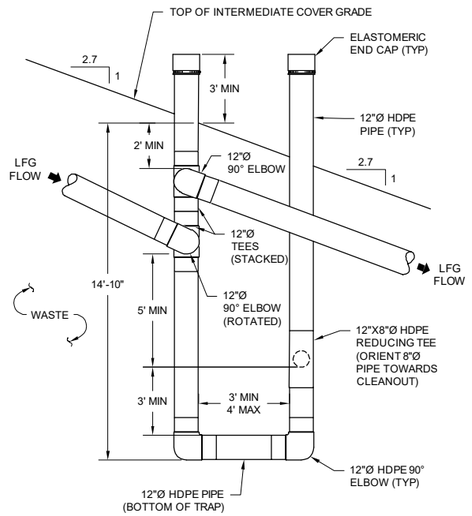
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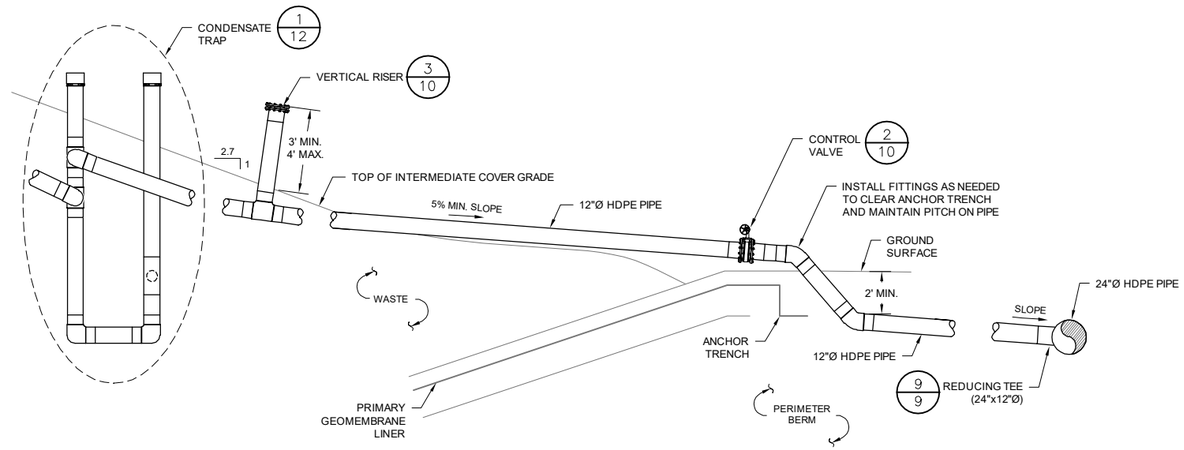
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ELEVATION VIEW

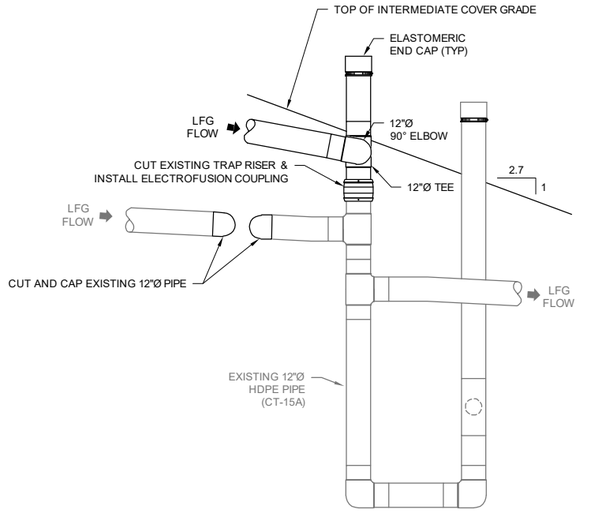
1 CONDENSATE TRAP CT-16

NOT TO SCALE



2 ANCHOR TRENCH CROSSING

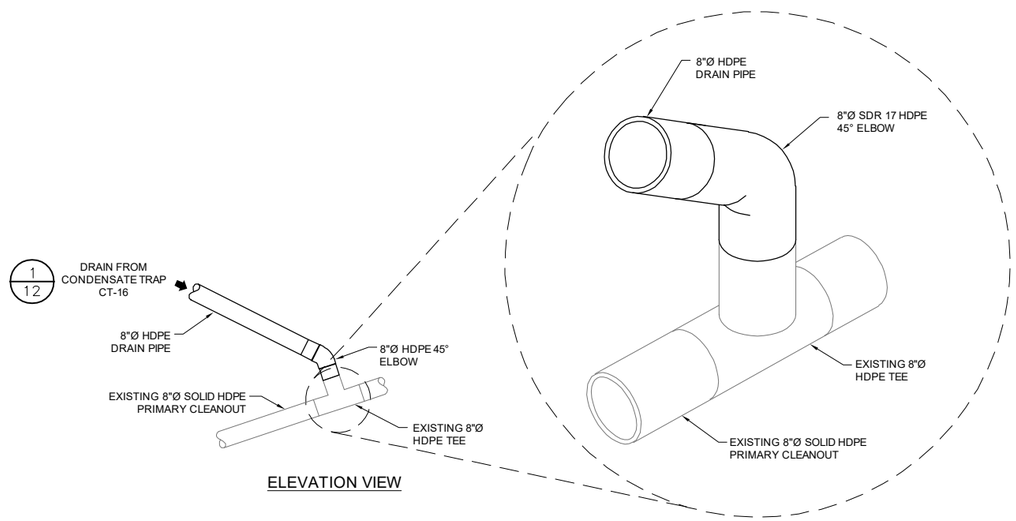
NOT TO SCALE



ELEVATION VIEW

3 CONNECTION TO EXISTING CONDENSATE TRAP CT-15A

NOT TO SCALE



ELEVATION VIEW

4 DRAIN TIE-IN TO CELL 16 PRIMARY LEACHATE COLLECTION CLEANOUT (CT-16)

NOT TO SCALE

SANBORN HEAD

SCALE AS NOTED

STATE OF MAINE — RYAN L. CLAY — 16411 — LICENSED PROFESSIONAL ENGINEER

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PROJECT MGR: R. CLAY
PIC: T. REED
DATE: MARCH 2024

CELL 16 LANDFILL GAS SYSTEM EXPANSION
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

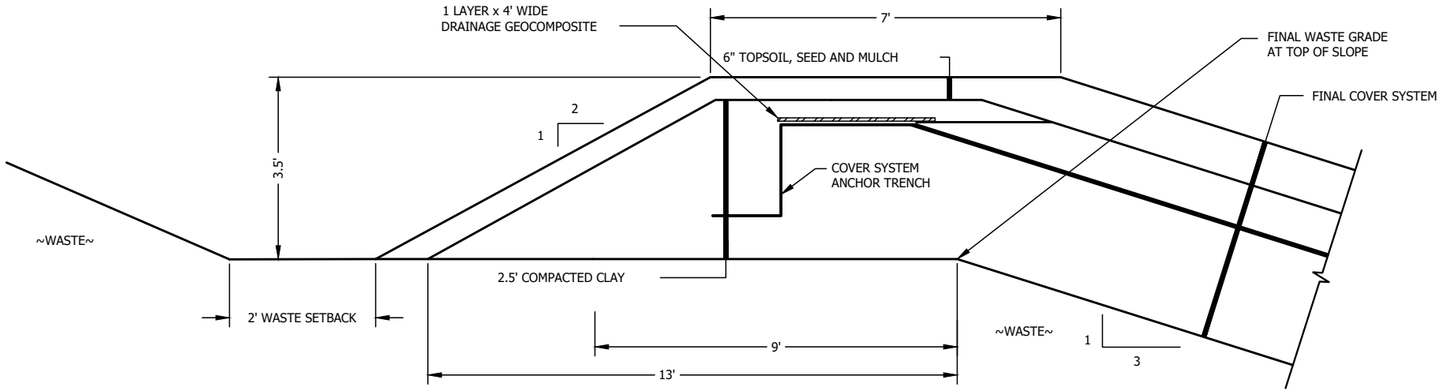
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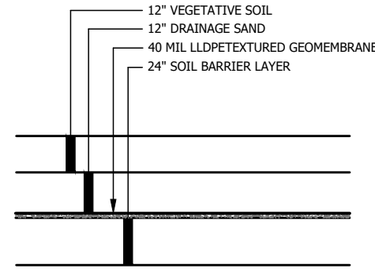
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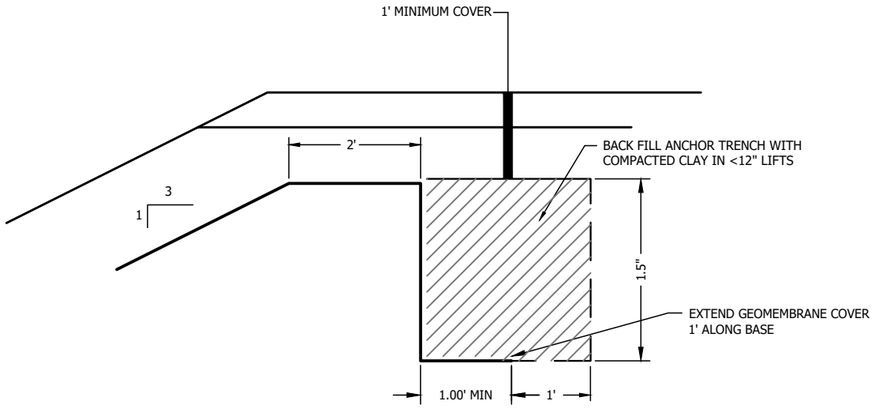
APPENDIX E
TYPICAL OPERATIONAL DEVELOPMENT DETAILS



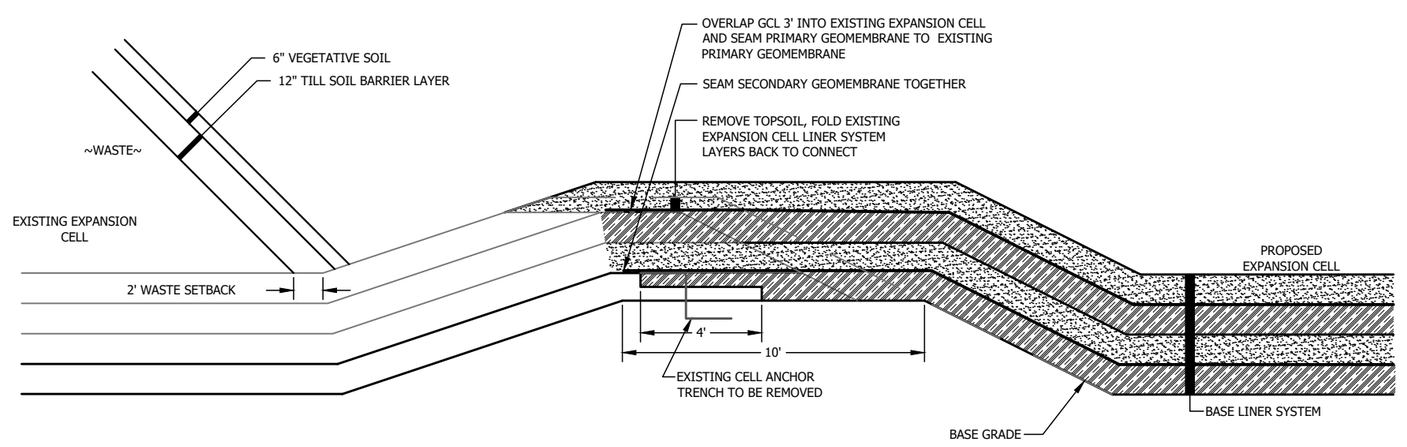
FINAL COVER TERMINATION AT TOP OF SLOPES (TYP)
NTS



FINAL COVER SYSTEM
NTS



COVER SYSTEM ANCHOR TRENCH AT TOP OF SLOPES AND SIDESLOPE PERIMETER BERMS (TYP)
NTS



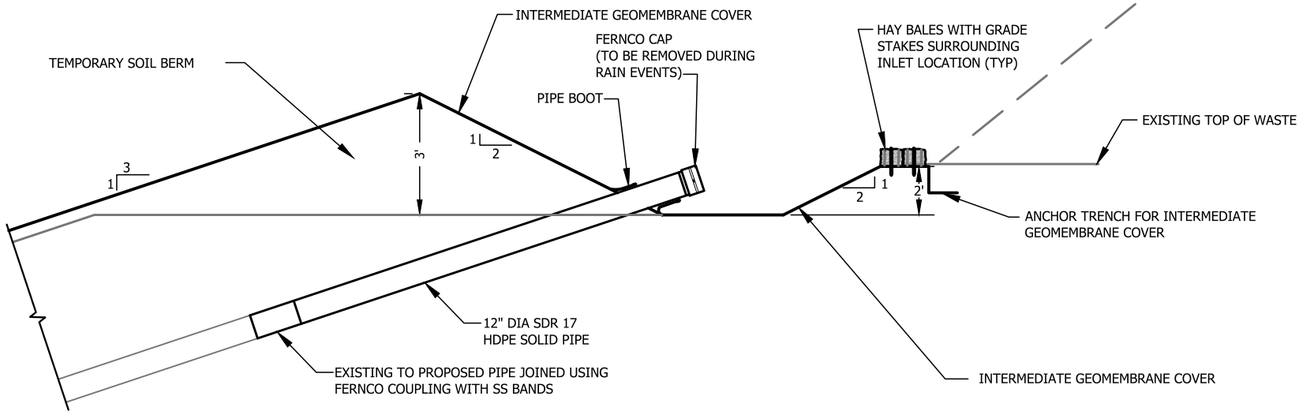
INTERMEDIATE BERM BASE LINER CONNECTION
NTS

FIGURE 12-7
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

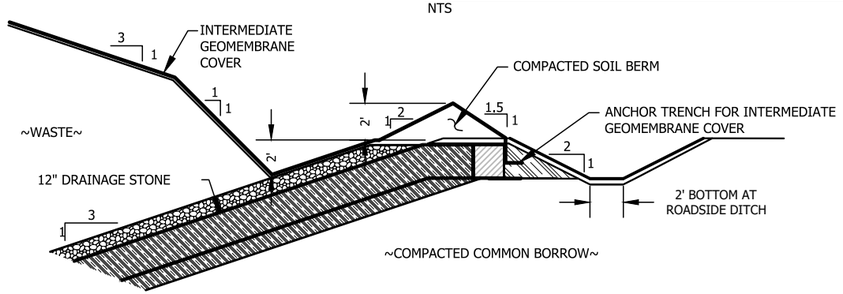
SME
SEVEE & MAHER
ENGINEERS

DWG: C12-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 12/23/2019

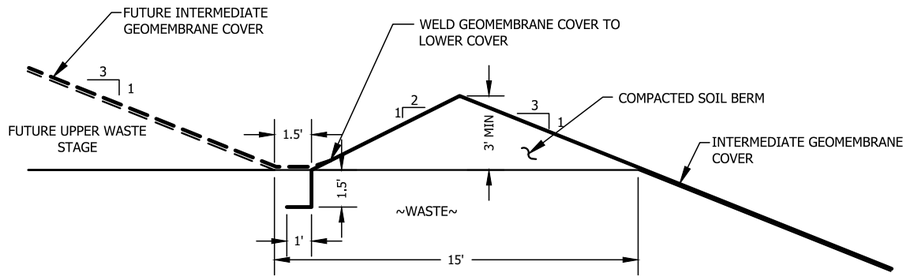
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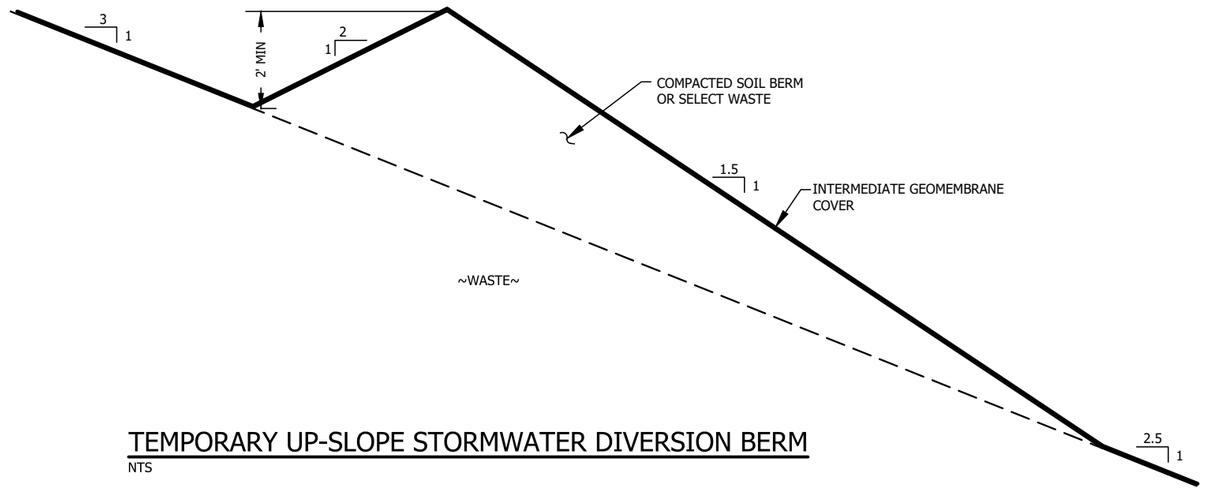
LEACHATE COLLECTION INLET
NTS



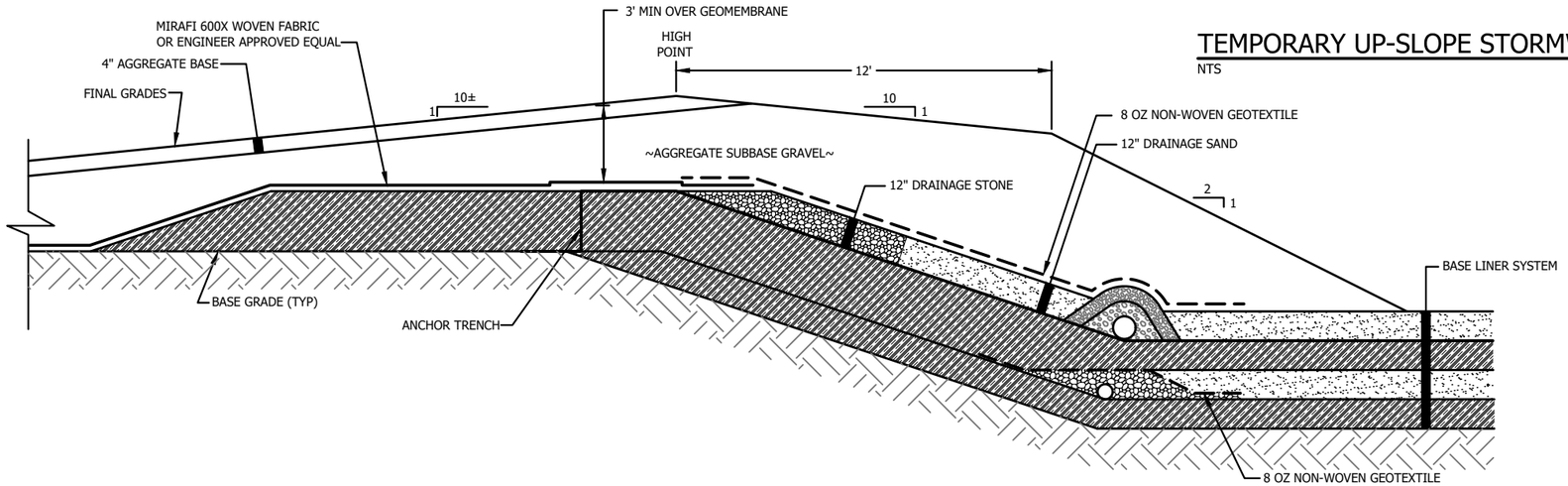
PERIMETER BERM INTERMEDIATE GEOMEMBRANE COVER DETAIL
NTS



TEMPORARY MID-SLOPE INTERMEDIATE BERM
NTS



TEMPORARY UP-SLOPE STORMWATER DIVERSION BERM
NTS



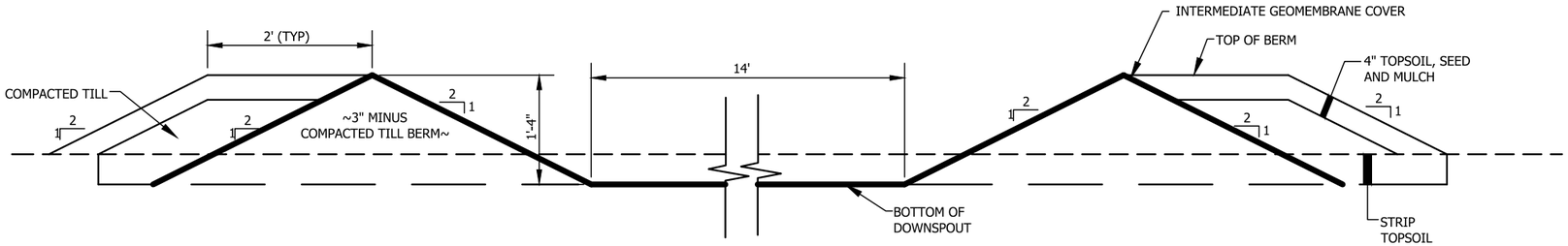
CELL ACCESS ROAD ENTRANCE RAMP (TYP)
NTS

FIGURE 12-8
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

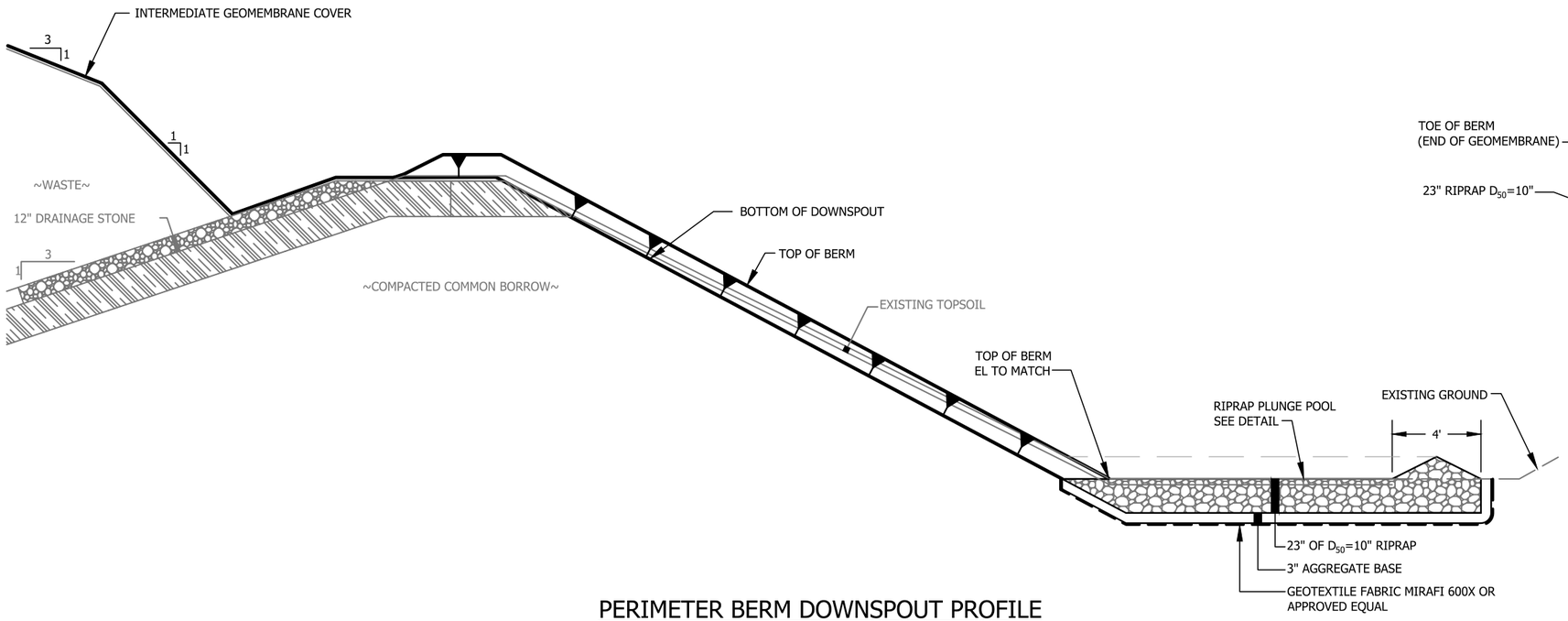
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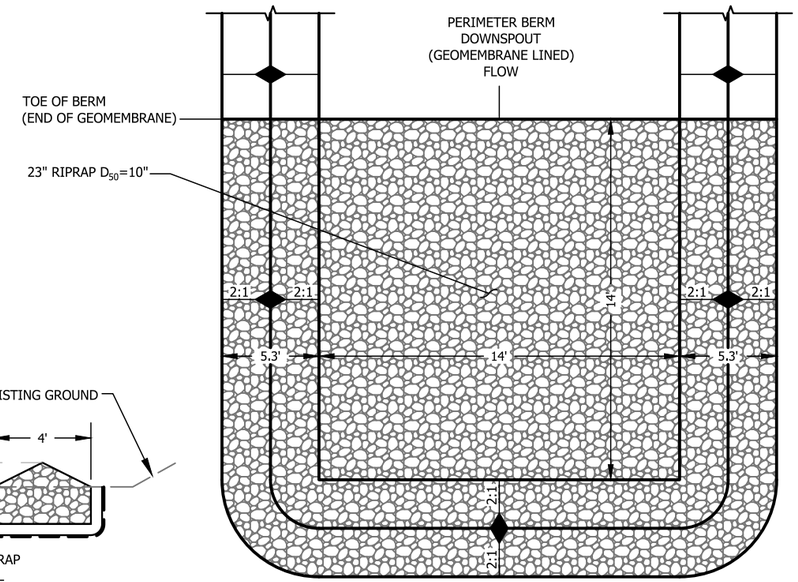
DOWNSPOUT SECTION

NTS



PERIMETER BERM DOWNSPOUT PROFILE

NTS



PLUNGE POOL

NTS

FIGURE 12-9
TYPICAL DEVELOPMENT DETAILS
JUNIPER RIDGE LANDFILL
NEWSME LANDFILL OPERATIONS
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: C12-CELLDEV-DETAILS LMN: NONE CTB: SME-STD REV: 12/23/2019

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APPENDIX F
STORMWATER MANAGEMENT AND EROSION CONTROL PLAN
(JRL SWPPP)

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 E: Spill Reporting Form
Appendix F: Initial Evaluation of Non-Stormwater Discharges
Appendix G: SWPPP Training Log
Appendix H: Visual Monitoring of Stormwater Discharges Associated with Industrial Activity - MEDEP Procedure DEPLW0768
Appendix I: Quarterly Visual Monitoring Form
Appendix J: Routine Inspection Form
Appendix K: Weekly/Monthly Inspection Form
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**);

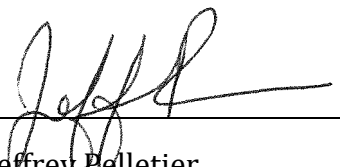
- A paper copy of the MSGP and any Sectors applicable to the site (**Appendix C & D**);
- Documentation of maintenance and repairs of control measures;
- All inspection reports and monitoring data required by the MSGP;
- Documentation of monitoring exceedances and response;
- A description of any deviations 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.

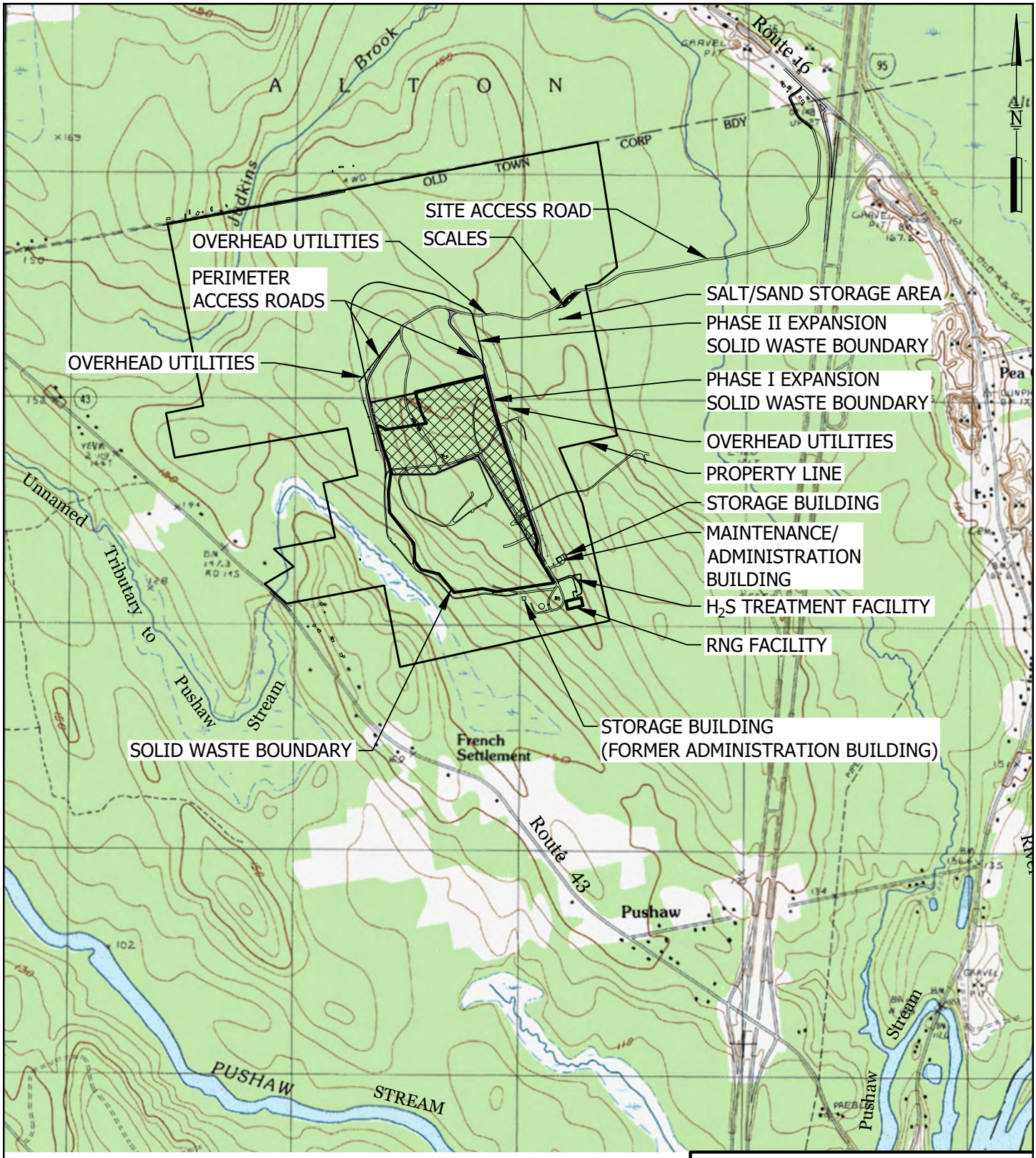
8.0 CERTIFICATION

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

\\Nserver\cfs\Casella\OldTownLandfill\GeneralSiteInfo\OM\2024\ACAD\Figures\SITELOC.dwg, FIGURE, 2/11/2025 2:16:46 PM, sjm

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
LEVEL LIP SPREADER
BORROW PIT ACCESS ROAD
VEGETATIVE SOIL STOCKPILE
WOOD WASTE HANDLING AREA
OUTFALL NO. 7 (MONITORING LOCATION)
CELL 14 PUMP STATION
APPROXIMATE LANDFILL WASTE LIMIT
APRIL 2024 OILY WATER SPILL
EXISTING GAS FLARE
DIESEL GENERATOR (366 GALLON DIESEL TANK)
ENERGY DISSIPATER
FUEL TRUCK
SPILL KIT
MAINTENANCE BLDG WELL
1ST JUNE 2024 HYDRAULIC OIL SPILL
2ND JUNE 2024 HYDRAULIC OIL SPILL
APRIL 2024 ANTIFREEZE SPILL
LEACHATE LOADING RACK
SPILL KIT
LEACHATE STORAGE TANK AND CONTAINMENT AREA
IN-PLACE GEOMEMBRANE COVER
CATCH BASIN
VALVE
RIPRAP OUTLET
DUAL 24-INCH CULVERTS (TYP)
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)
ACTIVE DISPOSAL AREA (SUMMER 2025)
STAGE 2 FINAL COVER
TEMPORARY MAINTENANCE ROAD
LITTER FENCE INSTALLED AS PART OF CELL 15 CONSTRUCTION
TEMPORARY CULVERT
OUTFALL NO.2 (MONITORING LOCATION)
DETENTION POND 2
CELL 5 PUMP STATION
OUTFALL NO. 3
NEW OUTFALL NO. 9 (MONITORING LOCATION)
CELL 15 PUMP STATION
NEW OUTFALL NO. 8 (MONITORING LOCATION)
CELL 4 PUMP STATION
GEOMEMBRANE LINED STORAGE POND
GEOMEMBRANE LINED STORAGE POND PUMP STATION
CELL 16 PUMP STATION
LANDFILL WASTE LIMIT (APPROXIMATE)
LEACHATE LOADING RACK
DETENTION POND 1 OUTFALL NO.1 (MONITORING LOCATION)
OCTOBER 2022 WATER/ LEACHATE SPILL

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 Landfill\2024\PPP\Autef\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

OUTFALL NO.4 (MONITORING LOCATION)

DETENTION POND 6 OUTLET STRUCTURE

OKA WELL

CELL 16 ACTIVE DISPOSAL AREA (SUMMER 2025)

STAGE 2 FINAL COVER

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.
3. DRAWINGS ARE FOR SITE OPERATIONS USE ONLY. DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION.
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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.

LEGEND

- 170 — EXISTING CONTOUR
- WETLAND DELINEATED
- DRAINAGE SUBCATCHMENT BOUNDARY
- (4) 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

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

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

UPDATED FEBRUARY 2025

DWG: SITEPLAN-2024 LMN: DRAINAGE PLAN CTB: SME-STD.CTB REV: 2/12/2025

\\Server\Civil\Casella\2025\Twin Land\2025\PPP\Autof\Figures\SITEPLAN-JRL2025.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	

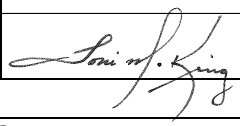
Applicable Sector(s) of industrial activity, as designated in Attachment A of the MSGP, that include associated discharges that you seek to have covered under this permit (check all that apply):

□ 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: Michael Brennan
V.P. General Counsel

By: James W. Bohlig
Name: James W. Bohlig
Its President

STATE OF MAINE, Acting by and Through its Executive Department, State Planning Office

Witness

George M MacDonald
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 Sandy Mojica, USEPA
Lori Mitchell, DEP/CMRO 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
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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

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 process 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, 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.
- When the generator receives the lab results, they are forwarded along with the completed & signed Special Waste Characterization Profile Form, 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 of any ongoing applicable testing frequencies.
- Copies of the approval form and lab tests 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.

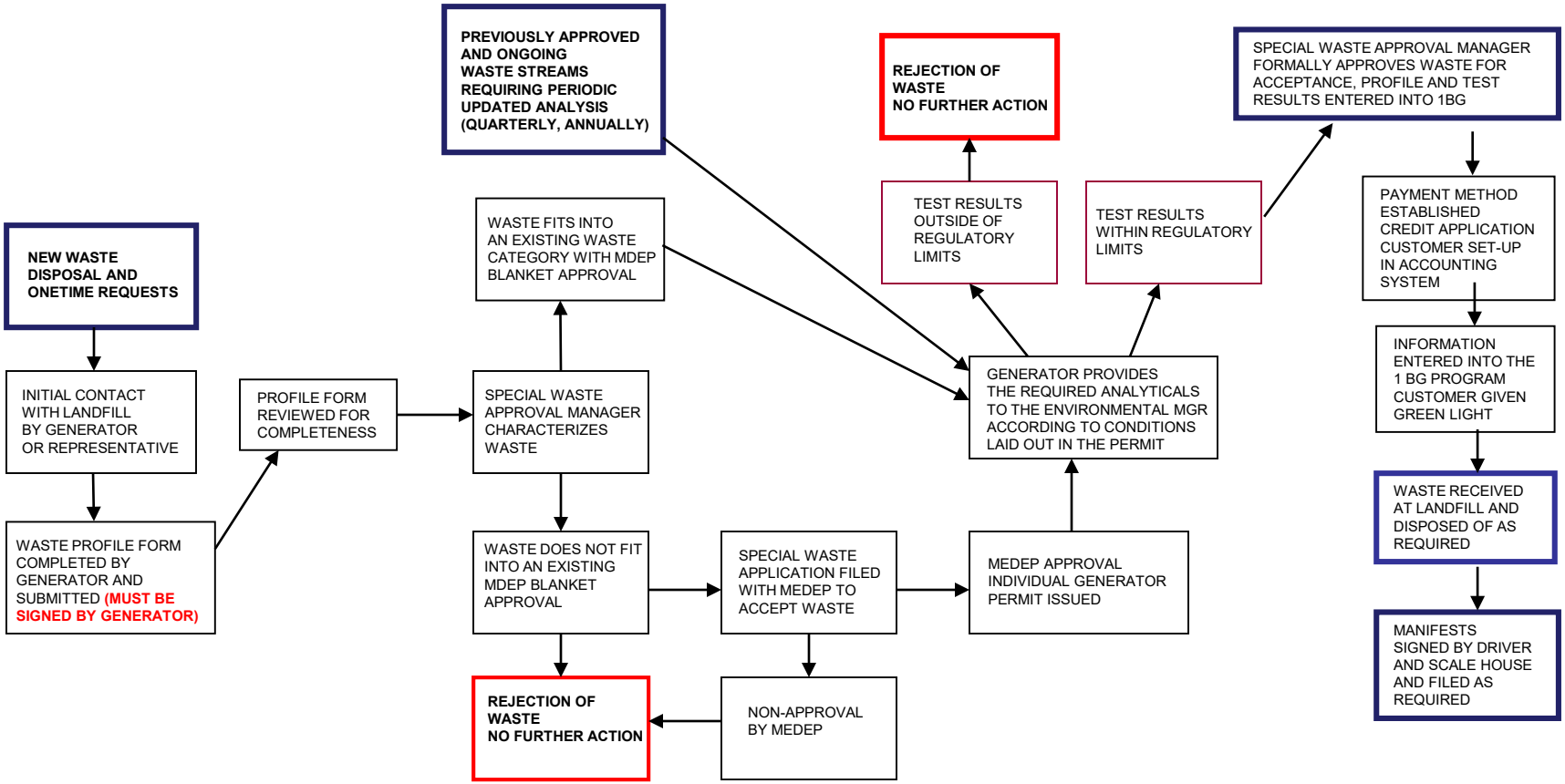
ACCEPTABLE MATERIALS
ASH - Burn Pile / Biomass, Coal, & Multi-fuel Boiler / MSW & Biomedical Incinerator
BURNED STRUCTURES
CATCH BASION GRIT & STREET SWEEPINGS
CONSTRUCTION DEMOLITION DEBRIS (CDD) & PROCESSING RESIDUE - Mixed CDD, Bulky Waste, & & Fines
CLEAN WOOD DEBRIS - (For Beneficial Use)
CRUSHED 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
MUNICIPLE 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
MUNICIPLE SOLID WASTE (MSW) - Non-bypass MSW
OTHER NON-APPROVED SPECIAL WASTES
OUT OF STATE WASTES
PAINTES / STAINS / CHEMICIALS / WASTE OIL
PATHOLOGICAL WASTES
UNIVERSAL WASTES - Fluorescent Lamps, Mercury Containing Items, Light Ballasts w/PCB's, TV's, etc.

JUNIPER RIDGE LANDFILL

Operated by NEWSME Landfill Operations, LLC

WASTE CHARACTERIZATION & ACCEPTANCE FLOW DIAGRAM



casella WASTE SYSTEMS

ANALYSIS REQUIRED

X - Requires testing
X - Amended and no longer requires testing

Permit #	Date Issued	Waste Type	TCLP 8 RCRA Metals	Total 8 RCRA Metals	TCLP Lead Only	Total & TCLP Vanadium	TCLP Volatiles	TCLP Benzene	TCLP Semi-Volatiles	TCLP Pesticides	TCLP Herbicides	Total Organic Halogens	Total TOX	pH (Corrosivity)	Chloride	Total PCB's	Dioxins and Furans	Sulfide Reactivity	Phosphorus	Cyanide Reactivity	% Moisture/Free Liquids	Flashpoint/Ignitability	% Carbon	Reactivity	Inorganic Parameters	Sampling Frequency	
Contaminated Soil and Debris																											
#S-01987-WD-BK-M	1/12/1994	Soil contaminated with waste oil from underground storage tanks and surface spill	X				X		X	X	X		X	X		X		X		X		X				One per source or 250 tons whichever is more frequent	**If Total TOX compounds > 1000ppm (EPA Test Method 9023 (EOX), must test for the following compounds for levels in exceedance of 100ppm by EPA Method 8240:** Tetrachloroethylene, Methlyene Chloride, Trichloroethylene 1,1,1 - Trichchloroethane, Ortho-Dichlorobenzene, Trichlorofluoromethane, 1,1,2 - Trichloroethane, Carbon Tetrachloride, 1,1,2 - Trichloro - 1,2,2 - Trifluoroethane, Chlorobenzene, Chlorinated Fluorocarbons **Analytivcal testing frequency from MEDEP Solid Waste Regs, Chap. 405, page 23-25**
#S-01987-WD-BK-M (#S-020700-WU-CD-N)	1/12/1994 (12/16/2020)	Soil contaminated with virgin gasoline from underground storage tanks			X			X														X				One per source or 500 tons, whichever is more frequent	If site history indicateds leaded gasoline not stored at site of origin, TCLP Lead analysis not required.
#S-01987-WD-BK-M (#S-020700-WU-CD-N)	1/12/1994 (12/16/2020)	Soil contaminated with virgin gasoline from surface spill or storage area			X			X														X				One per source or 500 tons, whichever is more frequent	If site history indicateds leaded gasoline not stored at site of origin, TCLP Lead analysis not required.
#S-01987-WD-BK-M (#S-020700-WU-CD-N)	1/12/1994 (12/16/2020)	Soil contaminated with virgin petroleum product other than gasoline from surface spill, underground storage tank, or storage area	X					X														X				One per source or 500 tons, whichever is more frequent	Does not require analysis if clean up was supervised by Maine DEP and is accompanied by a spill letter with authorization to accept. If from a non-DEP supervised clean up, analysis is required.
#S-01987-WD-BK-M	1/12/1994	Other Non-hazardous oil-contaminated soil	**Waste is accepted on a case-by-case basis. Request to MEDEP Required.**																							One per source or 250 tons	**Accepted case-by-case basis. Request for approval must be submitted**
#S-01987-WD-WA-M	12/19/2003	Urban Fill Contaminated Soil	X				X		X	X	X			X		X		X		X		X				One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	
#S-01987-WD-ZA-M	8/29/2003	Dredge Spoils	X				X		X	X	X					X		X								One sample per source or every 250 tons, whichever is more frequent.	
#S-020700-WU-CD-N	12/16/2020	Metal Impacted Soil and Debris	X				X		X	X	X			X		X		X		X		X				One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	
#S-020700-WU-CD-N	12/16/2020	PCB Contaminated Soil and Debris Not Classified as PCB Remediation Waste (<50 ppm)	X				X		X	X	X			X		X		X		X		X				One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	Non-TSCA Regulated
#S-020700-WU-CD-N	12/16/2020	PCB Contaminated **Debris Only** Not Classified as PCB Remediation Waste (<50 ppm)	X				X		X	X	X			X		X		X		X		X				One per source	Non-TSCA Regulated
#S-020700-WU-CD-N	12/16/2020	Soil and Debris Classified as PCB Remediation Waste (<50 ppm)	X				X		X	X	X			X		X		X		X		X				One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	TSCA Regulated
#S-020700-WU-CD-N	12/16/2020	Contaminated Soil and Debris from Manufactured Gas Plant ("MGP")	X				X		X	X	X			X				X		X		X				One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	
#S-020700-WU-CD-N	12/16/2020	Remediation Site Soil and Debris	X				X		X	X	X			X				X		X		X				One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	
#S-020700-WU-CD-N	12/16/2020	Treated Wood Storage Soil and Debris	X				X		X																	One sample per 250 tons	
#S-001987-WD-YA-M	2/20/2003	**OUT OF STATE:** Soil contaminated with virgin petroleum product other than gasoline from surface spill, underground storage tank, or storage area	**No analysis required (upon condtions)**																							No analysis required if conditions are met.	Deposited without analysis if accompanied by written authorization from that respective state's environmental agency responsible for solid waste disposal. Letter must be signed by a staffperson from that agency whose job includes remediation of petroleum spills
Ash Related Waste																											
#S-01987-WD-BO-M	1/4/1995	Biomass Boiler Ash	X	X		X								X	X				X		X		X			One sample to initiate landfill disposal, then one sample collected quarterly or once annually for sources >200 tons per year	If TCLP level for Vanadium in greater than 200ppm, the waste is unacceptable unless an approved high-vanadium ash handling and air monitoring program is implemented at time of disposal X - Testing is no longer required, per Blanket Permit #S-01987-WD-ZA-M * Totals analysis is not required unless material is used for daily cover
#S-01987-WD-BO-M	1/4/1995	Fossil Fuel Boiler Ash	X	X		X								X	X				X		X		X			One sample to initiate landfill disposal, then one sample collected quarterly or once annually for sources >200 tons per year	If TCLP level for Vanadium in greater than 200ppm, the waste is unacceptable unless an approved high-vanadium ash handling and air monitoring program is implemented at time of disposal X - Testing is no longer required, per Blanket Permit #S-01987-WD-ZA-M * Totals analysis is not required unless material is used for daily cover
#S-01987-WD-BO-M **#S-01987-WD-EB-M**	1/4/1995 1/2/2004	Municipal Clean Wood Open Burn Pile Ash	X																							Once per year or once every 200 tons	
#S-01987-WD-BO-M	1/4/1995	Wood Boiler Ash	X	X										X	X				X		X		X			One sample quarterly, or annually per source if <200 CY/year is generated	X - Testing is no longer required, per Blanket Permit #S-01987-WD-ZA-M
#S-01987-WD-BO-M	1/4/1995	MSW Incinerator Ash Biomedical Incinerator Ash	X	X		X								X	X				X		X		X			**MSW Incinerator:** One sample per 200 tons for initial 1000 tons, then one sample per 1000 tons or one sample annually, which ever is more frequent **Biomedical**: 1 sample per 100 tons or 1 sample annually, which ever is more frequent	Must conduct analysis if facility or origin not licensed by Maine DEP & submit sampling & analytical work plan in compliance with 06-096 CMR 405.1 If TCLP level for Vanadium in greater than 200ppm, the waste is unacceptable unless an approved high-vanadium ash handling and air monitoring program is implemented at time of disposal X - Testing is no longer required, per Blanket Permit #S-01987-WD-ZA-M * Totals analysis is not required unless material is used for daily cover
#S-01987-WD-BT-M	12/4/1996	High Vanadium Ash	X	X		X								X												For wastes high in Vanadium	See conditionss/procedure for disposal of high Vanadium Ash in License
#S-01987-WD-ZA-M	8/29/2003	Railroad Tie Ash and Debris	X				X		X							X										One sample to initiate landfill disposal, then one sample per 250 tons thereafter	
#S-020700-WD-O-M	3/12/2004	Biomass Boiler Ash from Indeck Maine Energy LLC and Sappi Fine Paper	X			X								X	X				X		X		X			Initially, then one representative sample quarterly, or one annually if less than 200 tons per year (Per Solid Waste Regulations Ch. 405.6)	Ash from both Indeck and Sappi will be mixed with sludge delivered from the Old Town Mill
#S-020700-WU-L-N	1/22/2002	Ash from the burn pile and hot loads areas of the Old Town transfer station	X																							Samples must be tested on a quarterly basis	
#S-020700-WU-CD-N	12/16/2020	Burned Structures - Constructed Prior to 1979 and Safe to Enter			X																					Composite sample on the ash	
#S-020700-WU-CD-N	12/16/2020	Burned Structures - Structure is Unsafe to Enter or is Completely Destroyed	X																							Composite sample on the ash. **Asbestos Analysis must also be completed on the sample**	No friable asbestos in JRLF

ANALYSIS REQUIRED

X - Requires testing
X - Amended and no longer requires testing

Permit #	Date Issued	Waste Type	TCLP 8 RCRA Metals	Total 8 RCRA Metals	TCLP Lead Only	TCLP Vanadium	TCLP Volatiles	TCLP Benzene	TCLP Semi-Volatiles	TCLP Pesticides	TCLP Herbicides	Total Organic Halogens	Total TOX	pH (Corrosivity)	Chloride	Total PCB's	Dioxins and Furans	Sulfide Reactivity	Phosphorus	Cyanide Reactivity	% Moisture/Free Liquids	Flashpoint/Ignitability	% Carbon	Reactivity	Inorganic Parameters	Sampling Frequency	
Sludges and Related Waste																											
#S-01987-WD-EB-M **#S-01987-WD-BO-M**	1/7/2004 1/4/1995	Pulp and Paper mill sludge	X				X		X	X	X							X								Intially, then quarterly for TCLP Metals and annually for VOC and SVOC	Waste may be accepted if the TCLP analysis results are below regulatory limit, and Sulfide Reactivity is less than 500 mg/kg
#S-01987-WD-EB-M **#S-01987-WD-BO-M**	1/7/2004 1/4/1996	Municipal sewage treatment sludge (WWTP)	X				X		X	X	X							X								Initially, then quarterly for TCLP Metals and annually for VOC and SVOC	Waste may be accepted if the TCLP analysis results are below regulatory limit, and Sulfide Reactivity is less than 500 mg/kg
#S-01987-WD-BP-M	6/16/1995	Industrial and Commercial Laundry Sludge	X	X			X		X	X	X							X								Intially, then one sample annually for TCLP Metals	Sulfide Reactivity must be less than 500 mg/kg
#S-01987-WD-ZA-M	8/29/2003	Water Treatment Plant Sludge	X				X		X	X	X							X								Initially, then annually thereafter	
#S-01987-WD-BN-M	7/15/1994	Filter press cake and collagen scrapings generated during raw leather tanning	X				X		X	X	X															Initially, each source of filter press cake and collagen scrapings; Wastes will be once annually for TOTAL and TCLP metals only	If the generator cannot certify that the waste contains exclusively or nearly exclusively trivalent chromium, then analytical testing will be conducted to determine the amounts of trivalent and hexavalent chromium present.
#S-020700-WU-CD-N	12/16/2020	Tank Bottom Sludge - Petroleum or Chemical Related	X											X				X		X	X	X				One sample per source or per 500 tons, whichever is more frequent	If material is virgin or uncontaminated, SDS sheet can be used for waste characterization purposes
#S-020700-WU-CD-N	12/16/2020	Industrial Sludges	X				X							X												One sample per 250 tons for jobs <1000 tons One sample per 500 tons for jobs >1000 tons, no fewer than 4 samples	
Miscellaneous Special Waste																											
#S-01987-WD-BU-M	5/12/1997	Pigeon Wastes																								No specific analysis Required	No other restricted or permittable waste may be mixed with pigeon waste unless covered by other blanket permits and analysis has been conducted on other material included Generator must water down and contain within bags or cocoon wrap (burrito wrap) it for sufficient strength due to fungal spores and pathogenic baterial found in pigeon waste.
#S-01987-WD-BV-M	6/26/1997	Air and Water Filtration media from Ambient Source																								No analysis Required	No analysis required, unless contaminated with regulated substances that require testing.
#S-001987-WD-HA-M	4/29/1998	Oversized Bulky Waste (OBW)																								Accepted upon as-needed basis	Must be placed farther than 5 ft from the liner system, cannot be placed on outer slopes, and cannot be placed within 2 feet of sides slopess or final waste sideslopes
#S-01987-WD-KB-M	5/3/2005	Non-Hazardous Paint Filters and Dried Paint Residue	X				X											X				X				One initial sample per source, then once annually per source.	
#S-01987-WD-EB-M	1/7/2004	Grit & Screening waste (WWTP)																								No analysis Required	Waste is acceptable if the waste contains no free liquids.
#S- 01987-WD-GY-M	12/11/1997	Non-hazardous chemicals																								No analysis required if product is unused/virgin, SDS Sheet is Required. Maine DEP approval required for wastes requiring chemical characterization as a result of product usage or contamination. Includes manufactured chemical products with an accompanied description of the physical and chemical properties of the product such as an MSDS.	
#S-01987-WD-BO-M	1/4/1995	Sand Blast Grit	X																							Small Quantity Generators: If < 50 tons per disposal event, analysis is then required annually. If bewteen 50 - 100 tons per disposal event, one sample required. If add'l material required disposal from same event, its 1 sampled every 100 tons. Large Quantity Generators: Generators of > 100 tons per disposal event must analyze 1 sample per 500 tons.	If TCLP analysis indicates metal concentrations detected are at 70% or greater of the applicable TCLP threshold, additional testing will be required to complete a statistical characterization of the particular parameter. If waste is impcated with petroelum products or other contamintes, testing is required and will be confirmed by Special Waste staff.
#S-01987-WD-BO-M	1/4/1995	Non-hazardous Special Wastes																								Case-by-case basis	
#S-010396-WU-DI-N	3/10/1993	Pionite Dust	X				X		X	X	X															One sample annually.	Must also test for Methylene Chloride, Toluene, and Acetone.
#S-020700-WU-AP-N	5/21/2010	Sulfer Slurry and Sulfer Filter Media																								No analysis Required	Previous analysis concluded waste is non-hazardous and will not require testing
#S-020700-WU-AJ-N	6/30/2010	Treated Biomedical Waste																								No analysis Required	Human pathological waste, animal carcasses, trace chemotherapy or cytotoxic waste shall not be accepted
#S-001987-WD-IA-M	9/23/1998	Front End Process Residue (FEPR)																								No analysis Required	FEPR is commingled with OBW, MSW Incinerator Ash and CDD.
#S-01987-WD-BM-M	5/6/1994	Chrome Leather Scrap Wastes	X																							Initially per new source, and once annually for TLCP metals only.	Must contain exclusively or nearly exclusively trivalent chromium. If the generator cannot verify that the waste contains exclusively or nearly exclusively trivalent chromium, then analytical testing must be conducted to determine the amounts of trivalent and hexivalent chromium.
#S-020700-WU-CD-N	12/16/2020	Manufacturing/Fabrication Waste Streams	X			X	X	X	X	X	X			X				X		X		X				Initially prior to disposal and anually thereafter from each waste generating source	Generator knowledge may be used to waive specific analytical tests, provided the following is met prior to waste acceptance: a determination is made based on generator certification of waste history, process knowledge, and waste volume
#S-020700-WU-CD-N	12/16/2020	Off-Specification Food Waste and Off-Specification Product																									Generator knowledge and SDS sheets shall be used for waste characterization
#S-020700-WU-CD-N	12/16/2020	Filter Medias and Filter Cartridges from Non-ambient Sources	X			X	X	X	X	X	X			X				X		X		X				One sample per 250 tons for each waste generating source	Generator knowledge may be used to waive specific analytical tests, provided the following is met prior to waste acceptance: a determination is made based on generator certification of waste history, process knowledge, and waste volume
#S-020700-WU-CD-N	12/16/2020	Marijuana, Hemp, and Invasive Plant Species Related Waste																									No testing is currently required for disposal of this natural material
#S-01987-WD-BQ-M	3/29/1996	Construction and Demolishion Debris	**No analysis required**																								No analysis required, unless contaminated with regulated substances that require testing.

Special Waste Characterization Profile

I. Requested Facility *Choose all that apply*

- ☐ **Massachusetts:** Southbridge (Southbridge, MA)
- ☐ **Maine:** Hawk Ridge (Unity, ME)
- ☐ **Maine:** Juniper Ridge (Old Town, ME)
- ☐ **New Hampshire:** NCES (Bethlehem, NH)
- ☐ **Pennsylvania:** McKean (Mt. Jewett, PA)
- ☐ **Vermont:** NEWSVT (Coventry, VT)
- ☐ **New York:** Chemung County (Lowman, NY)
- ☐ **New York:** Clinton County (Morrisonville, NY)
- ☐ **New York:** Grasslands (Chateaugay, NY)
- ☐ **New York:** Hyland (Angelica, NY)
- ☐ **New York:** Ontario County (Stanley, NY)
- ☐ **Other:** _____

II. Generator

Name: _____

Mailing Address: 110 Main St., Suite 1308

City: _____ State: ME ZIP Code: _____

Contact Name: _____ Title: Region Engineer

Phone: _____ Fax: _____ Email: _____

III. Bill To Customer ☐ *Same as Generator above*

Company Name: _____

Billing Address: _____

City: _____ State: ME ZIP Code: _____

Contact Name: _____ Title: _____

Phone: _____ Fax: _____ Email: _____

IV. Consultant/Representative

Company Name: _____

Contact Name: _____ Title: _____

Phone: _____ Fax: _____ Email: _____

V. Delivery and Quantity ☐ ***One-Time Event*** *or* ☐ ***On-Going (Annually)***

Amount to Be Delivered (Estimated): _____ ☐ Tons ☐ Cubic Yards ☐ Other: _____

Density of Waste (Approximate): _____ Pounds/Cubic Yard

Delivery Vehicle: ☐ Roll-off ☐ Packer Truck ☐ Tractor Trailer ☐ Vac Truck ☐ Other: _____

Hauler Name: _____

Mailing Address: _____ Phone: _____

Transporter Permit #: _____ (for State of Disposal)

Previous Disposal Facility (Name): _____

Application Was Submitted to/Approved by Another Disposal Facility (Name): _____

VI. Waste Stream Information

Common Waste Name: _____

Location or Address of Waste Generation Site: _____

City: _____ State: ME ZIP Code: _____ County: _____

Site Type: ☐ Industrial/Manufacturing ☐ Commercial ☐ Residential

☐ Institutional ☐ Municipal ☐ Other: _____

a. Waste Generation Process ☐ *Check if detailed Process Description is attached as a separate document*

Describe the site and waste generating process. Please be as detailed as possible. Include a process flow diagram if available.

b. Waste Description ☐ *Check if detailed Waste Description is attached as a separate document*

Describe the source of contaminants and materials used to generate the waste. Please be as specific and detailed as possible.

Describe all hazardous or nuisance properties associated with the waste:

Describe any special handling or disposal procedures:

Consistency at 70°F: ☐ Solid; ☐ Semi-Solid; ☐ Sludge; ☐ Liquid; ☐ Powder; ☐ Other _____

Ignitable (per 40 CFR 261.21): ☐ Yes ☐ No

Reactive (per 40 CFR 261.23): ☐ Yes ☐ No

Free Liquids: ☐ Yes ☐ No

% Solids: _____

Odor: _____

pH Range: _____

Is the waste an EPA listed hazardous waste under 40 CFR 261? ☐ Yes ☐ No

Is the waste non-hazardous waste from a CERCLA site? ☐ Yes ☐ No

Is the waste considered hazardous in the state of origin or the state of disposal? ☐ Yes ☐ No

Is the waste a treated hazardous waste, a de-listed hazardous waste or subject to land disposal restrictions (LDR) under 40 CFR 268, Subpart D? ☐ Yes ☐ No

c. Analytical Data

*At a minimum, full RCRA waste characterization analysis is required (§ 40 CFR 261) unless the applicant provides acceptable justification for submittal of less comprehensive data. The **generator** is responsible for proper waste characterization.*

Is representative waste characterization analysis attached?

☐ Yes → Please complete Appendix A of profile form.

☐ No → Please provide detailed explanation supporting the use of generator knowledge in lieu of analysis:

VII. Generator Certification

I hereby certify that (1) I am the duly authorized representative of the generator; (2) all information submitted on this form and on supplemental materials is true and accurate; (3) the information provided herein, including any supplemental information, such as laboratory analytical, SDS, etc., accurately describes the waste stream to be delivered to the facility and that all known or suspected hazards have been disclosed; (4) Casella can contact the laboratory directly to discuss our attached waste stream. I understand that once the waste stream is approved by Casella based on this information, any deviation in the source, composition, constituents or characteristics of the waste stream from the information described herein, may render the waste stream unacceptable for disposal, at the sole discretion of Casella. I further understand that any deviation from the information contained herein will require immediate notification to the disposal facility and cessation of disposal.

Signature (Generator): _____

Name (Print): _____ Company: _____

Title: _____ Date: 2/3/17

Appendix A

Additional Waste Stream Information

It is the Generator's responsibility to properly characterize the waste and demonstrate it is classified as non-hazardous by State and Federal regulations.

1. Samples

Samples collected and analyzed for waste characterization should be done in accordance with the EPA SW-846 Guidance Document and most recent approved EPA Method(s) for solid wastes.

Number of Samples: ____ Grab ____ Composite

Sample Source: ____ Boring(s) ____ Test Pit(s) ____ Stockpiles(s) ____ Core ____ Container

Soil/remediation projects must include a site map indicating area of excavation and sample locations.

2. Analysis

Please indicate all chemical analysis provided to support waste characterization. All testing must be performed by a laboratory certified in the State the waste is to be disposed in, where applicable.

Laboratory Name: _____ Laboratory Accreditation #: _____

Applicable Laboratory Report ID #'s: _____

Minimum Requirements

- ☐ TCLP RCRA 8 Metals
- ☐ TCLP Volatile Organic Compounds (VOCs)
- ☐ TCLP Semi-Volatile Organic Compounds (SVOCs)
- ☐ TCLP Herbicides
- ☐ TCLP Pesticides
- ☐ Reactive Sulfide
- ☐ Reactive Cyanide
- ☐ Total PCBs
- ☐ % Solids (Moisture Content)
- ☐ Free Liquids (Paint Filter)
- ☐ Corrosivity by pH
- ☐ Ignitability / Flashpoint

Additional Requirements

- ☐ Total TPH [1]
- ☐ Total PAH's [1]
- ☐ Total Organic Halogens (TOX)
- ☐ Total BTEX
- ☐ TCLP Copper [2]
- ☐ TCLP Nickel [2]
- ☐ TCLP Zinc [2]
- ☐ TCLP Vanadium [3]
- ☐ Total Sulfur/Sulfate
- ☐ TCLP PCBs
- ☐ Total Dioxins & Furans

Total Analysis AND Water Leaching Procedure (ASTM) Method D3987

- ☐ COD [2]
- ☐ Total Solids [2]
- ☐ Total Volatile Solids [2]
- ☐ Oil and Grease or Petroleum Hydrocarbons [2]
- ☐ Ammonia-Nitrogen [2]

Other

- ☐ Radiological analysis: U-238, RA-226, RA-228, TH-232, and K-40 by EPA test procedure 901.1 dry weight analysis expressed in pCi/g.
- ☐ Gamma field scans on the material and expressed in uR/hr or uRem/hr.
- ☐ Safety Data Sheets (SDS)
- ☐ Other_____

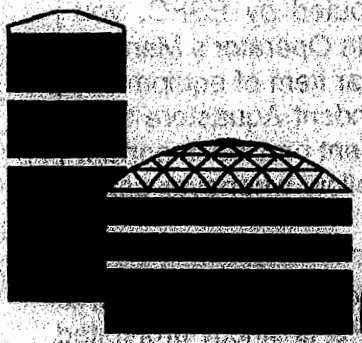
3. Generator Knowledge Statement

If the chemical analysis provided does not meet the minimum requirements, please provide an analysis waiver request with justification based on generator's knowledge of the process generating the waste.

1 VT only
2 PA only
3 ME only

APPENDIX H
O&M MANUAL - LEACHATE STORAGE TANK

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.

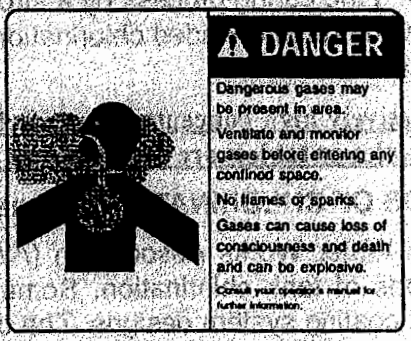
WATER STORAGE TANK DECAL

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.

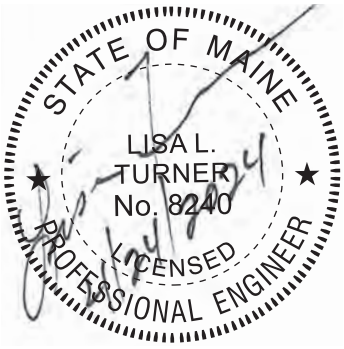
For each of the above items you should perform any necessary maintenance and repairs as part of the inspection process.

APPENDIX I
ENVIRONMENTAL MONITORING PLAN

ENVIRONMENTAL MONITORING PLAN
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

Prepared for

NEWSME LANDFILL OPERATIONS LLC



April 2024

4 Blanchard Road
P.O. Box 85A
Cumberland, Maine 04021
Phone: 207.829.5016 smemaine.com

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

SME
SEVEE & MAHER
ENGINEERS

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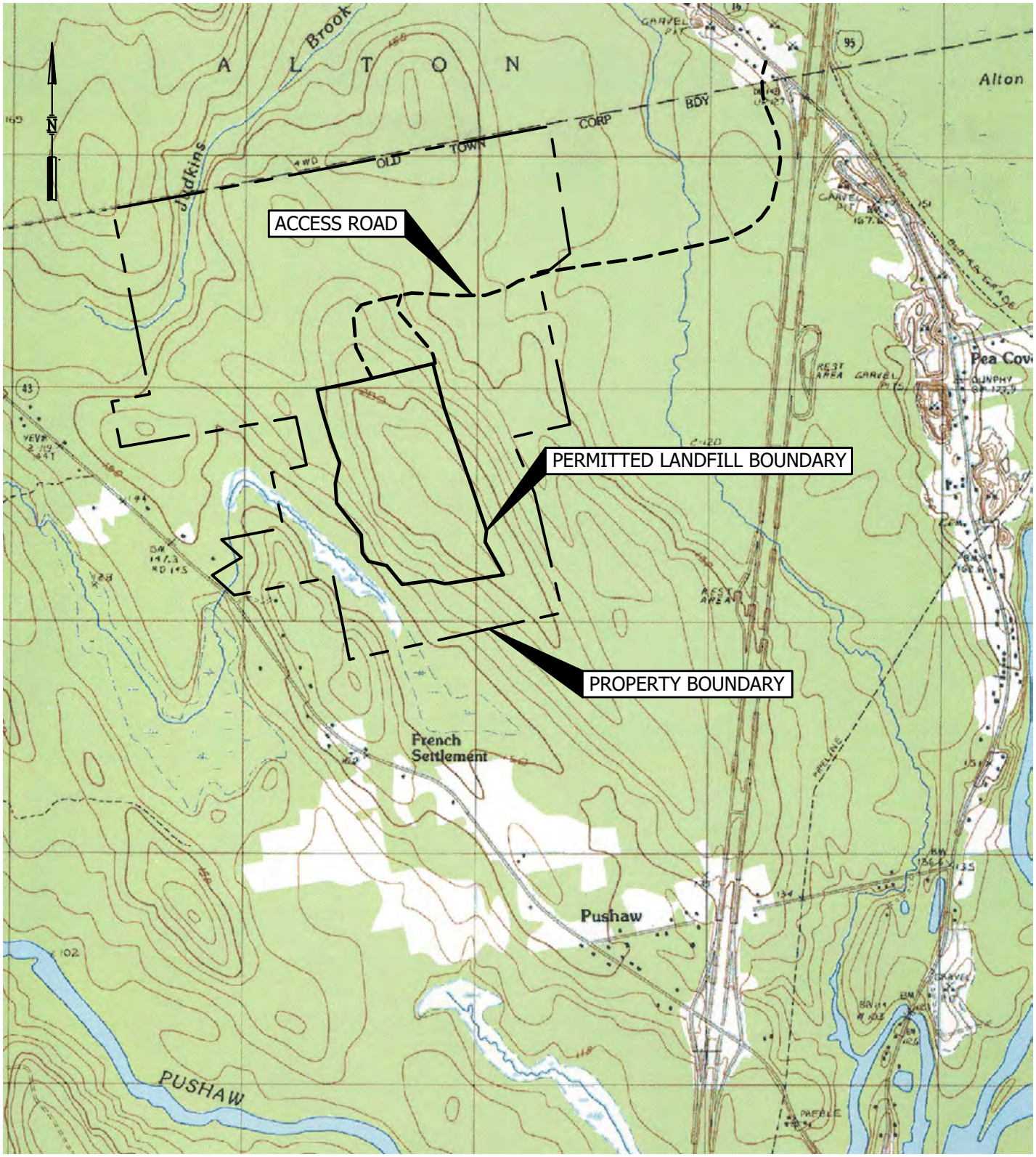
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ENVIRONMENTAL MONITORING PLAN
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

1.0 INTRODUCTION

The 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 around the Juniper Ridge Landfill (JRL) site (see Figure 1-1), which is operated by New England Waste Services of Maine Landfill Operations, LLC (NEWSME) on behalf of the state of Maine and the Maine Bureau of General Services (BGS). The EMP has been revised as necessary to address changes in site conditions; historical monitoring changes are summarized in Appendix A. This EMP combines the EMP approved for Cell 1 through Cell 10 and the EMP approved for the permitted expansion (Cell 11 through Cell 17). As of April 2024, Cells 1 through 15 have been constructed, Cell 16 construction is planned for the summer of 2024, and Cell 17 construction is planned for 2026.



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

1000 0 2000 FEET

DWG: SITELOC LMN: FIG 1 CTB: SME-STD REV: 4/5/2022

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

SME
SEVEE & MAHER
ENGINEERS

\\Nserver\cfs\Casella\OldTownLandfill\GeneralSiteInfo\Usgs\SITELOC.dwg, FIGURE 1-1, 4/5/2022 6:35:05 AM, sjm

2.0 OBJECTIVES OF THE ENVIRONMENTAL MONITORING PLAN

The purposes of the JRL monitoring plan 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, including routine characterization of the liquid in the underdrain layer beneath Cells 1 through 10, the underdrain beneath Cells 12 through 14, the former leachate pond, and the leak detection layer beneath Cells 11 through 17; and
- Evaluate the quality and quantity of leachate generated at the site.

3.0 MONITORING LOCATIONS AND FREQUENCY

The EMP includes monitoring at fifty groundwater monitoring wells, five surface water monitoring locations, five pore-water monitoring locations, two stormwater monitoring locations, thirteen underdrain monitoring locations, seven leak detection monitoring locations, and one leachate monitoring location. Monitoring locations are summarized in Tables 3-1 and 3-2 and shown on Figures 3-1 and 3-2.

3.1 Groundwater Monitoring Wells

The JRL groundwater monitoring well locations are described in Table 3-1 and are shown on Figures 3-1 and 3-2. Groundwater monitoring well locations are sampled during the spring, summer, and fall as shown on Table 3-3 for the monitoring parameter list established for the site as described in the site's 2017 license and 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, particularly near Cells 1 through 10. For Cells 11 through 17, the wells referred to as observation wells are located immediately adjacent to the Expansion boundary and are closely spaced, and the wells referred to as monitoring wells are located further from the landfill boundary between the Expansion boundary and the sensitive receptors. The groundwater monitoring locations have been located based upon the hydrogeologic site characterization work.

The groundwater elevations will be analyzed on an annual basis in accordance with the site's MEDEP license.

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 2024, there are:

- Four surface water monitoring locations along the unnamed tributary of Pushaw Stream (located west of the landfill);
- Four pore-water monitoring locations located in the soils along the east side of the unnamed tributary to Pushaw Stream; and
- Two stormwater monitoring locations in facility stormwater detention ponds.

HYDROGEN SULFIDE
MONITOR LOCATION A N
482095.70
E 929404.13

HYDROGEN SULFIDE
MONITOR LOCATION B N
477352.97
E 930685.56

PROPERTY LINE

CURRENT EXPANSION BOUNDARY

LEACHATE POND 1A
SEE FIGURE 3-2

HYDROGEN SULFIDE
MONITOR LOCATION D N
482955.24
E 921878.25

HYDROGEN SULFIDE
MONITOR LOCATION C
N 478101.11
E 923701.00

SW23-4
PWS-4
MW-06-01
MW-501
MW-502
OW-606A
MW-503
OW-606B
OW-605A
LF-LD-12
OW-604A
OW-06-03(
OW-603B
OW-602A
OW-601A
OW-601B
MW-206
P-206A
LF-UD-14
OW-607B
LF-LD-13
LF-LD-12
LF-LD-11
MW-08-01
MW-504
MW12-303R
LT-C4LR
P-04-11A
P-04-11B
LEACHATE STORAGE TANK
MW-505
LF-UD-10
LF-UD-9
OW-608A
MW-04-09B
MW-04-09A
OW-608B
LF-UD-8
SW-DP6
OW-609B
MW-506
FUTURE
CELL 17
FUTURE
CELL 16
LF-UD-6
P-04-04
P-04-02R
MH#5 (LF-UD)
MW-402B
MW-402A
MW09-901
SW-2
LF-LD-17
SW-DP1
MW04-102
MW-507
LF-LD-16
LF-LD-15
MW-223A
OW-610A
P-04-07A
P-04-07B
OW-611A
MW-223B
MW-508
MW-227
PWS10-3
LF-UD-SAND6
MW04-109R
MW-401B
MW-401A
MH#7 (LP-UD)
MW04-105
MW-301R
SW-1
DP-4
PWS10-2
PWS10-1
DETENTION POND 1A
(FORMER LEACHATE POND)
SW-5
SW-3

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 6/23/2023. 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.

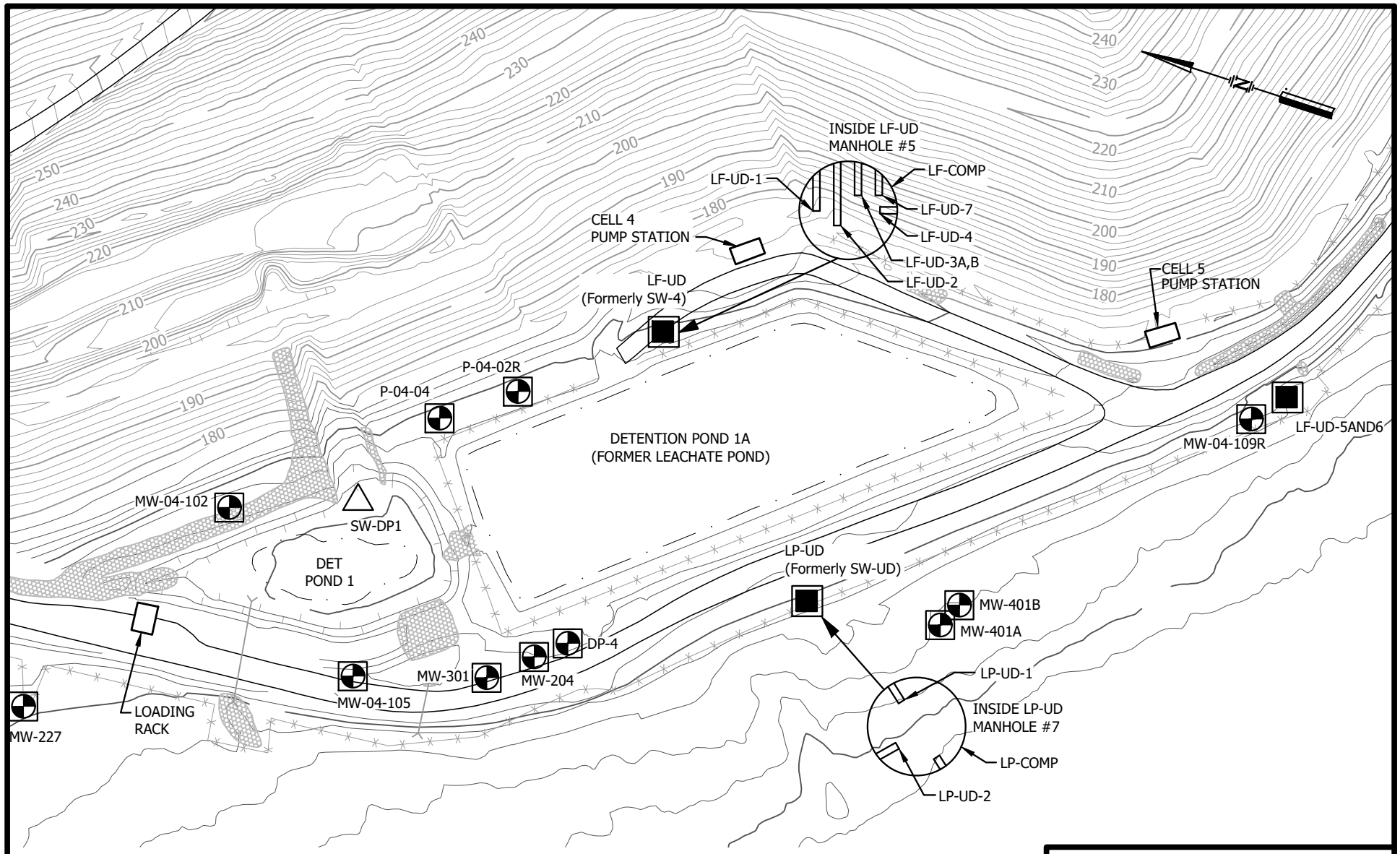
400 0 800 1600 FEET

FIGURE 3-1
SITE LAYOUT AND ENVIRONMENTAL
MONITORING LOCATIONS
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: EMP LMN: EMP 3-1 CTB: SME-STD REV: 4/23/2024

\\Server\cfs\Casella\OldTownLandfill\GeneralSiteInfo\Acad\EMP.dwg, EMP FIG 3-1, 4/23/2024 9:58:57 AM, bwb



LEGEND

- GROUNDWATER MONITORING LOCATION
- SURFACE WATER MONITORING LOCATION
- UNDERDRAIN MONITORING LOCATION
- GAS MONITORING LOCATION
- LEACHATE PUMP STATION

FIGURE 3-2
ENVIRONMENTAL MONITORING LOCATIONS
ADJACENT TO
DETENTION POND 1A
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

SME
SEVEE & MAHER
ENGINEERS

DWG: EMP LMN: EMP 3-2 CTB: EML REV: 4/23/2024

\\Server\cfs\Casella\OldTownLandfill\GeneralSiteInfo\Acad\EMP.dwg, EMP FIG 3-2, 4/23/2024 9:59:31 AM, bwb

TABLE 3-1

GROUNDWATER MONITORING LOCATIONS
ENVIRONMENTAL MONITORING PROGRAM

Monitoring Wells	Location (Upgradient or Downgradient)	Screen Interval (ft below ground surface)	Well Type	Installation Year
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
P-04-11B	Downgradient	9.0 – 10.0	Overburden	2004
MW-04-09A	Downgradient	38.0 – 39.0	Bedrock	2004
MW-04-09B	Downgradient	14.0 – 15.0	Overburden	2004
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
MW-505	Downgradient	72.2-82.2	Bedrock	2020
MW-506	Downgradient	50.0-60.0	Bedrock	2020
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

TABLE 3-1 (cont'd)
GROUNDWATER MONITORING LOCATIONS
ENVIRONMENTAL MONITORING PROGRAM

Monitoring Wells	Location (Upgradient or Downgradient)	Screen Interval (ft below ground surface)	Well Type	Installation Year
OW-608A	Downgradient	62.5 – 260.0	Bedrock (Open Borehole)	2017
OW-608B	Downgradient	33.5 – 43.5	Overburden	2020
OW-609B	Downgradient	39.0 – 49.0	Overburden	2020
OW-610A	Downgradient	26.7 – 36.7	Bedrock	2022
OW-611A	Downgradient	12.5 – 220.0	Bedrock (Open Borehole)	2017
OW-06-03	Downgradient	13.0 – 23.0	Overburden	2018
MW-08-01	Downgradient	117.0-127.0	Bedrock	2020

TABLE 3-2

SURFACE WATER, PORE-WATER, STORMWATER, LEACHATE, LEAK DETECTION, AND UNDERDRAIN MONITORING LOCATIONS

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
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

TABLE 3-2 (cont'd)
SURFACE WATER, PORE-WATER, STORMWATER, LEACHATE, LEAK DETECTION, AND UNDERDRAIN MONITORING LOCATIONS

Location Designation	Location Description	Collection Method	Position Relative To Landfill	First Recorded	Current Status
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
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-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	Cell 16 Leak Detection System	Grab	Western Perimeter Dike Leak Detection	To Be Established	Upon completion of Cell 16
LF-LD-17	Cell 17 Leak Detection System	Grab	Western Perimeter Dike Leak Detection	To Be Established	Upon completion of Cell 17
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

Acronyms:
SW-X – Surface Water Location
SW-DPX – Stormwater Detention Pond Location
LT-C4LR – Leachate Sample Location
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

SAMPLING FREQUENCY
ENVIRONMENTAL MONITORING PROGRAM

Sample Type	Monitoring - Detection (D)/Expansion Landfill Detection (D(E))/Field Parameters Only (FP)					Field Parameters Monthly[1]
	Monitoring Location	Characterization Monitoring	Spring	Summer	Fall	
Groundwater	MW-204	N/A	-	-	FP[2]	-
	MW-206	N/A	D(E)	D(E)	D(E)	-
	P-206A	N/A	D(E)	D(E)	D(E)	-
	MW-223A	N/A	D	D	D	-
	MW-223B	N/A	D	D	D	-
	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	D	D	-
	MW-402A	N/A	D	D	D	-
	MW-402B	N/A	D, VOC	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)	FP	-
	P-04-11B	2021	FP	D(E)	FP	-
	MW-04-09A	2020	D(E)	D(E)	D(E)	-
	MW-04-09B	2020	D(E)	D(E)	D(E)	-
	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)	FP	-
	P-04-07B	2022 - 2023	FP	D(E)	FP	-
	MW-501	2018	D(E)	D(E)	D(E)	-
	MW-502	2020	D(E)	D(E)	D(E)	-
	MW-503	2021	D(E)	D(E)	D(E)	-
	MW-504	2021	D(E)	D(E)	D(E)	-
	MW-505	2021	D(E)	D(E)	D(E)	-
	MW-506	2021	D(E)	D(E)	D(E)	-
	MW-507	2018	D(E)	D(E)	D(E)	-
	MW-508	2022 - 2023	D(E)	D(E)	D(E)	-
	MW06-01	2018	D(E)	D(E)	D(E)	-
	MW09-901	N/A	D	D	D	-
	OW-601A	2018	FP	D(E)	FP	-
	OW-601B	2018	FP	D(E)	FP	-
	OW-602A	2018	FP	D(E)	FP	-
	OW-603B	2018	FP	D(E)	FP	-
	OW-604A	2018	FP	D(E)	FP	-
	OW-605A	2018	FP	D(E)	FP	-
	OW-606A	2018	FP	D(E)	FP	-
	OW-606B	2021	FP	D(E)	FP	-
	OW-607B	2021	FP	D(E)	FP	-
	OW-608A	2018	FP	D(E)	FP	-
	OW-608B	2021	FP	D(E)	FP	-
	OW-609B	2021	FP	D(E)	FP	-
	OW-610A	2022 - 2023	FP	D(E)	FP	-
	OW-611A	2018	FP	D(E)	FP	-
	OW-06-03	2018	FP	D(E)	FP	-
	MW-08-01	2021	D(E)	D(E)	D(E)	-

TABLE 3-3 (cont'd)
SAMPLING FREQUENCY
ENVIRONMENTAL MONITORING PROGRAM

Sample Type	Monitoring - Detection (D)/Expansion Landfill Detection (D(E))/ Field Parameters Only (FP)/Volatile Organic Compounds (VOC)/ DISSOLVED METHANE (M)					Field Parameters Monthly[1]
	Monitoring Location	Characterization Monitoring	Spring	Summer	Fall	
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	2023	D(E)	D(E)	D(E)	-
	SW-5[4]	TBD[5]	D(E)	D(E)	D(E)	-
Pore-Water	PWS10-1	N/A	D, M	D	D	-
	PWS10-2	N/A	D, M	D	D	-
	PWS10-3	N/A	D, M	D	D	-
	PWS-4	2023	D(E)	D(E)	D(E)	-
	PWS-5[4]	TBD[5]	D(E)	D(E)	D(E)	-
Stormwater	SW-DP1	N/A	D	D	D	-
	SW-DP6	N/A	D	D	D	-
Leachate	LT-C4LR	N/A	D[6], VOC	D, VOC	D, VOC	-
Leak Detection	LF-LD-11[7]	N/A	-	D€	-	X
	LF-LD-12[7]	N/A	-	D(E)	-	X
	LF-LD-13[7]	N/A	-	D(E)	-	X
	LF-LD-14[7]	N/A	-	D(E)	-	X
	LF-LD-15[7]	N/A	-	D(E)	-	X
	LF-LD-16[4,7]	N/A	-	D(E)	-	X
	LF-LD-17[4,7]	N/A	-	D(E)	-	X
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, VOC	D(E)	-	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 leak detection monitoring during the nine months that water quality sampling is not conducted. Monthly parameters include flow and specific conductance.
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. Characterization monitoring (four rounds) as summarized in Table 4-2 will be completed prior to waste placement of expansion cells Cell 16 and Cell 17.
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 Liner Action Plan (See Appendix B).

Appendix A contains details of historical monitoring program changes.

- = not sampled
N/A = Not Applicable

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, will be established and monitoring will begin once Cell 17 has been constructed.

3.3 Leachate Monitoring

The leachate sampling occurs at the on-site leachate storage tank shown on Figure 3-1. The leachate is sampled during the spring, summer, and fall seasons. During the spring monitoring event, the leachate sample is analyzed for the MEDEP Rules Chapter 405 Appendix A Column 3 parameters as described in Section 4.0.

3.4 Underdrain Monitoring

The JRL underdrain system consists of sand, stone, and perforated collection piping installed beneath the liner systems of the leachate pond and Cells 1 through 10 and portions of Cells 12 through 14 of the landfill and the former leachate pond. The underdrain pipe sampling locations are shown on Figures 3-1 and 3-2. The underdrain location designations and descriptions are included in Table 3-2 and the sampling frequency is noted in Table 3-3. The samples are analyzed for the monitoring parameters summarized in Section 4.0.

3.5 Leak Detection Monitoring

The leak detection monitoring for expansion cells (Cells 11 through 17) consists of sampling ports on the discharge lines at each expansion cell leak detection pump station. The leak detection locations are sampled during the spring, summer, and fall seasons for the monitoring parameters summarized in Section 4.0. The results of the monthly monitoring of the leak detection system will be compared to Action Levels defined in the expansion's Liner Action Plan (LAP) provided in Appendix B. The LAP outlines the procedures to evaluate the data collected from the leak detection systems, and actions that will be implemented if the water quality data suggest the primary liner is not performing as designed. If action levels are exceeded, the monitoring parameters may be expanded as described in the LAP.

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 four stations located beyond the facility's property boundary shown on Figure 3-1.

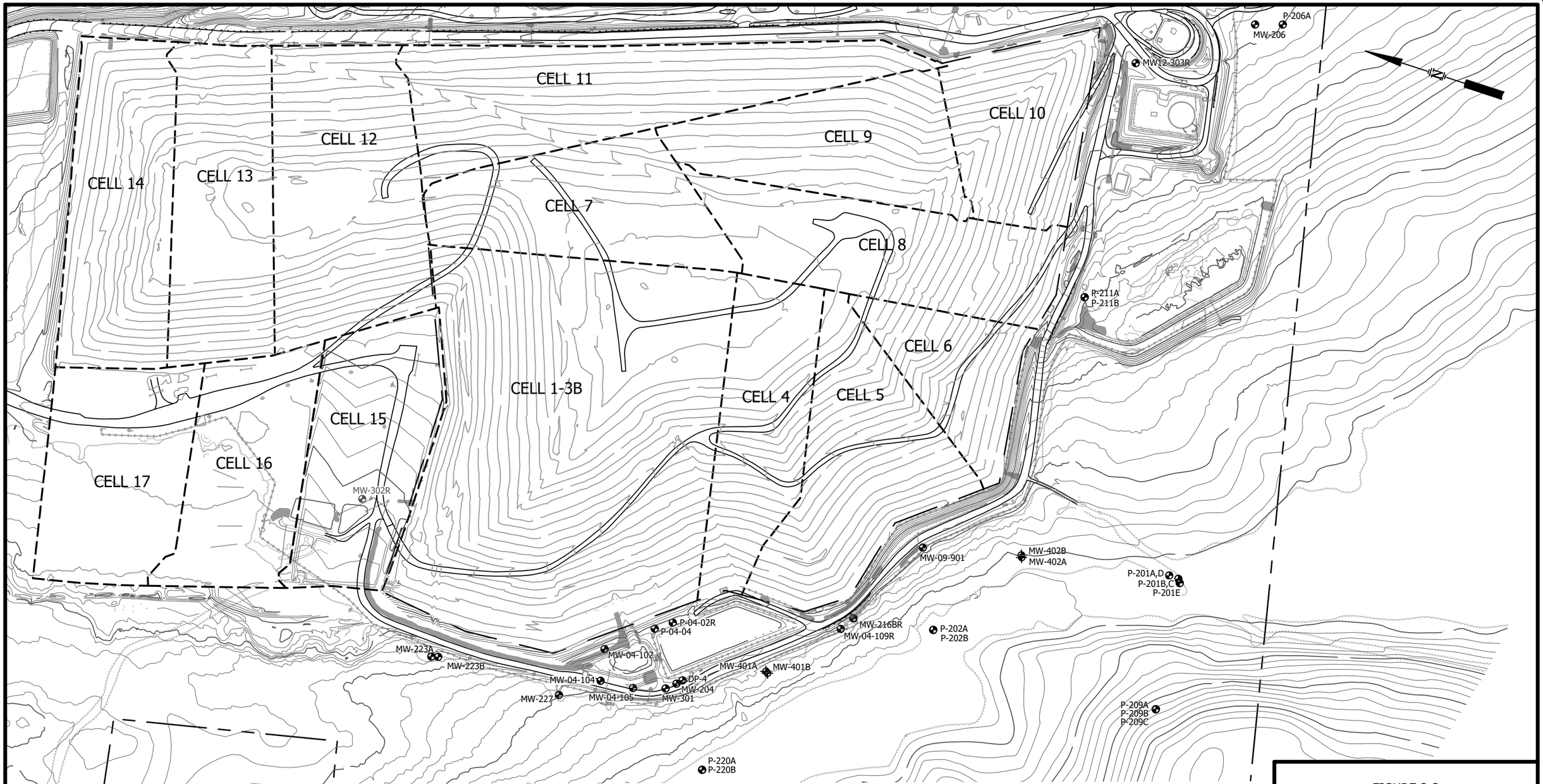
3.7 Annual Monitoring Well Specific Conductance Measurements

Specific conductance measurements are measured annually from an expanded list of monitoring wells surrounding the existing landfill operations at JRL during the October monitoring event based on the MEDEP's request in 2008. Locations measured annually for specific conductance are listed in Table 3-4 and shown on Figure 3-3.

TABLE 3-4

2023 MONITORING WELL AND PIEZOMETER LOCATIONS USED FOR ANNUAL SPECIFIC CONDUCTANCE MEASUREMENTS

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	



NOTES

1. TOPOGRAPHY FROM AERIAL SURVEY PERFORMED BY AERIAL SURVEY & PHOTO INC., NORRIDGEWOCK, MAINE. PHOTO DATE 6/23/2023. 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 6/24/21. 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

MW-302R — 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: FIG3-3 CONDUCTIVITY CTB: CONDUCTIVITY REV: 4/18/2023

\\Server\ds\Casella\OldTownLandfill\GeneralSiteInfo\Acad\GW.dwg, FIG 3-3 ANNUAL CONDUCTIVITY, 4/1/2024 7:39:45 AM, sjm

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 selection of parameters of interest was made 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 s are presented in Table 4-1.

The analytical laboratory 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).

TABLE 4-1

DETECTION MONITORING ANALYTICAL PROGRAM

Water Quality Parameter	Method	PQL[1] (mg/l)[2]
Total Dissolved Solids	SM 2540C	10
Total Suspended Solids	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)[9]	SW6010C/3010A	0.003
Sulfate (SO_4)	SWE300/9056A	2.0
Sulfide[4,9]	HACH 8131	0.1[1]
Volatile Organic Compounds (VOCs)[5,6]	U.S.EPA 8260C	0.005-0.02
Ammonia (NH3-N)[9]	SM 4500 NH3 B/ SM4500 NH3 C	0.5
Total Alkalinity[9]	SM 2320B	1.5
Nitrate + Nitrite	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[9]	SW6010C/3010A	0.05
Bromide	SW9056A	0.1
Methane[9,10]	U.S.EPA 8015B(MOD RSK-175)	0.02
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[11]	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 on the spring leachate sample.

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 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, LP-UD-1, and LP-UD-2 are analyzed for VOC compounds. Leachate is analyzed for VOC compounds during all three monitoring events.

7 Monitoring wells and leachate only.

8 Pore-water, surface waters, stormwater, and underdrain only.

9 Cells 11 through 17 monitoring wells. Cells 11 through 17 Leak Detection and Underdrain locations (summer only).

10 Pore-water, P-04-07A&B, MW-04-09A&B, P-04-11A&B, MW-206, P-206A, and MW-223B.

11 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.

5.0 SAMPLING PROCEDURES

This section describes the protocols involved in sampling groundwater, surface water, leachate, leak detection, 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 these bottles upon request to the sampling personnel.

Upon arrival at each sampling location, the sampling personnel will observe the physical condition of the monitoring wells. The inspection will include checking the condition of the ground surface seal and the well guard pipe to ascertain any evidence of frost-heaving, cracks, 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 prior to beginning 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. The distance from the reference elevation to the water contact will be entered in the field records. Depth to water in the monitoring wells will be determined to the nearest 0.01 feet, referenced to the top of the polyvinyl chloride (PVC) well casing (i.e., permanently marked measurement reference point). In cases where water is flowing from the well casing, the water level will be noted as such. Upon removal of the water level probe, it will be decontaminated as described in Section 6.1.

5.1.1 Low-flow Sampling Procedure

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 at the site. The objective of the sampling is to minimize the drawdown and disturbance in the well in order 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 monitoring program, a low-flow sampling assessment will be completed at each new location. The low-flow sampling procedure for each monitoring well was determined by implementing the assessment procedure summarized in Appendix C of this EMP. The facility's current sampling procedure is summarized in Table 5-1.

TABLE 5-1

LOW-FLOW SAMPLING PROCEDURES

Monitoring Well	Sampling Equipment	Well Diameter (in.)	Recommended Flow Rate (ml/min)	Results of Low-Flow Rate Sampling Assessment	Recommended Sample Collection Procedure
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 PROCEDURES

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-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

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.

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.
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 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. Equipment used to measure field parameters must be calibrated on a daily basis.

Placement or replacement of dedicated sampling tubing in any well will be done a minimum of 24 hours before 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 in the well screen. Tubing, pumps, or measuring devices will not be placed into the water column within 24 hours of sampling or during sampling of the well.

During initial well installation and development, it will be determined if the drawdown will stabilize in a reasonable amount of time for sampling purposes for each well. Separate procedures are included below for wells that will stabilize and wells that will not stabilize.

Procedure for Wells Where Drawdown Stabilizes

1. Low flow rates will be used for purging, as specified in Table 5-1.

2. Water level measurements must 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 (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.

4. Once drawdown stabilization is achieved and three successive 5-minute interval field parameter measurements meet the conditions listed below, complete stabilization will be verified by three successive field parameter measurements at 3-minute intervals, which 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 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. Samples will be obtained directly from the pump discharge line. The sample labeling procedures described above will be used for all water quality samples collected at the JRL.

TABLE 5-2

SAMPLE LABEL INFORMATION

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 protective devices and the field instrumentation 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.
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 bottle not more than 1 foot below the water surface. If a stream is being sampled, the sample will be 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, not the sample:
    - Temperature;
    - pH;
    - Specific Conductance;
    - Dissolved Oxygen;

- Eh; and
- Turbidity.

If direct measurement is not possible, these parameters will be measured from water remaining in the sampling device or another sample bottle. 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 (Appendix E).

5.3 Leachate, Leak Detection, and Underdrain Sampling Procedure

Leachate, leak detection, and underdrain samples will be obtained in the following manner:

- Sample Collection from Pumping Station 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 is directly accessible, a sample can be collected directly from the discharge 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 and underdrain samples, measure the following parameters in a separate sample bottle:

- Temperature;
- pH;
- Specific Conductance;
- Dissolved Oxygen;
- Eh; and
- Turbidity.

The flow rate for the leachate and leak detection systems and underdrain pipes will be measured by timing the filling of a container of known volume, if possible.

This 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 not disrupt the area where pore-water sampler will be installed.
3. Gently push the pore-water sampler approximately two feet into the soil surface in the desired location. The inner rod should be present in the sampler at the time of installation in order to maintain the integrity of the pore-water 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 (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 turbidities over 20 NTU, the metals sample will be filtered through a 0.45-micron high-capacity filler.
7. Install a grade stake with the sample location identification clearly marked on the grade stake to allow for future sample collection from the same general location.
8. Initiate COC procedures as described in Section 7.0.

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 will be monitored three times per year at all monitoring well, underdrain, leak detection, and leachate collection locations. Additionally, four locations just beyond the 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 monitoring location and the hydrogen sulfide monitoring locations The meter will be calibrated to a methane standard in accordance with the manufacturer's instructions. The monitoring procedure is as follows:

1. Note the weather conditions at the time of sampling.
2. Remove the protective cap from the monitoring well.
3. Insert the meter's inlet tube approximately two inches into the top of the monitoring well. 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.
7. Proceed with the well purging and sampling procedures specified in Section 5.0.

5.6 Sample Volume, Preservation, and Holding Times

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 samples to be collected.

TABLE 5-3

SAMPLE HANDLING, PRESERVATION, AND HOLDING TIME

Parameter Group[1]	Container	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

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 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 bottles 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 bottles in covered insulated coolers constructed of impact resistant plastic. Efforts will be made to pack the coolers so that sample bottles 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 will be analyzed for the same parameters as its companion sample.

5.7.3 Trip Blanks

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 bottles 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.

- 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 bottle under any circumstances. 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.

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 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 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, and results are traceable to field records;
- Important 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.

Samples to be collected from the JRL will be identified in accordance with SME's standard procedure. A copy of the sample identification procedure is in Appendix F.

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 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, samples will be packed and shipped so as 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 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 calculated. Samples outside range (0.55 – 0.75) 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 collected);
- 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. Parameters will be plotted which are indicative of the leachate quality or the geochemical effects of the leachate in the natural soils or bedrock.

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. This 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 changes (e.g., locations, parameters, frequency, etc.) will be submitted to MEDEP. The annual report will also include responses to any MEDEP comments 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 with the development of the expansion cells. They will be sealed in a manner appropriate to geologic conditions at each location and in accordance with MEDEP procedures, as follows:

1. Remove all material installed in the original borehole, including casing, screen, and annular materials, to the greatest extent possible;
2. Seal the borehole by pressure injection from bottom to top with cement bentonite or other appropriate material to within 5 feet of the ground surface. The upper 5 feet may be backfilled with native material and the entire site must be restored to a safe condition; and
3. Document the abandonment through a written description of the procedures, drilling methods and depths, borehole depth, and volume and type of sealant.

APPENDIX A

ENVIRONMENTAL MONITORING PLAN REVISION TABLE

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JUNIPER RIDGE LANDFILL FACILITY
ENVIRONMENTAL MONITORING PLAN REVISION TABLE
(UPDATED APRIL 2024)

Date	EMP Revision	Location of Change in EMP	Page Location
April 2024	Combined EMP for Cells 1 thru 10 and the EMP for expansion Cells 11 thru 17 into a single document. Abandoned MW-302R as part of cell development and construction.	Changes made throughout the entire 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

LINER ACTION PLAN (JULY 2015)

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ENGINEERS

JUNIPER RIDGE LANDFILL EXPANSION APPLICATION
LINER ACTION PLAN

Submitted by:

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

July 2015

SME
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

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

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JUNIPER RIDGE LANDFILL EXPANSION
LINER ACTION PLAN

1.0 INTRODUCTION

This document describes the Liner Action Plan (Plan) for Cells 11 through 16 of the proposed landfill expansion (Expansion) at the Juniper Ridge Landfill (JRL) in Old Town, Maine. The Plan describes the method to be used by NEWSME Landfill Operations, LLC (NEWSME) to monitor the performance of the Expansion's primary liner, and if appropriate, trigger response activities in the event monitoring suggests additional actions are warranted. The monitoring and evaluation techniques described in this Plan have been successfully employed at other landfill facilities in the State of Maine to monitor the performance of primary liner systems.

The expansion cells (i.e., Cells 11 through 16) have a primary and secondary liner system with a dedicated leak detection system (LDS) between them. The primary liner is a composite liner consisting of an 80-mil HDPE geomembrane, a geosynthetic clay liner (GCL) and one foot of compacted clay. The secondary liner is a 60-mil HDPE geomembrane.[1] Under the entire landfill base a one foot compacted clay layer exists. The leak detection system for the cells is located between the primary and secondary liners and consists of a geocomposite, one foot of sand, and piping which drains to an internal sump located within the cells. The sumps are equipped with a dedicated pumping system in each cell which allows both the flow and water quality of LDS fluids to be monitored by means of data collected from the totalizing flow meter and dedicated sample ports on each cell's LDS pump discharge.

The Plan describes a procedure to monitor the performance of the primary liner system using water quantity and quality data from the cell's LDS to a calculated Action Leakage Rates (ALRs). ALRs are calculated flow rates collected by the leak detection layer that trigger further

[1] In some areas of the landfill the secondary geomembrane is augmented with a GCL and one foot of clay.

investigations or actions that will be undertaken to evaluate primary liner's performance. For the Expansion two ALRs have been identified and are discussed in Section 3.0

The procedure for monitoring the primary liner performance uses a comparison of the specific conductance measurements in the LDS with the specific conductance identified as LDS Action Levels (LDSALs). The LDSALs are calculated using the ALR flow rates, the background flow rates in the leak detection system, and the specific conductance measurements of the LDS discharge prior to active use of the cell, and the specific conductance of the landfill leachate. This approach allows for a more representative evaluation of primary liner performance than a straight comparison of flow from the LDS system to the ALR's since flow in the LDS system can be from a number of sources which are not leachate related. These can include fluid present in the system as a result of construction or non-leachate leakage into the system from the perimeter of the cells. By incorporating specific conductance measurements into the evaluation of the primary liner performance the source of water collected in the LDS system can be better quantified. As the landfill cells are operated, actual flow and specific conductance measurements, obtained from the LDSs will be incorporated into the monitoring program. The procedures for both calculating the LDSALs and incorporating data into the monitoring program are discussed in Section 3.0.

NEWSME will be responsible for collecting the monitoring data (i.e., flows and conductivity measurements), compiling and evaluating the data, and reporting the data to the Maine Department of Environmental Protection (MEDEP). In the event the data suggests a leak has occurred, they may also involve a professional technical consultant to evaluate the data and assist in determining whether a leak has occurred and appropriate response actions. NEWSME will collect flow data and water quality samples from the leachate and individual cell's leak detection systems on a monthly basis for use in implementing this Plan.

The remainder of this Plan discusses the approach and methodology for monitoring the performance of the landfill cells' primary liner. Section 2.0 provides an overview of the Expansion containment systems design, and possible sources of fluids that would be collected by the leak detection layer. Section 3.0 discusses the two specific ALRs selected for the Expansion, and the corresponding Response Activities (RAs). This section also describes the

methodology for converting ALRs to LDSALs. Section 4.0 describes the location and frequency of monitoring associated with the Plan, as well as the methodology for collecting samples from the Expansion cells' leachate sumps.

2.0 OVERVIEW OF CONTAINMENT SYSTEM DESIGN AND PROJECTED FLOW RATES

2.1 Containment System Design

The cells' containment system is designed to contain and collect leachate generated in the cells and monitor the performance of the primary liner system with a dedicated leak detection system. The containment system design includes the following components:

Leachate collection layer:

- a 12-inch layer of drainage sand ($K \geq 1x10^{-2}$ cm/sec),
- a network of 6 and 8-inch diameter perforated HDPE pipe,
- a geocomposite drainage net and piping system, and
- an internal leachate sump and pump system.

Primary liner system:

- a 80-mil high-density polyethylene (HDPE) textured geomembrane,
- a geosynthetic clay liner (GCL), and
- a 12-inch clay layer (hydraulic conductivity (K) less than or equal to $1x10^{-7}$ cm/sec).

Leak detection system:

- a 12-inch layer of drainage sand ($K \geq 1x10^{-2}$ cm/sec),
- a network of 6-inch diameter perforated HDPE pipe with sampling,
- a geocomposite drainage net and piping system, and
- an internal leak detection sump and pump system within each cell.

Secondary liner system:

- a 60-mil HDPE textured geomembrane.

The entire double liner system is underlain by and a 12 inch clay layer, having a hydraulic conductivity (K) less than or equal to $1x10^{-7}$ cm/sec.

2.2 Leak Detection Flow Rates

Fluid within the leak detection layer will flow to the individual LDS pump stations. There are several potential sources of fluid that could be present in the leak detection layer. These include construction water and liquids that enter the LDS before waste filling begins; liquids that enter the LDS system from areas not in contact with wastes, such as along the perimeter of the landfill cells in the vicinity of the anchor trench, and any fluid which may flow through the liner system due to defects in the primary liner system. The amount of these fluids can vary depending on the site conditions.

3.0 ACTION LEAKAGE RATES \ACTION LEVELS\ AND RESPONSE ACTIONS

3.1 Background

40 CFR § 265.302 defines Action Leakage Rate as the "maximum design flow rate that the leak detection system can remove without the fluid head on the bottom liner exceeding one foot." The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction operation, and location of LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS and proposed response actions (e.g. the action leakage rate must consider decreases in flow capacity of the system over time resulting from siltation, and clogging, rib layover and creep of synthetic components of the system overburden pressure, etc.) U.S.EPA initially proposed a range for ALRs of between 5 and 20 gallon per acre per day (gpad) for waste management units with a composite liner system (Federal Register, 1987). In a supplemental document supporting final rulemaking, U.S.EPA acknowledged that these values may not be achievable in waste facilities meeting the minimum U.S.EPA design standards for double lined facilities (U.S.EPA, 1992). U.S.EPA recommended an ALR of 100 gpad for landfill facilities. This recommendation was based on measurements of actual flow rates in leakage detection systems of operating facilities, which meet the U.S.EPA minimum design requirements, and a theoretical analysis using a sophisticated three-dimensional seepage model. In recommending the 100 gpad, U.S.EPA states "leakage rates above this value often indicate that 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 that may be readily identified and repaired."

The information contained in the supplemental U.S.EPA document (U.S.EPA, 1992) suggests that facilities constructed with proper QA/QC, as proposed for the Expansion cells, typically have flow rates in their LDS of less than 100 gpad; whereas, only 70 percent of the well-designed facilities with good QA/QC can meet the original proposed upper bounds of 20 gpad, included in U.S.EPA's original proposal. The Expansion cells will be constructed with an extensive amount of QA/QC testing and oversight as is currently done for the existing landfill

cells. Therefore, site-specific ALRs were being proposed to the Expansion as described in Section 3.2

3.2 Landfill Cells Action Leakage Rates

For Cells 11 through 16, two ALRs will be used to monitor and evaluate the primary liner's performance. These ALR's have been established based on the EPA guidance and the site specific design assumptions, characteristics, and QA/QC Plans. Each ALR has an appropriate Response Activity (RA) associated with it. The purpose of defining two ALRs is to provide an initial response level set at a low level that triggers an initial review and increased monitoring of the data collected from the LDS, and a second level that warrants a more immediate investigation of potential sources of primary liner leaks. The exceedance of the first ALR would trigger a more frequent sampling regime. Then a more detailed analysis of LDS water quality to determine the cause for the ALR exceedance. The first ALR (ALR-I) will require obtaining additional measurements during the work week to confirm the initial results; notification of the MEDEP after obtaining four weekly sets of readings; continue monitoring the LDS during the work week for four consecutive months to confirm the ALR-I is consistently being exceeded. If four consecutive monthly readings indicate a leak, then monitor the individual LDS sumps for detection monitoring water quality parameters. The second ALR (ALR-II) will indicate a potential compromise of the primary liner system requiring a more immediate action, including additional investigations and the notification of MEDEP.

The Action Leakage Rates established for the cells consist of two liner leakage rates that were utilized to evaluate the potential impact of landfill leakage on the surrounding environment.[1]

- The first ALR (ALR-I) is set at 4.6 gallons gpad. This value was used to evaluate the effect on site groundwater if three 1 cm^2 holes develop in the secondary liner

[1] In a total liner failure, the amount of leachate that would enter the environment will be controlled by the hydraulic conductivity of the soil present under the liner including the imported clay layer. Volume III of the MEDEP Application contained a contaminant transport analysis (Section 4.0) as required by the MEDEP Solid Waste Management Rules (Section 401.2.D.).

system. This ALR is below the 20 gpad that has historically been used in the State of Maine.

- The second ALR (ALR-II) is set 92 gpad. This value was used in the contaminant transport analysis to evaluate potential effect of on-site groundwater assuming no liner is present.[2]

The total leachate leakage rates for the individual cells based on these ALRs are summarized in Table 1.

TABLE 1

ACTION LEAKAGE RATES – EXPANSION CELLS

Cell ID	Cell Area (Acres)	LDS-ALR-I (gallons per day)	LDS-ALR-II (gallons per day)
11	9.5	44	874
12	12.6	58	1159
13	11.8	54	1085
14	6.7	31	616
15	6	28	552
16	7.1	33	653

3.3 Leak Detection System Action Levels

To determine if an ALR has been exceeded in a landfill cell, the monthly measured specific conductance value of the LDS discharge will be compared to a calculated Leak Detection System Action Level (LDSAL). The LDSAL will be calculated using ALR values in Table 1; the base LDS flow rate and the baseline LDS specific conductance measurement collected before active cell operations, and the specific conductance measurements of the leachate. The LDSAL will be calculated for each cell using the equation: LDSAL = *{[(base flow rates) * (the baseline specific conductance)] + [action leakage rates) * (leachate specific conductance)] /((base flow rate to the underdrain) + action leachate rates))*.

Tables 2 shows the general specific conductance values associated LDSAL-I and LDSAL-2 for Cell 11 with for the solution to this equation for each of the ALRs, and assumed values for both

[2] The contaminant transport analysis demonstrated that a leak of this level would not result in contamination at sensitive receptors.

baseline flow in the LDS and Specific conductance of the leachate. As the facility is operated, operational data will be incorporated into the calculation of the LDSALs for each of the individual cells. The collection of this data, and its incorporation into determining the LDSAL, is discussed in Section 4.1.

TABLE 2

LEAK DETECTION SYSTEM ACTION LEVELS

Cell	Cell Size acres	Total Leachate Seepage Flows (gpd)		Baseline Values			Leak Detection System Action Levels	
		ALR I 4.6 gpad	ALR II 92 gpad	Flow gpd	LDS Cond. µmhos/cm	Leach. Cond. µmhos/cm	LDSAL I µmhos/cm	LDSAL II µmhos/cm
11	9.5	44	874	2,025	400	20,000	817	6,309

3.4 Response Actions

NEWSME will notify the MEDEP within 15 working days of obtaining four consecutive monthly readings from the leak detection discharge, suggesting exceedance of ALR-I (as determined by comparing the specific conductance measurement to the corresponding LDSAL). After notifying the MEDEP, NEWSME will monitoring the leak detection discharges at weekly intervals for four consecutive months, and notify the MEDEP of the results. If the results from the four months of weekly monitoring program suggests that liner seepage in excess of the ALR-I rate has occurred, a sample of the water from the offending LDS will be analyzed for the detection monitoring parameters contained in the facility's Environmental Monitoring Plan, at the end of the four months to assist in evaluating the source of the fluid in the LDS system. The MEDEP will be kept informed either verbally or written of the results of the sampling. NEWSME will prepare a report summarizing the results of the sampling and submit it to the MEDEP for its review within 60 days of receiving the detection monitoring test results. The report will contain recommendations for addressing the ALR-1 exceedance.

If the results of LDS monitoring exceed the LDSAL value associated ALR-II rate, NEWSME will notify MEDEP within 10 working days, and after consultation with MEDEP will submit a plan to the MEDEP which identifies the approach it will implement to evaluate the cause of the exceedance of ALR-II and identify appropriate corrective actions. Upon receipt of approval of

this plan, NEWSME will undertake the plan and provide MEDEP with monthly progress reports. NEWSME will continue to collect measurements of flow and specific conductance from the LDS on a weekly basis until NEWSME and MEDEP agree to a modified plan.

4.0 MONITORING PROCEDURES

4.1 Monitoring Frequency

To implement the Plan, water quality and quantity samples will be collected from the LDS for each landfill cell. The total flows will be obtained from the totalizing flow meters installed on the discharge lines for the LDSs. The water quality samples will be collected from the sampling port on the LDS pump station discharge from each cell.

During the initial baseline period of operations, after a cell has been constructed and waste placed in the cell, LDS water quality and quantity samples will be collected at a frequency defined in Table 3. The baseline period is anticipated to last up to a year after the construction of a cell is completed and waste is placed in the cell.[4] Data collected during this baseline period will be used to calculate the LDSALs used to monitor the performance of the primary liner, and provide baseline conductivity measurements at each sampling port. After this baseline period, the frequency of data collection will be modified during the operating and closure life of the facility. The frequency of sample collections during the operational and closure period is summarized in Table 3. At the end of each calendar year, the data from that preceding year will be incorporated into the calculation of the UALs values used to monitor the primary liner performance. This will be done by calculating the monthly-means of the leachate specific conductance measurement, and recalculating the LDSAL values using this data for each cell. NEWSME will make appropriate recommendations for changes to the methodology for calculating the LDSALs based on the data collected as part of the annual report prepared for the Landfill. NEWSME will make no changes to the methodology until it receives MEDEP's approval.

[4] The baseline period will be extended after initial waste in placed in the landfill cell provided the data collected suggests that the liner system is functioning as designed.

TABLE 3

LINER ACTION PLAN SAMPLING FREQUENCY

Item	Baseline Period[2]	After Baseline Period Provided LDSAL-I is not Exceeded	After Baseline Period If LDSAL-I is Exceeded for Four Consecutive Months	After Baseline Period If LDSAL-II is Exceeded
LDS Flow Rate(gpd)	Bi-Weekly	Monthly	Weekly	Daily
LDS Specific Conductance (μmhos/cm)	Bi-Weekly	Monthly	Weekly	Weekly
Leachate Specific Conductance(μmhos/cm)	Bi-weekly	Monthly	Weekly	Weekly
Leak Detection Water Quality Characterization	1	1	2	As Required[3]

Notes:
1. Leak detection water quality will be characterized as outlines in the Facility's EMP.
2. The sample period during the baseline period may be decreased as the data collected is consistent. The data will be collected no less than monthly during the baseline period.
3. A sample will be obtained after four consecutive months of LDSAL-1 exceedance.

4.2 Reporting Procedures

During the baseline period of operation for each cell, NEWSME will submit a report to the MEDEP with the results of the sampling program three times per year. The report will include cumulative flow data from the LDS with specific conductance measurements. After the baseline period for each cell, NEWSME will submit a yearly report presenting all of the data collected during the preceding year, and any recommended changes to the monitoring program, such as adjustments of the LDSAL values for each cell.

APPENDIX C

LOW-FLOW GROUNDWATER SAMPLING ASSESSMENT AND SAMPLING PROCEDURE

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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

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MW-204

GROUND SURFACE ELEVATION (FT) 158.5 | DRILLER YMAINS TEST BORINGS | LOGGED BY MWM

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	ATTER-BERG LIMITS	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		15.0					
	9D		116				K_F = 0.029
	10D		80				
20							
	11D	GRAY SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES (BASAL TILL)	74	10			
	12D		95				
25							
	13D		64	11			
	14D		55				
30							K_P = 0.025
	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

- 2" CASING (TYP)
- 11.0 SAND (TYP)
- 5' 2" SCREEN
- MW-204
- 18.8
- 21.0 BENTONITE (TYP)
- 27.5 5' 3/4" SCREEN PZ-204
- 34.0
- 35.0 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 MANNS TEST BORINGS | LOGGED BY KAJ

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 (%)	DD (PCF)	ATTERBERG LIMITS	PERMEABILITY (cm/sec)
	1D	0.3 TOPSOIL	11				
	2D	Brown Sandy Gravelly Silt-Clay w/ Cobbles (Basal Till)	69				
5	3D		122				
	4D		145				
	5D		100				
10	6D		180	10			K_H = 0.000024
	6	11.50		11		LL=22 PI=6	K_V = 0.000028
	7D	Brownish Gray Sandy Gravelly Silt-Clay Trace of Cobbles (Basal Till)	147				
	8D		133				
15	9D		106				
	10D		114	11	5?		
	11D		—	11	57		
20	12D	22.5	197		3?		
	13D	Gray Sandy Gravelly Silt-Clay w/ Cobbles (Basal Till)	212		62		
	14D		100	8	59		
25	15D				59		
		Brown Silty Gravelly Sand Trace of Cobbles (Washed Till)					
30	16D		—				
	17D	32.6	130				
			190		12		
35	18D	Brown Gravelly Sand some Silt Trace of Cobbles w/ Silty Sand Layers					
	19D		195		23		
	20D		113	22	10		K_R = 0.59
40	21D	41.5	122		0		
	22D	Brown Very Silty Gravelly Sand Has Till-Like Appearance	99	17	10		
	23D		111	17	9		
45	24D		106	18	10		
	25D	49.0	96		3		
	26D	Black to Green Silty Sand	110		12		$K_F \geq 9.0$
	27D	59.0	110	21	14		
55	28D	Cobbles	—		67		
	29D	Brown Silty Gravelly Sand	200		26		
	30D		136	8	9		
60	31D	(Washed Till)	237		11		

INSTRUMENT LOG: Bentonite Pellets (typ) 4.0 | Sand (typ) | 17.5 | 20.0 | 34.0 | 35.0 | Grout (typ) | 40.5 | 5' 3/4" Slotted PVC @ 20 to 5 | 54.7 | 55 | 57 | Continued From Pg 2

WATER LEVEL: 9

NOTES: Revision as per water correspond

SEVEE & MAHER ENGINEERS

5/90

PROJECT Lines Old Town Corridor | JOB NO. 3006 | BORING NO. B206

DATE COMPLETED 05 OCT 90 | WELLS INSTALLED B206 A & B | DRILLING METHOD Mobile B-61

GROUND SURFACE ELEVATION (FT) 201.5 | DRILLER Mike Trent (Subcon) | LOGGED BY KPN

BOREHOLE DIAMETER (IN) 0-13' 4¼" OD, 13'-35' 3⅝" OD | ROCK CORE DIAMETER (IN.) 2.0 ID | SHEET 2 OF 2

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N	MC (%)	% CLAY SIZE	ATTERBERG LIMIT	PERMEABILITY (FT/DAY)
65	32D	Brown Gravelly Sand some silt trace of cobbles w/ silty sand layers (WASHED TILL)	182	9	10		
	33D		118		11		
70		69.9					
	1-R	RQD=100% INTERBEDDED METAGRAYWACKE AND PHYLLITE (BEDROCK)					
75	2-R	RQD: 96%					
80	3-R	RQD: 28%					
85	4-R	RQD=68% ... many pegmatite veins					K= 0.027
90	5-R	90.5 B.O.E.					
95							

INSTRUMENT LOG: cave (typ) 65 / 68 / 82.5 / B-206A / 5' 3/4" screen / 90.5

WATER LEVEL

NOTES

5/90

SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill	JOB NO. 2006	BORING NO. B206A	
DATE COMPLETED 05.10.90	WELLS INSTALLED MW206 PZ06	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)
0							
5		BROWN SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES (BASAL TILL)					$K_v = 0.021$
10		11.9					
15		BROWNISH-GRAY SANDY GRAVELLY SILT-CLAY W/ COBBLES (BASAL TILL)					$K_h = 0.00096$
20		22.0 B.O.E.					
25							

INSTRUMENT LOG: 3.0 PZ06 5' 1/4" SLOTS; 11.0; 11.6 BENTONITE CHIPS; MW206 5' 2" SCREEN; SAND (TYP.); 20.0; 22.0

WATER LEVEL

DEPTH (FT): 0, 5, 10, 15, 20, 25

NOTES

SEVEE & MAHER ENGINEERS

5/90

PROJECT West Old Town Landfill	JOB NO. 9006	BORING NO. B223 A DSM	
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)	INSTRUMENT LOG	DEPTH (FT)
0	1D	0.5' TOPSOIL	44					BENTONITE (TYP)	0
	2D		33					3.0	
	3D	BROWN SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES AND BOULDERS (GLACIAL TILL)	47						
5	4D		51						5
	5D		56	10				GROUT (TYP)	
10	6D		124						10
	7D		65						
	8D		—						
15	9D		71	12	59				15
	10D	18.6	—						
20	1R	INTERBEDDED PHYLLITE AND METAGRAYWACKE (BEDROCK) RQD = 96%							20
	2R								
25	3R	RQD = 66%					K_F = 0.77	25.0	25
30	4R	RQD = 56%						MW-223A 5' SCREEN	30
		33.3						SAND (TYP) 33.0	
35									35

NOTES

PROJECT WEST OLD TOWN LANDFILL | JOB NO. 30060 | BORING NO. B223 B 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)	M(%)	TORVANE TSF	ATTERBERG LIMITS	PERMEABILITY (FT/DAY)	INSTRUMENT LOG	DEPTH (FT)
0		0.5 TOPSOIL						BENTONITE (TYP)	0
5	SEE B223A FOR SOIL SAMPLES	BROWN SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES AND BOULDERS (BASAL TILL)					K_F = 0.12	20	5
10								SAND (TYP)	10
15								MW-223B 5' SCREEN	15
17.6		B.O.E						17.6	
20									20

NOTES

PROJECT: West Old Town Landfill | JOB NO. 3006 | BORING NO. B227

DATE COMPLETED: 03.17.90 | 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	ATTERBERG LIMIT	PERMEABILITY (FT/DAY)	INSTRUMENT LOG	DEPTH (FT)
		0.2 TOPSOIL							
	1D		103					GROUT (TYP)	
5		BROWN VERY SILTY GRAVELLY SAND TRACE OF COBBLES (BASAL TILL)							5
	2D		51						
10	3D		—	11				10.2 SAND/LOAM	10
		13.0						13.4	
		GRAY SANDY GRAVELLY SILT-CLAY TRACE OF COBBLES (BASAL TILL)						MW-227 5' SCREEN 2" Φ	
15	4D		116	11	67		K_F = 0.00044	SAND (TYP)	15
								20.4 BENTONITE	
	5D	22.0	60	10				22.0 (TYP)	
		B.O.E							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 45/32	SHEET 1 OF 4

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	INSTRUMENT LOG	DEPTH (FT)
0			3.0	
5		Mottled Brown Silt, Clay, and Gravel		
	6	Fill		
		Olive Clayey Silt		
	9	Trace of Gravel		
10				
15		Brown Sandy Gravelly Silt w/ cobbles	17.0 Bentonite Chips	
			21.0	
20				
	27			
30				
		Gray Sand/ Gravelly Silt w/ cobbles		
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	Rec (%)	INSTRUMENT LOG	DEPTH (FT)
70		... Becoming Gray Clayey Sandy Silt w/ Gravel & Cobbles		65 Bentonite chips (typ) 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		
120					

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 3 OF 4

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	RQD % / Recovery c-1/2c	Permeability	INSTRUMENT LOG	DEPTH (FT)
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)	155.0 "00" SAND (TYP) 157.5	
160	16R		94		"0" SAND (TYP)	160
165	17R		100			
170	18R		100	1.2x10⁻⁶ cm/sec (TEST INTERVAL 161.5-182.7)	2" ϕ SCH 40 PVC SCREEN No 10 SLOT L=20 FT	
175	19R		86			
180						

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 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	
5		Brown silty c-f SAND, trace gravel, dense				cuttings sand b-chips	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	9.4 bentonite chips	10
15	2R			5.0	88	12.9 filter sand	15
20	3R	Interbedded PHYLLITE and Metagray WACKE		5.0	92	19.5	20
25	4R			5.0	94	schedule 40 #10 slot well screen L=10 ft.	25
30	5R	(bedrock)		3.0	100	29.5	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.	PEN./ REC	DEPTH (Ft.)	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.

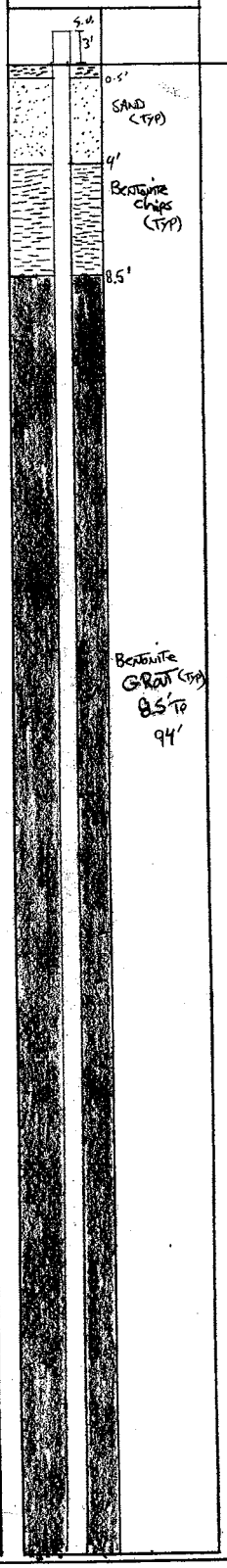
BORING No. MW-303R

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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	MTB	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	1D	Grass Topsoil 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'		Increased clay color silts.				
15.5'	4D	Clayie silt w/ very fine sand and some cobbles	115			
18'		Boulder				
21'						
25	5D	Gray clayie silty fine to medium sand with little gravel and cobbles	68			
30	6D		56			
35'						
35	7D	Increased clay content.	48			
40	8D		50-0.4'			
45	9D		50-0.2'			
50	10D		50-0.4'			
55	11D	56' UA Gray clayey, silt, with some gravel and cobbles BASAL TILL	50-0.3'		62.3%	11.1%
60						

INSTRUMENT LOG



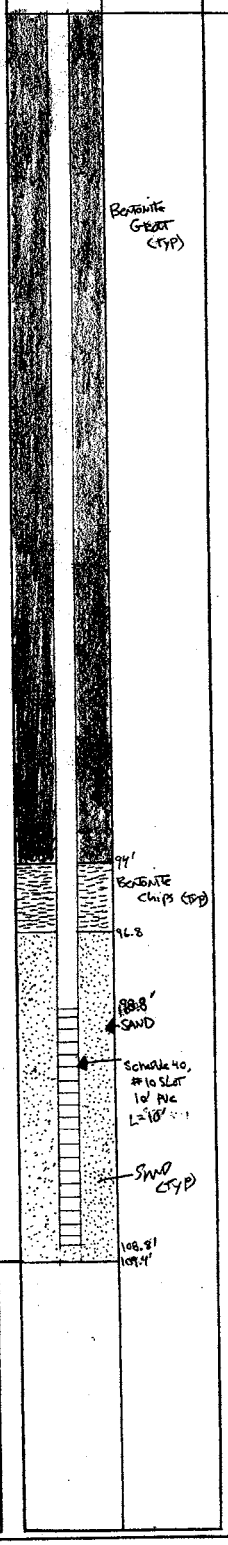
NOTES

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, ...	NA	
70				
75	15D		NA 50-0.2'	
	16D			
		78.5' BASAL TILL		
	Rotary core	no sample recovery		
80	1R			0%
85	2R			48%
90	3R			86%
95	4R			62%
100	5R			30%
105	6R			0%
	7R			50%
	109.4'	Bedrock		
110		B.O.E.		

INSTRUMENT LOG

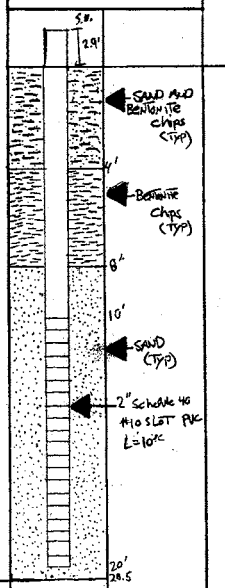


DEPTH (FT)

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.		0
5				5
10				10
15				15
20		20.5' B.O.E. BASAL TILL		20
25				25

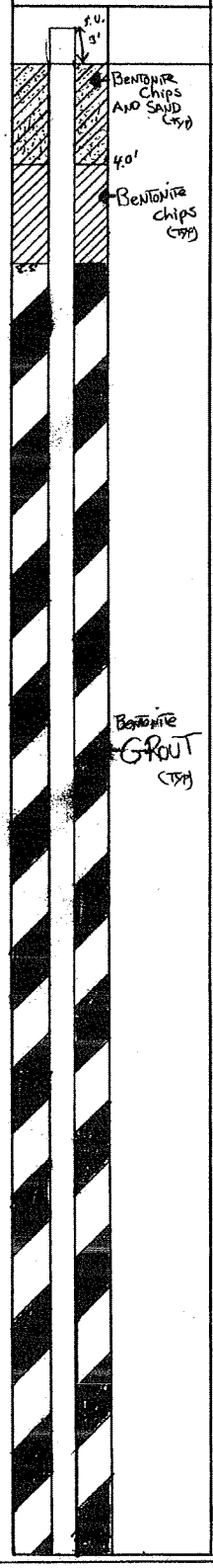
NOTES

SEVEE & MAHER ENGINEERS

PROJECT: West Oldtown 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): 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	14		86.9%	21.9%
10	3D	11' (MARINE CLAY / MARINE SEDIMENTS) BROWN GRAVELY SANDY SILT WITH A TRACE of COBBLES. — —	50-0.2'			
15	4D	...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)	50-0.2'			
50						
55	11D	BASAL TILL	106		65.5%	11.0%
60						

INSTRUMENT LOG

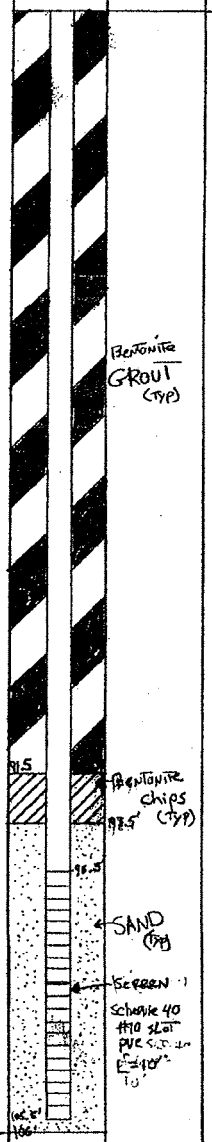


NOTES

PROJECT WEST OLDTOWN LANDFILL EXPANSION	JOB NO. 03876.09	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		60-0.1'			
70	14D	(BASALTIC) Glacial Till	100-0.4'		59%	9.6×10^{-4}
75	15D	1' Thick Boulder Glacial Till	100-0.3'			
	3R			63%		
80	4R			76%		
85	5R			10%		
90	6R			60%		
95	7R			56%		
100	8R			80%		
105	9R	106' Bedrock B.O.E.		92%		
110						

INSTRUMENT LOG



NOTES

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	5.0' 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	22.5'	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.			3
5	P-04-02 was abandoned, see Note 1.			
10				
15				
20				
25				
				28
30				30
35				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

SU 2.5'

BENTONITE CHIPS (TYP)

23.3

SAND (TYP)

30.0

30.5'

2" Ø SCH 40 PVC, NO 10 SLOT SCREEN L = 5'

NOTES

VERY MINIMAL WASH WATER LOSS MUD TUB DOWN (1-3 GAL) WASH AT 105 AT START 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						
68											36.0	
45	17D	2"	6"		36.5	80						
165												
25												Olive Silty Cobbley Gravelly Sand
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	SURFACE ELEVATION	
SIZE I.D.	4"	1 3/8"	2.5"		
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
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) 1040.0'	DRILLING CONTRACTOR M.T.B	LOGGED BY T. Riley / JLS	
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				
	2D	2' Brown Silt / Clay w/ Little Coarse Sand and a Trace of Gravel.	50/0.4'				
5		4'	68/0.2'	55.1%	13.2%		
	4D		50/3.4'				
			50/0.2'				
10	6D		50/3.4'				
	7D		97				
15	8D		50/0.3'				
	9D	... becoming clayey	50/0.2'				
20	10D	22'	50/0.4'				
	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'				
	14D	29'	50/0.3'				
30	15D	Brown Silt gravely Sand with some Cobbles.	102				
	16D		75/0.5'				
35		36'	80/0.5'				
	17D						
	18D	Very Tollayey 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' (Basal Till) B.O.E.	90/0.5'				
55							
60							

INSTRUMENT LOG



NOTES

5/90

SEVEE & MAHER ENGINEERS

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 ELEVATIO	
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												Olive Silty Fine Sand,
22	5D	2"	24"		10.0	21	30	51	48			w/Little Coarse Sand & Gravel,
2												w/Trace of Cobbles
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												Gray Fine Sandy Silt w/Some Gravel & Cobbles
"	12D	2"	11"		22.9	35	50					
"											25.0	
"												
"	13D	2"	8"		25.7	35	50					
"												
"												Gray Silty Very Fine Sand
"	14D	2"	6"		28.5	125						w/Little M/C Sand,
"												Some Gravel & Cobbles
"	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						31.6': Top of Bedrock - rolleverone no recovery to 32'.
		—	0	0		
	80° - minor FeOx					32'-40': Interbedded black sulfidic phyllite & med. gray siltstone/graywacke - same as P-04-10. - thin Qtz-Ca veinlets common.
33	80° " "	75° -80°	94	70	R1	
	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?

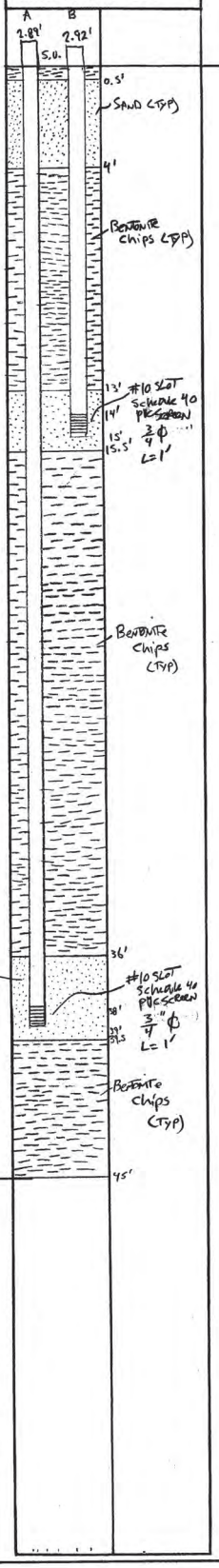
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SEVEE & MAHER ENGINEERS

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	
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	0-0.5' 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	11D	20' Boulder 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						

INSTRUMENT LOG



NOTES

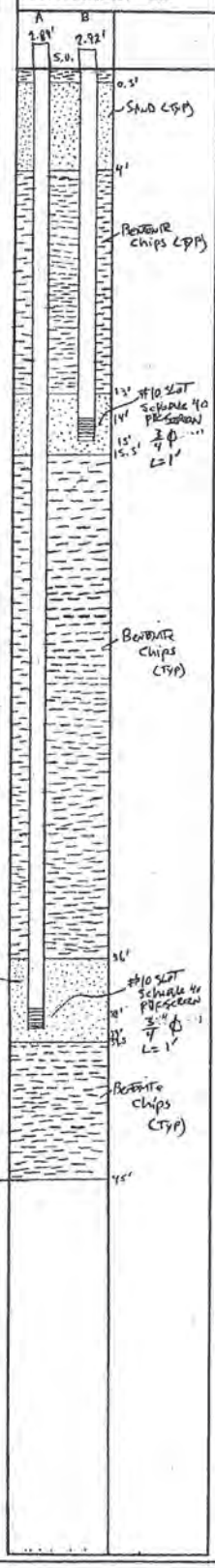
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SEVEE & MAHER ENGINEERS

PROJECT West Old Town Landfill Expansion	JOB NO. 03016.09	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	0-0.5' 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		50/0.4'				
	5D		99				
10	6D		87				
	7D		66				
15	8D		50/0.4'				
	9D		50/0.2'				
	10D	19.9'	50/0.4'				
20	11D	20' Boulder	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	12.5/2.5'		46.9%	13.0%	
30	15D	31.6' (Basal Till)	50/0.1'				
	1R	INTACT BEDDED PHYLLITE, SILTSTONE, METAGRAY WACKE		50%			
35	2R			50%			SAND (TYP)
40	3R	MISTA - GRAY WACKE		100%			Kf = 9.7x10^-6 cm/s
45		45' (Bedrock) B.O.E.					
50							
55							
60							

INSTRUMENT LOG

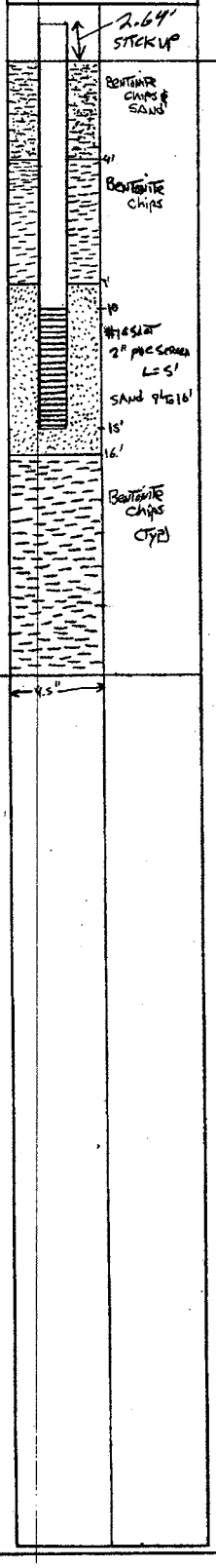


NOTES

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 NOTES
0	1D 0.5'–2.5'	Brown silty fine sand w/ little coarse sand, gravel & cobbles	Auger	25
5	2D 5'–6.2'		Rotary wash	57-50/0.2'
10	3D 10'–10.7'			55-50/0.2'
13'		Gray fine sandy silt w/ coarse sand & gravel, trace of clay		50-50/0.2'
15	4D 16.2'			
19'		Gray clayie sandy silt w/ coarse sand + gravel	Open hole	36
20'	5D 22'			
22.5				
23'	6D 25'	Gray fine sandy silt w/ coarse sand + gravel, trace of clay		64
		Bor. 25'		

INSTRUMENT LOG



NOTES

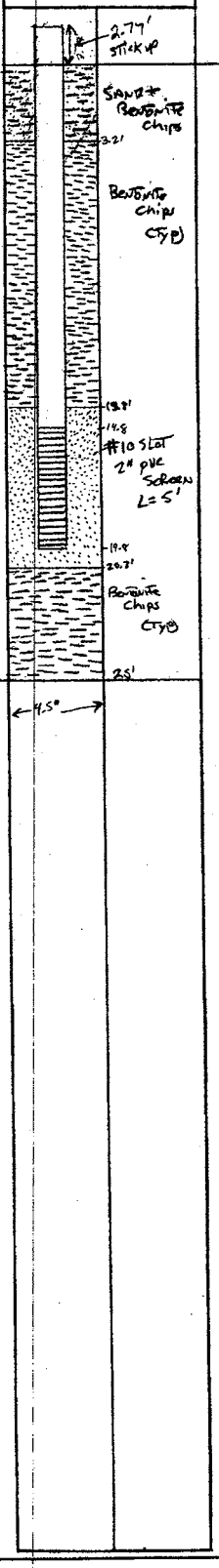
5/90

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	
13'				
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	DATE
TYPE	HW	SS	NQ2	07/22/04 Start	07/28/04 Finish
SIZE I.D.	4"	1 3/8"	2"	SURFACE ELEVATION	
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)

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.
4						
	Rollercored No recovery	–	0	–	X	4.8' - Top of Bedrock. Rollercored to 7.0' - no recovery
6						
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					
	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.
18						

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	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					25.5' Rock shows abrupt change to medium gray, fine to medium grained meta-graywacke
26	20° D					- rock is generally hard and competent
	D					- whitish Qtz+Ca veins are common at various angles.
28						
	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°				
34	10° weathered	-90°	98	86	R6	
	Rubbly - weathered					
	70° - on contact					35.3': Thin layer of black phyllite at ~ 80°
36	D					
						37'-40': several thin, whitish Qtz-ca veins.
38		80° -90°	100	90	R7	
	5° D					
40	D					
	75° - FeOx stained					
42		85° -90°	100	93	R8	
	5° D					
44	D					
	25° - FeOx stained					
46						

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°				
52	20° D 20° FeOx Stain	-90°	100	90	R10	
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		80° -90°				
66	70° FeOx stain.		98	84	R13	
68	5° - FeOx. 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° -90°	96	75	R15	
76	70° FeOx					
	10° FeOx					
	D					
	D					
78	15° D					
	50° stained					
	25° "					
80		85° -90°	98	78	R16	
	5° FeOx					
82						
	D					
	5° D					
84						
	10° D					
		85° -90°	100	96	R17	
86						
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)

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.
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

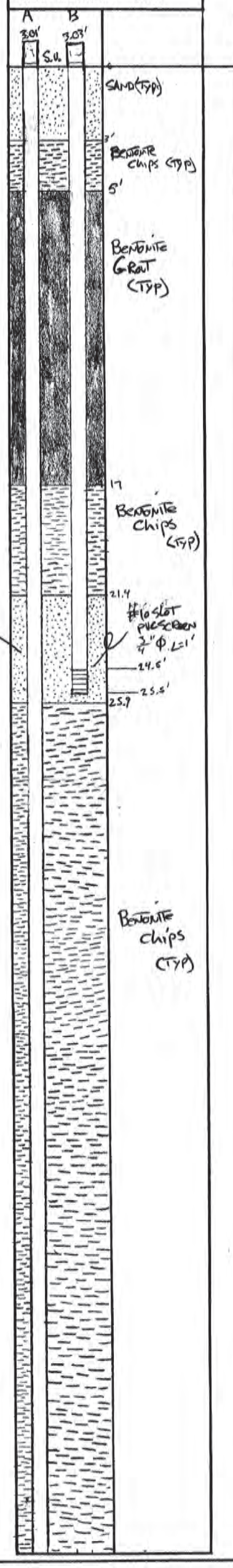
WX: WEATHERED - WEATHERING
SL - SLIGHT
MOD - MODERATE
SEV - SEVERE

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					
108						107.5': TD

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)	174.6'	DRILLING CONTRACTOR	M.T.B	LOGGED BY	T. Riley
BOREHOLE DIAMETER (IN.)	4.5" O.D. / 3.5" O.D. 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	0-0.2 Topsoil. Gray Brown Fine Sandy Silt. Mottled Silty Fine Sand with Little Coarse Sand and Gravel	29		60.2%	11.6%
	2D	Increased Gravel	64			
5	3D	Olive Silty Fine Sand w/ Little Coarse Sand + Gravel	50-0.3'		60%	11.4%
		4.8' Bedrock at 4.8'. Roller Cone. - No Sample.				
10	1R			100%		
15	2R			100%		
20	3R			88%		
25	4R			50%		
30	5R			100%		
35	6R			86%		
40	7R			90%		
45	8R			93%		
50	9R			87%		
	10R			90%		
55	11R			67%		
60		Bedrock				

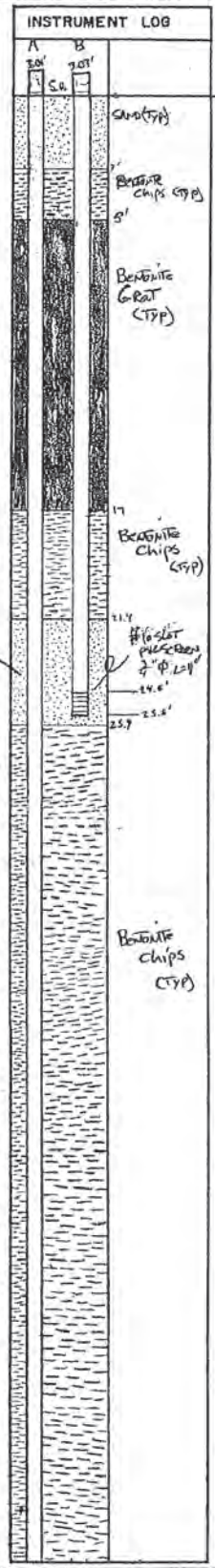


NOTES

SEVEE & MAHER ENGINEERS

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 Sieve	Water Content %
0	1D	Stiff Brown Fine Sandy Silt Mottled Silty Fine Sand with Little Coarse Sand and Gravel	29		60.2%	11.6%
	2D	MOTTLED BROWN SILT ... Increased Gravel Content (Basalt)	64			
5	3D	Stiff Silty Fine Sand w/ Little Coarse Sand & Gravel	50/0.3'		60%	11.4%
		4.8' — 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 MICA-GRAY MICACEOUS		100%		
30	6R			86%		
35	7R	... OCCASIONAL PHYLLITE LAYERS		90%		
40	8R			93%		
45	9R			87%		
50	10R	... WX ZONE		90%		
55	11R			67%		
60		(Bedrock)				



NOTES

PROJECT	JOB NO.	BORING NO.
West Old Town Landfill Extension	03076.09	P-04-07

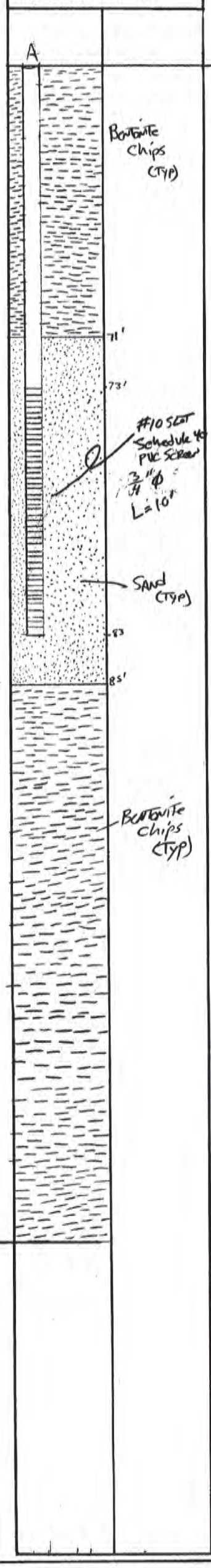
DATE COMPLETED	DATE WELLS INSTALLED	DRILLING METHOD
7/29/04	7/28/04	Wash-Rotary

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	107.5' Bedrock B.O.E.	100%

INSTRUMENT LOG



DEPTH (FT) 60 65 70 75 80 85 90 95 100 105

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)
		Brown fine sandy SILT				A	
	1E		2,3,4,6	19			
5							5
	2E	Same as above	10,17,26,22	17			
		5-6.3					
		Becoming gray, silty sand with cobble					
10		10-10.7					10
	3E		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.					45

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

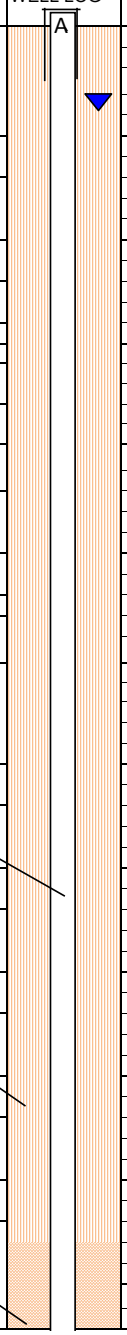
DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5	1A	Silty sand with some small stones, some moisture	9, 10, 18, 15	14			5
10	2A	Silty sand with some small stone	10, 22, 15, 17	15			10
15	3A	Silty sand with some small stone	12, 10, 11, 18	24			15
20	4A	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

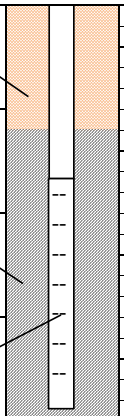
PROJECT: JUNIPER RIDGE LANDFILL		JOB NO.: 20750			BORING NO.: MW-505
DATE STARTED: 11/18/20	DATE FINISHED:			DRILLING METHOD: Drive & Wash	
GROUND SURFACE ELEVATION (FT):	197.0	DRILLING CONTRACTOR: N.E.B.C.			LOGGED BY: BAM
BOREHOLE DIA. (IN): 4.5 (HW)	ROCK CORE DIA. (IN): 3.88 (HQ)				SHEET 1 OF 2

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

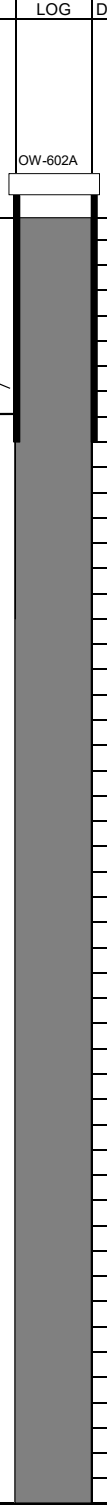
DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5						A	5
	1A	Silty sand with some small stones, some moisture	7, 8, 8, 13	24			
10							10
		Cobbles					
	2A	Silty sand with some small stone	14, 23, 24, 50 / 0.2	20			
15							15
	3A	Clay silt with 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
50		light brown soft phyllite
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 (%)	WELL LOG	DEPTH (FT)
		0.3 ft Topsoil			Bentonite Chips (typ)	
	D-1	(BASAL TILL)	4-5-8-18	100		
5						5
	D-2		45-50	100	2" schedule 40 PVC pipe	
10					Sand (typ)	10
	D-3		24-27-63-30	10		
15		Brown gravelly silt transitioning to silty gravel transitioning to silty sand with trace of cobble			2" schedule 40 PVC screen, No. 10 slot	15
	D-4		13-11-11-12	12		
20						20
	D-5	22 ft BOE (COBBLE ZONE)	15-11-16-17	90		

NOTES:

Artesian flow through casing @ 15'

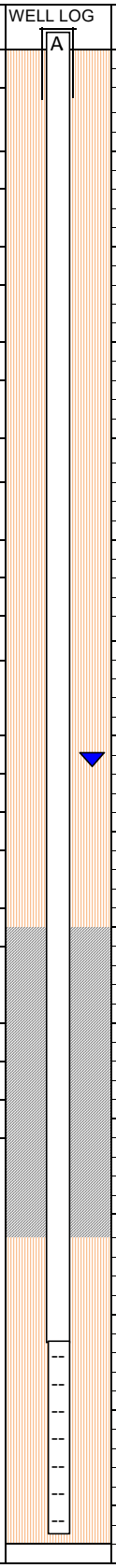
PROJECT JRL WELL REPLACEMENT	JOB NO.	BORING NO. MW09-901	
DATE COMPLETED 11-9-09	DATE WELLS INSTALLED 11-9-09	DRILLING METHOD	
GROUND SURFACE ELEVATION (FT)	DRILLING CONTRACTOR MTB	LOGGED BY PLM	
BOREHOLE DIAMETER (IN)	ROCK CORE DIAMETER (IN.) N/A	SHEET 1 OF 1	

DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION						INSTRUMENT LOG	DEPTH (FT)
-5		BROWN CLAY (SILTY) 0-10'	AUGER TO 5.0'					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

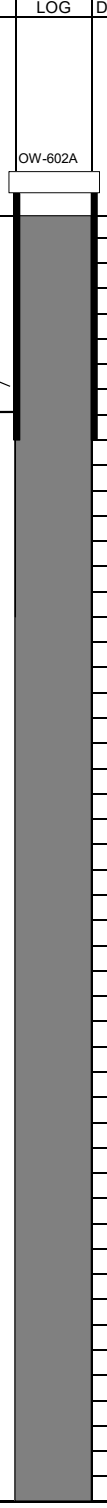
DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	N-VALUE (bpf)	RECOVERY (in.)	WELL LOG	DEPTH (FT)
			35,28,18,19	15	B	
	1A	Brown fine sandy SILT				
5						5
	2A	5-6.2	33,73,50/.2	10		
10						10
	3A	Olive sandy SILT, little gravel	16,25,5,7	19.5		
15						15
	4A		22,25,27,36	5		
20						20
	5A	Gray sandy SILT, little gravel	12,30,50	21.5		
		20-21.5				
25						25
	6A	25-25.5	26	3		
		Granular dense silty sand (till) w/ areas of cobble and sand				
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		Gray sandy SILT, with gravel	14,31,23,31	12.5		45
	10A					
50						50
	11A		25,31,38,19	16		
55	12A		21,37,13,13	12.5		55
		Refusal at 56.8 ft. BOB at 56.2 ft.				
60						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
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders
25		increasing hardness…
50		light brown soft phyllite
75		increasing hardness…
100		Bedrock 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
		Bedrock		
120				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

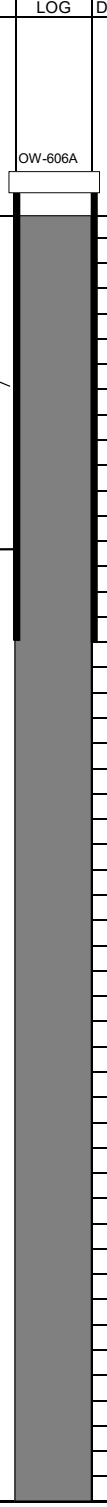
Soil Key

- 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…
75		Gray/White Phyllite Bedrock
100		
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				125
		Bedrock		
150				150
		light brown soft phyllite at 158', 40 GPM		
175				175
200				200
		Gray/White Phyllite		
225				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

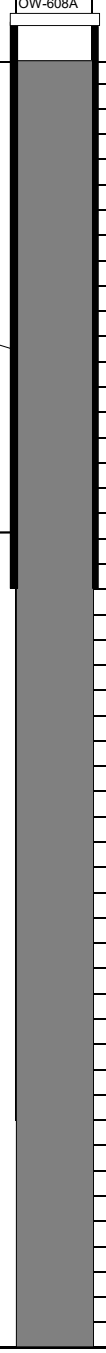
DEPTH (FT)	SAMPLE NO.	MATERIAL DESCRIPTION	BLOWS/ 0.5' (bpf)	RECOVERY (in.)		WELL LOG	DEPTH (FT)
5						A	5
	1A	Brown sand, some organics, trace gravel	25, 40, 38, 36	18			
10							10
	2A	Light brown sand with silt, some gravel	24, 20, 17, 22	14.5	2" Schedule 40 PVC Riser		
15		Boulder					15
	3A	Light 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
0		Basal Till Brown, gravely, sandy silt, trace of cobbles and boulders
30		
60		Gray/White Phyllite
		light brown soft phyllite
		Gray/White Phyllite
90		Bedrock
120		
150		light brown soft phyllite at 148', 100+ GPM



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

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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-302R						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 _____

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GAS VENT MONITORING
JUNIPER RIDGE LANDFILL, OLD TOWN, MAINE

PROJECT NO. 21044 **WEATHER:** _____

DATE: _____ **CALIBRATION GAS:** See Attached Calibration Sheet

METER ID: RKI GX-2003

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 – 302R										
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) _____ CASING/ F 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

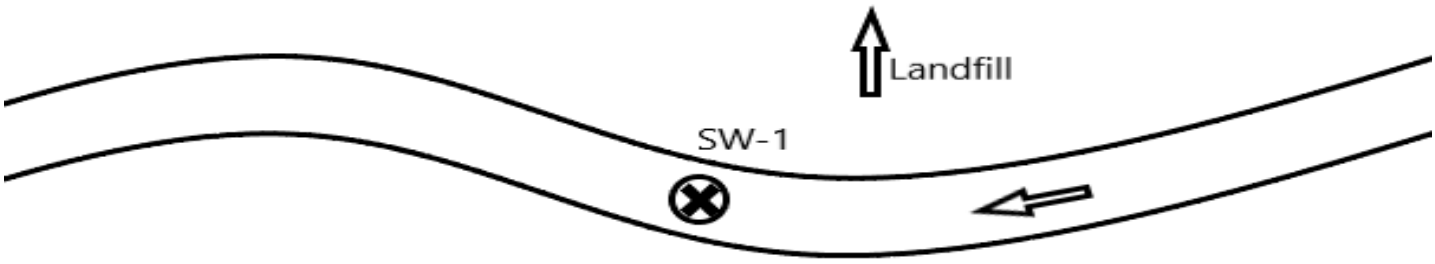
SPECIFIC CONDUCTANCE: _____ µmhos/cm

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 **DISSOLVED OXYGEN:** _____ mg/L

ORP: _____ mV **TURBIDITY:** _____ NTU

ORP OFFSET: _____ mV **TOTAL ALKALINITY:** _____ (# of drops) x

pH:_____ SU _____ (mg/L per drop) =

SPECIFIC CONDUCTANCE: _____ µmhos/cm _____ 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:

A CHAIN OF CUSTODY IS REQUESTED WITH EACH SET OF SAMPLES

APPENDIX F

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
LANDFILL GAS MANAGEMENT SYSTEM

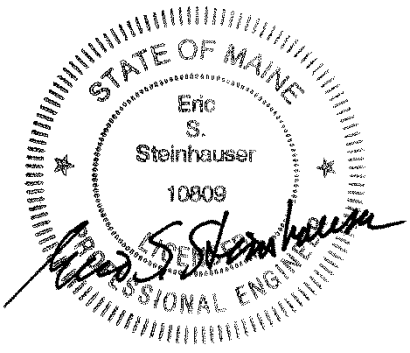
Operations and Maintenance Manual Landfill Gas Management System

Juniper Ridge Landfill
Old Town, Maine

Prepared for
NEWSME Landfill Operations, LLC
Old Town, Maine

Prepared by
Sanborn, Head & Associates, Inc.
20 Foundry Street
Concord, New Hampshire

File 2536.27
Revised February 2016



(Document reviewed/Figure 2 updated by JRL Environmental Manager in April 2020)

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TABLES

Table 1: Typical Landfill Gas Constituents
Table 2: Recommended Monitoring Schedule
Table 3: Gas Extraction System Monitoring Checklist - Gas Extraction Points

FIGURES

Figure 1: JRL LFG Infrastructure Plan (Full build-out)
Figure 2: JRL LFG Infrastructure Plan (As-built - Cells 1 - 8)
Figure 3: Flow Diagram – Approval of LFG Infrastructure

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; however, the facility, and landfill gas, is managed 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, and trench backfill.
- 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.

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 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 hydrogen sulfide (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]

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. 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 always the potential for an explosive methane-air "front" that could be formed nearby by dilution.

Personnel should take the following precautions.

[1] https://www.osha.gov/Publications/hydrogen_sulfide.html

- 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. **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 and 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 (comprising of pulp/paper sludge, wastewater sludge, CDD 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 a 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 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 3-4 trenches per 40-foot lift (dependent upon overall cell width). The constructed trench will consist of a stone or tire chip-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 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 taps 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 hydrogen sulfide (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 three 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 (three samples) to estimate sulfur dioxide (SO_2) emissions using an approved method such as laboratory analysis. O&M procedures for the Thiopaq® sulfur removal system are detailed in a separate O&M manual from this document.

3.6 Blower/Flare Station

Currently, there is one 3,500 cubic feet per minute (cfm) flare station with dual blowers that extracts landfill gas from the entire landfill.

The blower/flare station 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.

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. Further, the presence of odors should also 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) for MSW Landfills as described below in Section 4.0. Semiannual reports on the gas collection and control system (GCCS) are submitted to MEDEP and an annual certification of compliance is submitted to the U. S. Environmental Protection Agency (USEPA).

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 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 is a GEM-2000 or GEM-5000 Portable Gas Analyzer (meter) manufactured by CES 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.

CES 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 (vacuum) to provide active extraction from that point. If the pressure is positive, then adjustments should be made to increase the flow rate, 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. A LFG temperature greater than 150°F is considered excessively high for anaerobic degradation at JRL. When the measured temperature is greater than 150°F, the wellhead valve opening should be reduced to decrease flow and temperature.

The default LFG temperature limit in New Source Performance Standards (NSPS) is 55 °C (131 °F), but the NSPS also provides for a higher operating temperature based on data demonstrating the elevated temperature does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. The historical data collection at JRL indicates that a higher operating temperature of 150°F is required to collect gas generated in the landfill. Reducing the LFG flows at wellheads with elevated temperatures has not reduced gas temperatures to less than 131 °F in several areas of the waste, and based on discussions with MEDEP, anaerobic decomposition for the waste mix at JRL has been demonstrated at up to 150°F.

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, environmental factors, and aging;
- 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 require shutting down the flare or certain sections of the LFG collection system. 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 is 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 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 Maine Department of Environmental Protection should be notified prior to impacting the final cover system, and repairs 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.

Process plant pipe and fittings may consist 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 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;
- 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/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. 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 peformed 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. As-built drawings pertaining to new wellhead installations will be provided to the MEDEP within 45 days of completion of work.

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.

Following the construction of the above infrastructure, updated information will be provided to Sanborn Head and as-built plans provided to the MEDEP within 45 days of completion of work.

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, DEP 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

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)	30 to 50%.
Carbon Dioxide (CO_2)	20 to 40%.
Oxygen (O_2)	0 to 5%.
Balance Gas Including Nitrogen (N_2)	10 to 50%.
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	Treated to 1,000 ppmv or less (5,000 to 15,000 ppmv untreated)
Moisture	Up to 14% (increases with gas temperature).
Volatile Organic Compounds (VOCs)	Less than 2%; typically ¼ to ½%.

Note: This table represents the typical characteristics of landfill gas at the Juniper Ridge Landfill based on data collected at the site.

TABLE 2

RECOMMENDED MONITORING SCHEDULE

Operations and Maintenance Manual
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
Juniper Ridge Landfill
Old Town, Maine

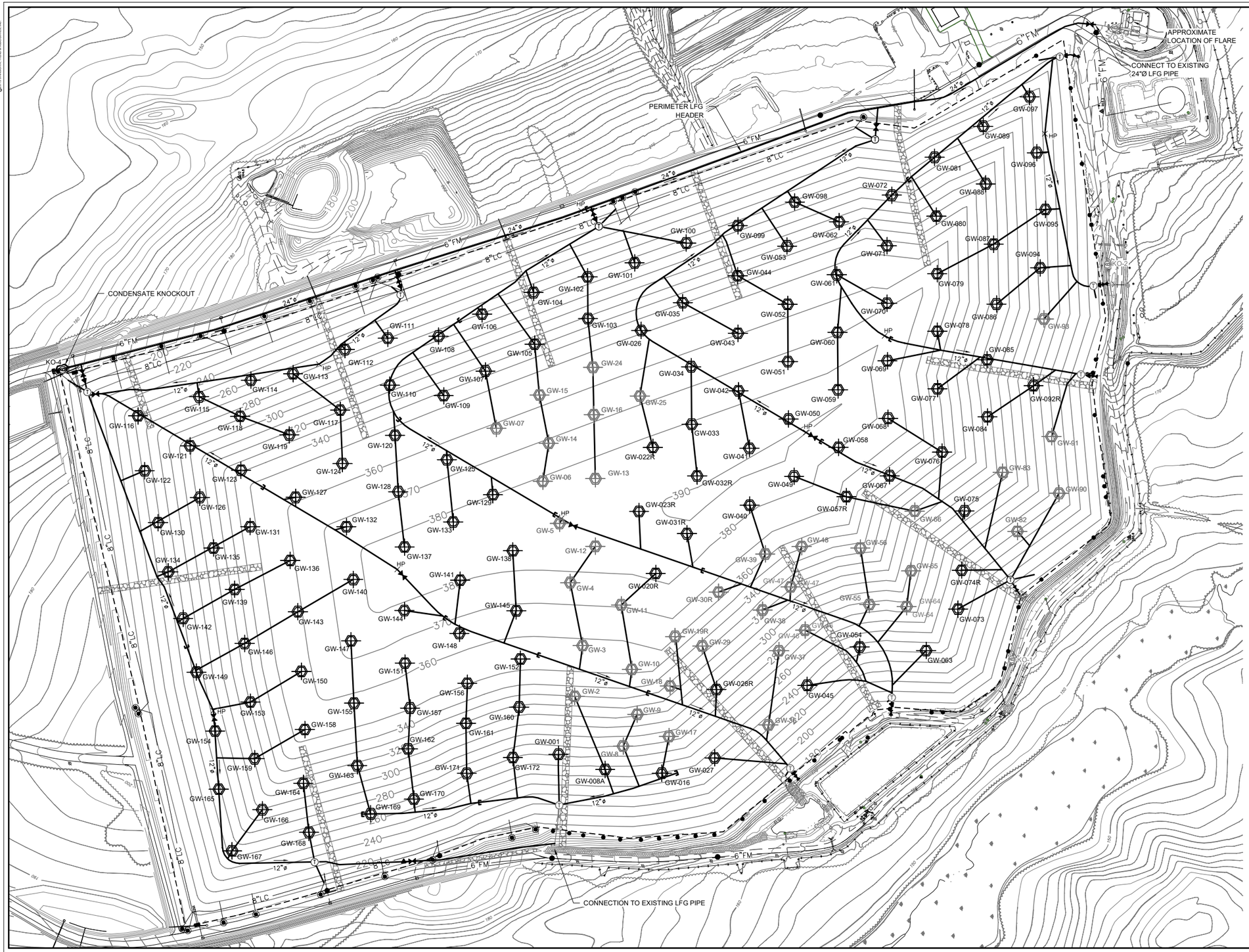
A. Prior to going out onto the landfill.

1. Calibrate the GEM-2000 or 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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NOTES:

1. THE BASE MAP SHOWN WAS PREPARED BY AERIAL SURVEY & PHOTO INC., OF NORRIDGEWOCK, MAINE. PHOTO DATE JULY 31, 2014. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83. GROUND CONTROL BY PLISGA & DAY LAND SURVEYORS, BANGOR, MAINE.
2. 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. THE LOCATIONS OF MANY OF THE LANDFILL DESIGN COMPONENTS SHOWN ON THIS PLAN, SUCH AS LEACHATE CLEANOUTS, STORMWATER MANAGEMENT FEATURES, AND UTILITIES, ARE BASED ON PROPOSED LOCATIONS PROVIDED TO SANBORN HEAD BY SEVEE & MAHER ENGINEERS, INC. OF CUMBERLAND, MAINE.
6. 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.
7. SOLID LANDFILL GAS CONVEYANCE PIPE AND COLLECTION TRENCHES SHALL BE INSTALLED AT A MINIMUM SLOPE OF 6 PERCENT. PERFORATED LANDFILL GAS COLLECTION TRENCHES SHALL BE INSTALLED AT A MINIMUM SLOPE OF 2 PERCENT.
8. HDPE PIPE AND FITTINGS SHALL BE SDR-17.
9. HDPE FITTINGS SHALL BE MOLDED; FABRICATED FITTINGS SHALL NOT BE USED.

LEGEND:

EXISTING		PROPOSED
180	10 FOOT CONTOUR	370
	2 FOOT CONTOUR	
GW-11	VERTICAL LFG WELL	GW-35
12"ø	LFG CONVEYANCE PIPE (SIZE AND SLOPE DIRECTION)	12"ø
T	CONDENSATE TRAP	T
	CONTROL VALVE	
KO-1	CONDENSATE KNOCKOUT	KO-4
	LEACHATE COLLECTION CLEANOUT	
	VERTICAL RISER	
	LIMIT OF WASTE CONTAINMENT	
	CELL LIMIT	
	EDGE OF ROAD	
HP	HIGH POINT	HP
	RIPRAP-LINED DOWNCHUTE	
	TEMPORARY PIPE TERMINATION	

SANBORN HEAD

GRAPHICAL SCALE
150' 75' 0' 150' 300'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: R. CLAY
DESIGNED BY: R. CLAY
REVIEWED BY: E. STEINHAUSER
PROJECT MGR: E. STEINHAUSER
PIC: E. STEINHAUSER
DATE: APRIL 2015

LFG SYSTEM EXPANSION MASTER PLAN
JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

PROJECT NUMBER: 2536.27

JRL LFG INFRASTRUCTURE PLAN (FULL BUILD-OUT)

FIGURE NUMBER: 1

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MAINE STATE PLANE

LIST OF ACTIVE GAS EXTRACTION LOCATIONS

HORIZONTAL COLLECTION TRENCHES
JRGCT2A1
JRGCT3A4
JRGCT3B1
JRGCT3B2
JRGCT502
JRGCT503
JRGCT505
JRGCT508
JRGCT511
JRGCT601
JRGCT604
JRGCT606
JRGCT607
JRGCT701
JRGCT702
JRGCT703
JRGCT704
JRGCT705
JRGCT706
JRGCT707
JRGCT708
JRGCT709
JRGCT711
JRGCT712
JRGCT810
JRGCT829
JRGCT830
JRGCT831
JRGCT910
JRGCT911
JRGCT912
JRGCT913
JRGCT914
JRGCT915
JRGCT916
JRGCT918
JRGCT919
JRGCT920
JRGCT921
JRGCT922
JRGCT923
JRGCT924
JRGCT925
JRGCT926
JRGCT927
JRGCT928
JRGCT929
JRGCT930
JRCT1001
JRCT1002
JRCT1003
JRCT1004
JRCT1006
JRCT1007
JRCT1008
JRCT1010
JRCT1011
JRCT1012
JRCT1013
JRCT1014
JRCT1015
JRCT1101
JRCT1102
JRCT1103
JRCT1104
JRCT1105
JRCT1106
JRCT1107
JRCT1108
JRCT1109
JRCT1110
JRCT1111
JRCT1112
JRCT1113
JRCT1114
JRCT1115
JRCT1116

VERTICAL WELLS
JR-GW-03
JR-GW-04
JR-GW-05
JR-GW-06
JR-GW--7
JR-GW-09
JR-GW-10
JR-GW-11
JR-GW-12
JR-GW-13
JR-GW-14
JR-GW-15
JR-GW-16
JR-GW-18
JR-GW19R
JR-GW20R
JR-GW22R
JR-GW23R
JR-GW-24
JR-GW-25
JR-GW-28
JR-GW106
JR-GW-29
JR-GW30R
JR-GW31R
JR-GW32R
JR-GW33R
JR-GW-37
JR-GW-38
JR-GW-39
JR-GW-40
JR-GW-41
JR-GW-42
JR-GW42B
JR-GW-46
JR-GW-47
JR-GW-48
JR-GW-49
JR-GW50B
JR-GW50R
JR-GW-51
JR-GW51B
JR-GW-55
JR-GW-56
JR-GW56R
JR-GW57R
JR-GW-58
JR-GW58B
JR-GW-59
JR-GW-59R
JR-GW59B
JR-GW-60
JR-GW60B
JR-GW-62
JR-GW-64
JR-GW-65
JR-GW-66
JR-GW-67
JR-GW-68
JR-GW68B
JR-GW68C
JR-GW-69
JR-GW69B
JR-GW-70
JR-GW-72
JR-GW-74
JR-GW-75
JR-GW-76
JR-GW76B
JR-GW77R
JR-GW-78
JR-GW78B
JR-GW78C
JR-GW-79
JR-GW79B
JR-GW-80
JR-GW-81
JR-GW-82
JR-GW-83
JR-GW-84
JR-GW-85
JR-GW-86
JR-GW86B
JR-GW-87
JR-GW-88
JR-GW-89
JR-GW-90
JR-GW-91
JR-GW-92
JR-GW-93
JR-GW-94
JR-GW-95
JR-GW-96
JR-GW-97
JR-GW-98
JR-GW-99
JR-GW100
JR-GW101
JR-GW102
JR-GW104
JR-GW106
JR-GW--A
JR-GW-H2
JR-GW--I
JR-GW--L
JR-GW--S
JR-GW--U
JR-GW--V
JR-GW--W
JR-GW--X
JR-GW--Y
JR-GW--Z

Other
JR-LC-SE
JRLGV401
JRLGV402
JR-OP901
JR-OP-69
JR-OP-SE
JR-OP101
JROP11NE



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. THE BASE MAP SHOWN WAS PREPARED BY AERIAL SURVEY & PHOTO, INC. OF NORRIDGEWOCK, MAINE. PHOTO DATE: JUNE 24, 2019. VERTICAL DATUM: BRASS PLUG AT PUMP STATION. HORIZONTAL DATUM: MAINE STATE COORDINATES EAST ZONE NAD 83.

LEGEND (EXISTING):

190	10-FOOT CONTOUR	GW–9	LANDFILL GAS EXTRACTION WELL
	2-FOOT CONTOUR	GCT–901	COLLECTION TRENCH WELLHEAD
	LIMIT OF WASTE CONTAINMENT		COLLECTION TRENCH TERMINATION
	CELL LIMIT		PIPE END CAP
	EDGE OF ROAD		LEACHATE COLLECTION CLEANOUT
	LANDFILL GAS CONVEYANCE PIPE ≥ 12"Ø		LEACHATE COLLECTION INLET
	LANDFILL GAS CONVEYANCE PIPE < 12"Ø	CT–7	CONDENSATE TRAP
	LANDFILL GAS COLLECTION TRENCH		RIPRAP
	LIMIT OF MARSH		
	FENCE LINE		
	ISOLATION VALVE		
	ACCESS RISER		

SANBORN HEAD

GRAPHICAL SCALE
120' 60' 0 120' 240'

NO.	DATE	DESCRIPTION	BY

DRAWN BY: O. HERNANDEZ / R. CLAY
DESIGNED BY: R. CLAY
REVIEWED BY: R. CLAY / J. SHAW
PROJECT MGR: R. CLAY
PIC: T. REED
DATE: FEBRUARY 2020

JUNIPER RIDGE LANDFILL
OLD TOWN, MAINE

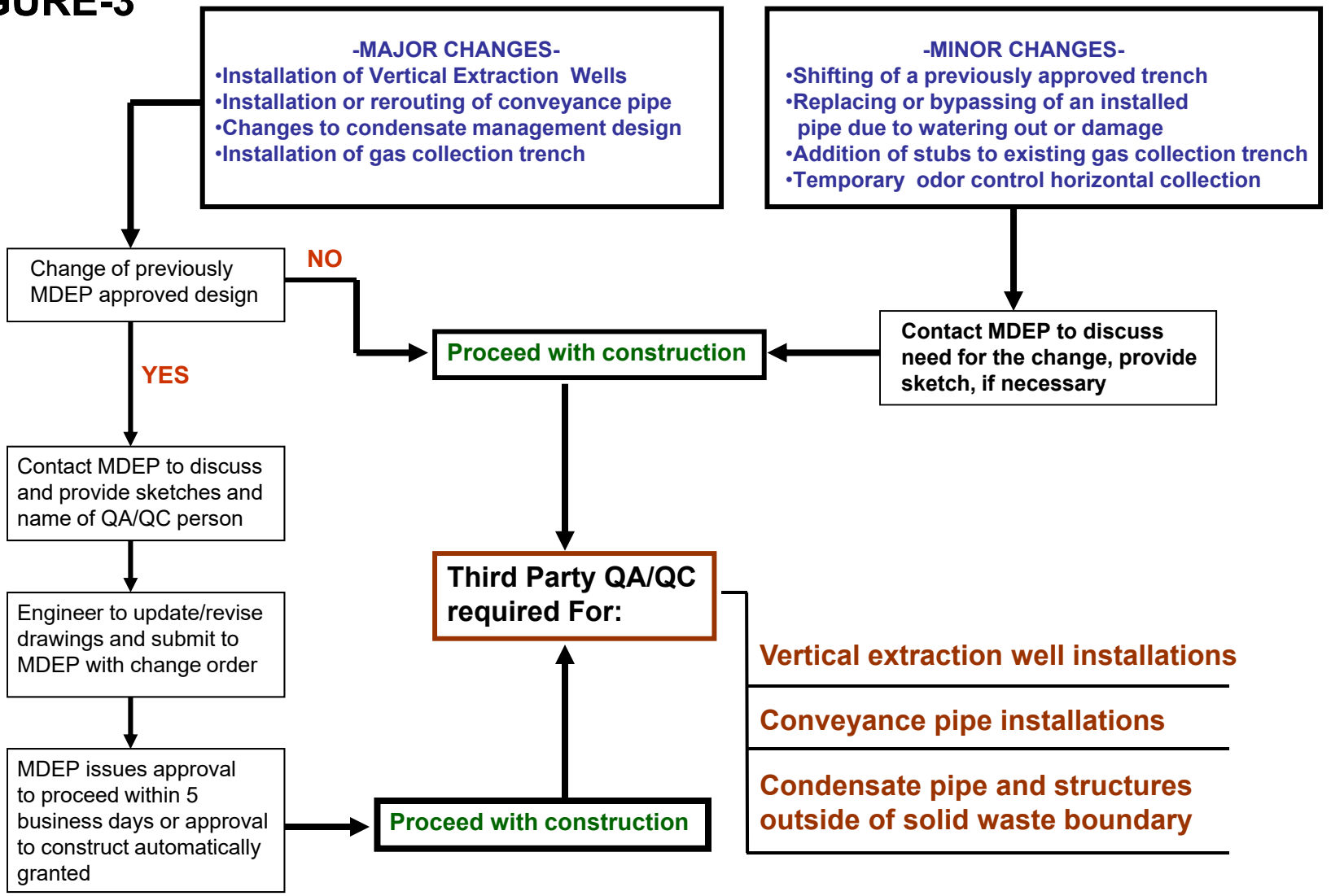
JRL LFG INFRASTRUCTURE PLAN (AS-BUILT - CELLS 1-11)

PROJECT NUMBER: 2536.32

FIGURE: 2

IMAGES: ...\Project Files\GIS\ArcGIS\Tool\Tile_MXD\11100\PRIMARY\TIER 4\JEB\JRJB-100-SCALE.dwg
XREFS: P:\CAD Library\As-built\JRL\Topo\ASBUILT 2020 CONTOURS.dwg
P:\CAD Library\As-built\JRL\Cells\Cell 11\Cell 11 Limit.dwg
P:\CAD Library\As-built\JRL\Common\Grid\2020\GRID_FOUNDBOUNDARY_100.dwg
FILE: P:\2500s\2536.32\Graphics\Fees\CAD\As-built Updates\20200205 - As-built Figure 2 for O&M Manual\20200205_JRL Site Wide LFG As-built for O&M Manual.dwg
LAYOUT: 2 - Standard
PLOT DATE: 4-9-20

FIGURE-3



-PROTOCOL FOR LFG SYSTEMS INSTALLATION-

APPENDIX K
ODOR COMPLAINT MANAGEMENT AND RESPONSE PLAN



Operated by NEWSME Landfill Operations, LLC

JUNIPER RIDGE LANDFILL
Odor Complaint Management and Response Plan

Revisions:

April 29, 2025
April 15, 2020
February 19, 2013
June 30, 2010

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 off-site 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 off-site.

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 number is 207-394-4376**. The complaint line is answered 24 hours per day 7 days per week by trained landfill personnel.

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**
LUIGI PIZZUTI	207-205-4637	NICOLE HUSTUS	207-631-8786
KURTIS BROWN	207-217-1781	LUIGI PIZZUTI	207-205-4637
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: □ 394-4376 (JRL 24-hour line) □ 394-4370 (fax)
□ 941-4570 (MDEP) □ 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: Fort James:_____ Weigh Station:_____ 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 Lou Pizzuti, Kurtis Brown, and Mike Abbott: _____

-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 □ FEPR □ 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 special wastes that have the potential to generate odors. The waste types with the highest potential for odor generation are front end process residue (FEPR), by-pass municipal solid waste (MSW), and wastewater sludges. The leachate generated from the landfill is also a likely source of odors during its storage and transport to the wastewater treatment plant. As the waste mix in the landfill begins to degrade, it 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 waste arrives that is noticeably odorous, ash, construction and demolition debris (CDD), till, or other effective neutralizing material, will be spread over the waste to limit odor

migration. This activity is particularly important on windy days to minimize gas and odor migration.

2. Additionally, daily cover is applied over the active portion of the landfill at the end of each workday. Cover materials include wood chips, CDD processing fines, bark, ash, soil-type materials, or soil equivalent foam applied to manufacturer recommended thickness, as approved by the Department, and/or other approved wastes or alternative daily cover materials that provide appropriate cover.
3. When necessary, a dozer mounted odor neutralizer spray system is utilized to control odors from arriving wastes as they are offloaded and spread out.
4. Upon arrival at the landfill during warm weather months, the tops of the trailer loads of FEPR, sludge, and bypass MSW pass under a trailer spray system that applies an odor control agent onto the waste to assist in controlling odors during the offloading process. These empty trailers pass through the same spray system to control empty trailer transit odors.
5. A perimeter odor (misting) neutralization system is employed during the warm weather months to provide additional odor control coverage. The system is sited in strategic locations around the active area of the landfill and is moved to appropriate locations when new cells are opened. A portable system is also utilized at the active face of the landfill.

Control of Odors Associated With Leachate Storage & Transport

1. JRL has a leachate storage tank designed to store all leachate being generated from the landfill prior to being transported offsite for appropriate 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. 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 so that odors are

minimized 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 as soon as the cell reaches its final grade.
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 3,500 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 supervisor in order to assure that any potential odor causing conditions are corrected accordingly.
2. As a proactive measure, JRL has installed six Honeywell Single Point Monitors onsite and 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 at 2824 Bennoch Road, off Route 16 northeast of the landfill (Route 16 Monitor).
3. Located approximately 1-mile north of the landfill on the access road (Access Road Monitor).
4. Located at 4 West Coiley Road, off Route 43 southeast of the landfill (West Coiley Road Monitor).
5. Located at 552 W. Old Town Road off Route 43 southwest of the landfill (552 W. Old Town Road Monitor).
6. Located off the Old Stagecoach Road northwest of the landfill (Stagecoach Road Monitor).

All six of the H_2S 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 H_2S monitors detects 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 H_2S 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 (941-4570)
    - JRL complaint line (394-4376)
    - JRL fax (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 MDEP.

APPENDIX L
WASTE INSPECTION PLAN

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

JUNIPER RIDGE LANDFILL

Operated by NEWSME Landfill Operations, LLC

2828 Bennoch Road
Old Town, ME 04468

FACILITY NOTIFICATION PROCEDURES

April 2014
Revised April 2020
Revised April 2025

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Attachment A - Contact Information

DISTRIBUTION LIST

Copies of this Facility Notification Plan are located at the following locations:

1. General Manager, Pine Tree Landfill, Hampden, ME
2. Environmental Compliance Manager, Pine Tree Landfill, Hampden, ME
3. Landfill Operations Manager, JRL Facility, Old Town, ME
4. Site Safety Manager, Pine Tree Landfill, Hampden, ME
5. Regional Vice President, Regional Office

Copies of this Facility Notification Plan have also been forwarded to the following entities:

1. Maine Bureau of General Services, Augusta, ME
2. MEDEP, Augusta, ME
3. City of Old Town, Old Town, ME
4. Sevee & Maher Engineers, Cumberland Center, ME
5. Pierce Atwood LLP, Portland, ME

1.0 INTRODUCTION

1.1 Plan Purpose

This Facility Notification Plan (FNP) specifically addresses the notification process in the event of a regulatory compliance issue or public safety incident and the need for coverage at the facility during routine operations and in the event of an emergency (internal and external).

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 including the facility Spill Prevention, Control and Countermeasures (SPCC) Plan, Stormwater Pollution Prevention Plan (SWPPP), Environmental Monitoring Plan, and several health and safety plans already on file at the JRL facility.

1.2 Notification to Proper Officials

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. The specific notification procedures are discussed in Section 4.0 of this FNP. The list of proper officials to be notified for emergency responders, municipal contacts, regulatory contacts and corporate contacts along with their contact numbers are attached in Appendix A.

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 and operated by NEWSME Landfill Operations, LLC (NEWSME), a subsidiary of Casella Waste Systems, Inc. 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/Owner:	2828 Bennoch Road Old Town, ME 04468
County:	Penobscot County

3.0 FACILITY COVERAGE

3.1 Routine Facility Coverage

The following table illustrates facility personnel available at the JRL on a daily basis:

Name/Title	Contact Info:
Wayne Boyd, General Manager	(207) 694-5510 cell
Kurtis Brown, Landfill Operations Manager	(207) 217-1781 cell
Michael Abbott, Landfill Supervisor	(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 Landfill Supervisor 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 Landfill Supervisor 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, and
- Maintain communications with corporate management.

3.2 Emergency Facility Coverage

In the event that the General Manager, Landfill Operations Manager, and Landfill Supervisor are off-site or require additional assistance due to emergency or unforeseen circumstance, the following personnel are available:

Name/Title Emergency Managers	Contact Info:
Luigi Pizutti, Environmental Anaylist Brandon Badger, Shop Supervisor	(207) 205-4637 cell (207) 249-3536 cell
Jim Worster, Site 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 Site Safety Manager for the facility shall serve as the designated alternate emergency contacts for the facility. The Environmental Manger and the Site 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, and
- Maintain communications with corporate management.

4.0 NOTIFICATION PROCEDURES

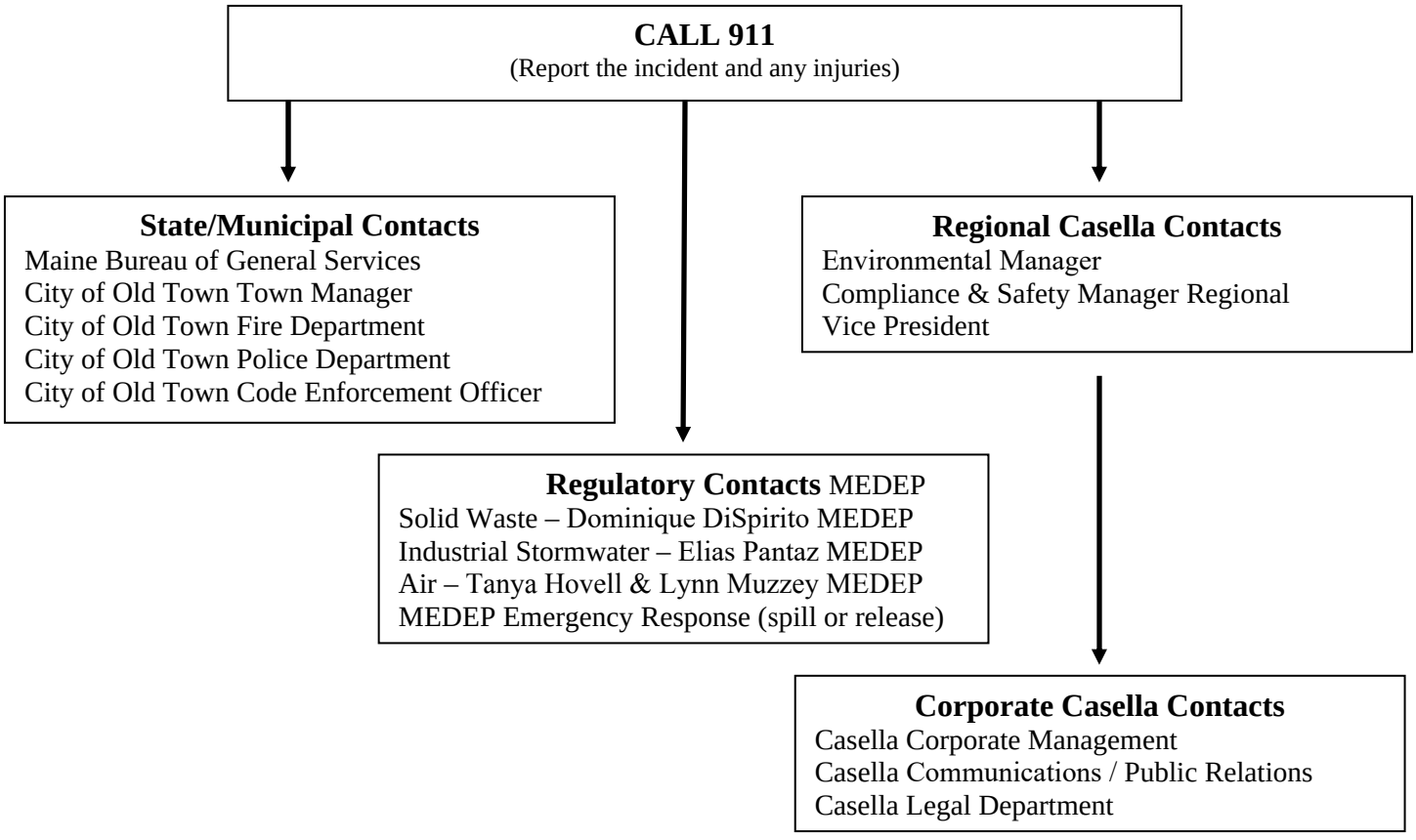
4.1 Safety

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.

4.2 Notification Procedures – Public Safety Emergency

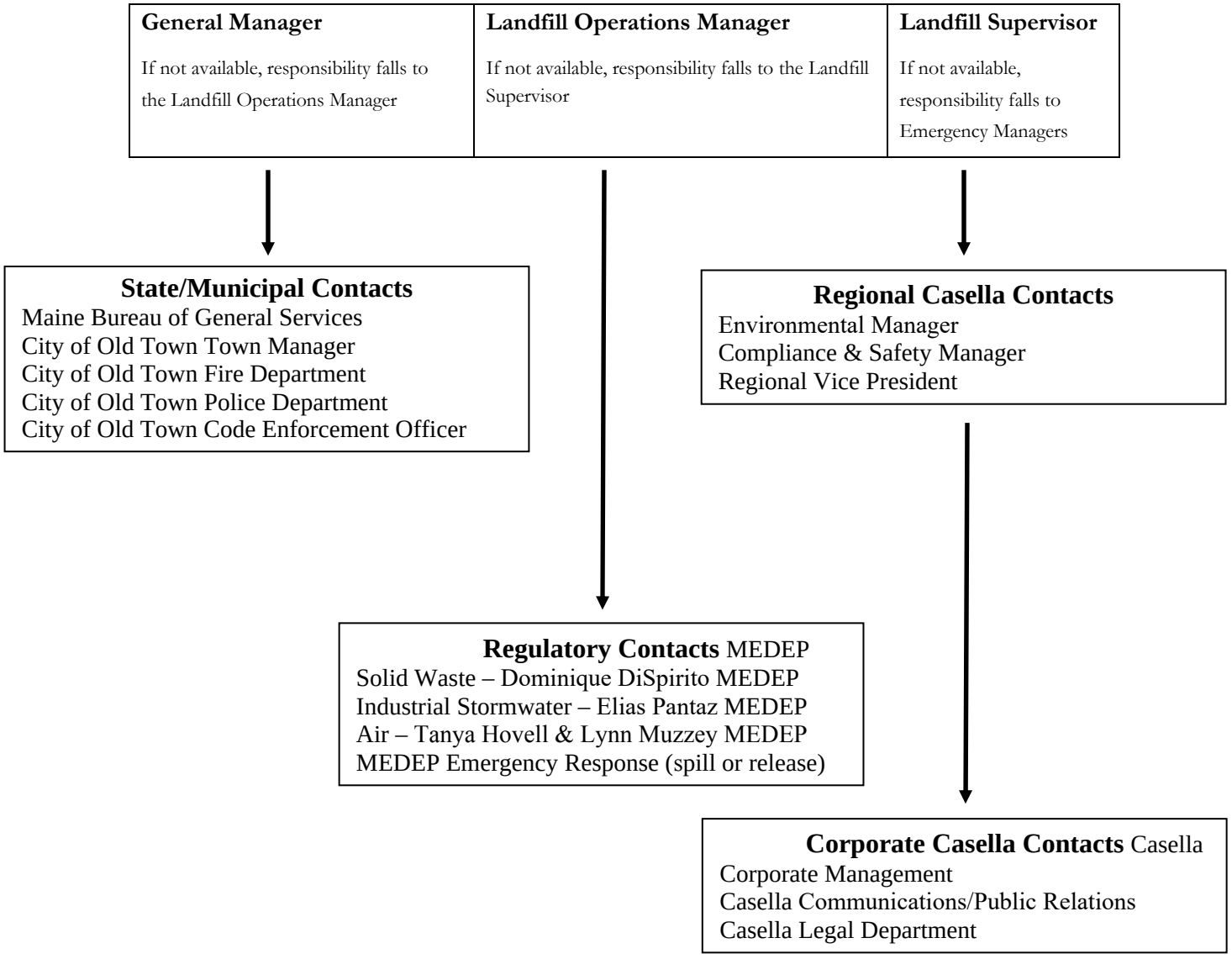
In the event of a public safety emergency and after securing the safety of those at the facility, the facility management team shall execute the following notification procedures:

General Manager	**Landfill Operations Manager**	**Landfill Supervisor**
If not available, responsibility falls to Landfill Operations Manager	If not available, responsibility falls to Landfill Supervisor	If not available, responsibility falls to Emergency Managers



4.3 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:



5.0 TRAINING

5.1 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, Landfill Supervisor	(207) 217-1781 cell
Michael Abbott, Landfill Supervisor	(207) 745-2025 cell
Jeffrey Pelletier, Environmental Manager	(207) 249-8025 cell
Jim Worster, Site Safety Manager	(207) 745-8345 cell
Simon Tripp, Regional Vice President	(207) 949-0374 cell

State/Municipal Contacts	
Maine Bureau of General Services	(207) 624-592-0841
City of Old Town Town Manager	(207) 827-3960
City of Old Town Fire Department	911 (207) 827-3400
City of Old Town Police Department	911 (207) 827-6358
City of Old Town Code Enforcement Officer	911 (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) 41-0732
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

JUNIPER RIDGE LANDFILL

GEOTECHNICAL MONITORING PLAN

July 2015

SME
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

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

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LIST OF APPENDICES

APPENDIX A ANNUAL GEOTECHNICAL INSPECTION FORM

JUNIPER RIDGE LANDFILL EXPANSION
GEOTECHNICAL MONITORING PLAN

1.0 INTRODUCTION

This document describes the Geotechnical Monitoring Plan (GMP) for the landfill expansion (Expansion) at the Juniper Ridge Landfill (JRL) in Old Town, Maine. The Expansion will consist of six additional landfill cells, (i.e., Cells 11 through 16), generally constructed to the north of the existing facility. The plan replaces the existing GMP at the time when Cell 11 is constructed. The Expansion cells will receive similar types of wastes as those received in the current landfill cells. The Plan describes the methodology to be used by NEWSME Landfill Operations, LLC (NEWSME) to monitor the geotechnical conditions of the Expansion for consistency with the parameters and assumptions used in the facility's design. The specific activities related to the GMP include periodic landfill observations, review of topographic surveys of the landfill surface, and an annual independent geotechnical landfill inspection and review of landfill operations. The findings of the GMP will be reported annually and will supplement routine landfill observations performed by operational personnel.

2.0 OVERVIEW OF GEOTECHNICAL MONITORING

The GMP consists of three components:

- Visual observation of landfill slope stability and settlement and general landfill conditions;
- Review of semi-annual topographic surveys; and,
- Review of waste types and properties, construction material properties, and filling sequences.

Visual observations and reviews relating to landfill slope stability and settlement will be made on the active and inactive portions of JRL. The review and comparison of topographic surveys will be used to quantify both inplace densities and changes in secondary (time-dependent) strain rates that are used in the assessment of cover performance, in inactive areas. The review of

waste types and properties, construction material properties, and filling sequences will be used to both evaluate initial design assumptions used in the geotechnical evaluation of each landfill cell construction, completed as part of the detailed cell design.

2.1 Routine Landfill Inspections, Annual Inspections, and Surveys

Landfill inspections will be routinely completed as described in Section 8.0 of the JRL Operations Manual. These inspections are to document landfill operations and check that facility components are operating properly. As part of these inspections, weekly inspections will observe and document slope stability. During these inspections, the landfill surface will be observed for overall condition, 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. These inspections are completed by NEWSME operational personnel.

An annual inspection and review will be completed by the site geotechnical engineer using the form presented in Appendix A. This review will include a site inspection, a review of site operating records, a review of pore pressure measurements obtained from site transducers installed below the landfill liner, and in the leachate collection system and a review of site aerial topographic surveys. As part of this evaluation the engineer will observe waste slope and liner conditions, the types, quantities and waste filling techniques, and overall landfill settlement. The intent of the inspection and evaluation is to confirm that the landfill is maintained in a stable condition and that the geotechnical response of the facility is consistent with that anticipated during design. If necessary, this evaluation may include some additional site survey if deemed appropriate by the engineer. Barring no identified unfavorable conditions requiring immediate action at the landfill, the results of this evaluation will be compiled into a report which will be included in the JRL Annual Report. If any of the inspections or evaluations indicates actions requiring immediate action, the engineer will notify NEWSME and develop a plan that addresses the items identified. These plans will be reviewed with the MEDEP prior to implementing the plan.

2.2 Reporting

An annual Geotechnical Report will be prepared and included in the facilities Annual Report submitted to the Maine Department of Environmental Protection (MEDEP). The report will include a summary of annual site activities, findings from the site inspections and recommendations regarding changes in geotechnical inspections and evaluations.

APPENDIX A

ANNUAL GEOTECHNICAL INSPECTION FORM

ANNUAL GEOTECHNICAL INSPECTION FORM
WEST OLD TOWN, MAINE

Observation Date: _____ Monitor Name: _____
Weather: _____

Observation (Enter a √ as appropriate)			Description (location, direction, appearance, etc.)	Proposed Action
Area	**Sat**	**Unsat.**		
Active Area				
location description				
slope stability				
waste lift thickness				
active slope angle				
erosion				
leachate breakout				
ponded water				
toe heaving				
overall condition				
Inactive Area (synthetic)				
location description				
slope stability				
cracking				
erosion				
leachate breakout				
ponded water				
toe heaving				
overall condition				
Interim Soil Cover				
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

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: ☐ 394-4376 (JRL 24-hour line) ☐ 394-4370 (fax)
☐ 941-4570 (MDEP) ☐ 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: Fort James:_____ Weigh Station:_____ 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 Lou Pizzuti, Kurtis Brown, and Mike Abbott: _____

-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 ☐ FEPR ☐ MSW ☐ Other

Specific comments pertaining to complaint:

_____

Completed Complaint Record Form entered into the Environmental Audit Database: (Date) _____

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**

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.

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:**

JUNIPER RIDGE LANDFILL
FACILITY INSPECTION REPORT

INSPECTION MONTH\YEAR:_____ **INSPECTION DATE:**_____

NAME OF INSPECTOR:_____

INSPECTION ITEM DESCRIPTION	INSPECTED NO ACTION TAKEN	NEEDS ACTION (See Comments)
OPERATIONS	(place a check mark in the appropriate column)	
Access roads clear and free of debris		
Active disposal area size minimized		
Daily cover materials being utilized		
Litter being controlled & collected as needed		
Dust being minimized		
Tracking of wastes outside of cell being controlled		
Waste setback from berms		
Leachate controlled & contained in cells		
Odor control measures in-place		
Vector control measures in-place (birds, rats, etc.)		
Fire prevention & control measures in-place		
Adequate working equipment onsite		
LEACHATE MANAGEMENT		
Build-up of sediment in wetwells		
Pumps & valves functioning properly		
Flow conditions		
Pump station vented properly		
Electrical panel inspection		
Flow meter inspection		
Manholes intact and serviceable		
LEACHATE STORAGE & DISPOSAL		
Inspection of leachate storage pond & level		
Any signs of leachate seeps		
Underdrain system monitoring being performed		
Inspection of loading rack system & drain		
Leachate forcemain system		
STORMWATER COLLECTION & CONTROL COMPLIANCE		
Check outlet structures for condition		
Drainage ditches clear and flowing		
Signs of erosion		
Check dams		
Detention ponds		
Silt fences installed properly		
Check roadway ditches for erosion		
SPILL PREVENTION COMPLIANCE		
Condition of oil/fuel storage tanks & drums		
Any signs of leaks or spills		
Secondary containment being utilized as needed		
Spill kits available and restocked as needed		
All containers labeled appropriately		
ACTIVE GAS COLLECTION SYSTEM		
Condensate knockout system		
Condition of wellheads ok		
Presence of leakage on assembly		
Thiopaq® system operation/compliance		
Cleanleness of Thiopaq® system		
Maintenance of Thiopaq® up to date		
Noise/vibration in the motor or blower		
Maintenance up-to-date		
Condition of igniter system		
Plumbness of stack		

JUNIPER RIDGE LANDFILL
FACILITY INSPECTION REPORT

COMMENTS ON NON-COMPLIANT CONDITIONS.

REVIEW BY ENVIRONMENTAL COMPLIANCE MANAGER:

Signature Date

Distribution: General Manager
PCE Manager

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:**

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:												

COMMENT ON MAINTENANCE OR REPAIR NEEDED ON THE LAST PAGE OF THIS DOCUMENT FOR ANY MARKED RED UNDERLINED CHECK BOX.

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

COMMENT ON MAINTENANCE OR REPAIR NEEDED ON THE LAST PAGE OF THIS DOCUMENT FOR ANY MARKED RED UNDERLINED CHECK BOX.

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

COMMENT ON MAINTENANCE OR REPAIR NEEDED ON THE LAST PAGE OF THIS DOCUMENT FOR ANY MARKED RED UNDERLINED CHECK BOX.

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
LINER ACTION PLAN

JUNIPER RIDGE LANDFILL EXPANSION APPLICATION
LINER ACTION PLAN

Submitted by:

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

July 2015

SME
Sevee & Maher Engineers, Inc.

ENVIRONMENTAL • CIVIL • GEOTECHNICAL • WATER • COMPLIANCE

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

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JUNIPER RIDGE LANDFILL EXPANSION
LINER ACTION PLAN

1.0 INTRODUCTION

This document describes the Liner Action Plan (Plan) for Cells 11 through 16 of the proposed landfill expansion (Expansion) at the Juniper Ridge Landfill (JRL) in Old Town, Maine. The Plan describes the method to be used by NEWSME Landfill Operations, LLC (NEWSME) to monitor the performance of the Expansion's primary liner, and if appropriate, trigger response activities in the event monitoring suggests additional actions are warranted. The monitoring and evaluation techniques described in this Plan have been successfully employed at other landfill facilities in the State of Maine to monitor the performance of primary liner systems.

The expansion cells (i.e., Cells 11 through 16) have a primary and secondary liner system with a dedicated leak detection system (LDS) between them. The primary liner is a composite liner consisting of an 80-mil HDPE geomembrane, a geosynthetic clay liner (GCL) and one foot of compacted clay. The secondary liner is a 60-mil HDPE geomembrane.[1] Under the entire landfill base a one foot compacted clay layer exists. The leak detection system for the cells is located between the primary and secondary liners and consists of a geocomposite, one foot of sand, and piping which drains to an internal sump located within the cells. The sumps are equipped with a dedicated pumping system in each cell which allows both the flow and water quality of LDS fluids to be monitored by means of data collected from the totalizing flow meter and dedicated sample ports on each cell's LDS pump discharge.

The Plan describes a procedure to monitor the performance of the primary liner system using water quantity and quality data from the cell's LDS to a calculated Action Leakage Rates (ALRs). ALRs are calculated flow rates collected by the leak detection layer that trigger further

[1] In some areas of the landfill the secondary geomembrane is augmented with a GCL and one foot of clay.

investigations or actions that will be undertaken to evaluate primary liner's performance. For the Expansion two ALRs have been identified and are discussed in Section 3.0

The procedure for monitoring the primary liner performance uses a comparison of the specific conductance measurements in the LDS with the specific conductance identified as LDS Action Levels (LDSALs). The LDSALs are calculated using the ALR flow rates, the background flow rates in the leak detection system, and the specific conductance measurements of the LDS discharge prior to active use of the cell, and the specific conductance of the landfill leachate. This approach allows for a more representative evaluation of primary liner performance than a straight comparison of flow from the LDS system to the ALR's since flow in the LDS system can be from a number of sources which are not leachate related. These can include fluid present in the system as a result of construction or non-leachate leakage into the system from the perimeter of the cells. By incorporating specific conductance measurements into the evaluation of the primary liner performance the source of water collected in the LDS system can be better quantified. As the landfill cells are operated, actual flow and specific conductance measurements, obtained from the LDSs will be incorporated into the monitoring program. The procedures for both calculating the LDSALs and incorporating data into the monitoring program are discussed in Section 3.0.

NEWSME will be responsible for collecting the monitoring data (i.e., flows and conductivity measurements), compiling and evaluating the data, and reporting the data to the Maine Department of Environmental Protection (MEDEP). In the event the data suggests a leak has occurred, they may also involve a professional technical consultant to evaluate the data and assist in determining whether a leak has occurred and appropriate response actions. NEWSME will collect flow data and water quality samples from the leachate and individual cell's leak detection systems on a monthly basis for use in implementing this Plan.

The remainder of this Plan discusses the approach and methodology for monitoring the performance of the landfill cells' primary liner. Section 2.0 provides an overview of the Expansion containment systems design, and possible sources of fluids that would be collected by the leak detection layer. Section 3.0 discusses the two specific ALRs selected for the Expansion, and the corresponding Response Activities (RAs). This section also describes the

methodology for converting ALRs to LDSALs. Section 4.0 describes the location and frequency of monitoring associated with the Plan, as well as the methodology for collecting samples from the Expansion cells' leachate sumps.

2.0 OVERVIEW OF CONTAINMENT SYSTEM DESIGN AND PROJECTED FLOW RATES

2.1 Containment System Design

The cells' containment system is designed to contain and collect leachate generated in the cells and monitor the performance of the primary liner system with a dedicated leak detection system. The containment system design includes the following components:

Leachate collection layer:

- a 12-inch layer of drainage sand ($K \geq 1x10^{-2}$ cm/sec),
- a network of 6 and 8-inch diameter perforated HDPE pipe,
- a geocomposite drainage net and piping system, and
- an internal leachate sump and pump system.

Primary liner system:

- a 80-mil high-density polyethylene (HDPE) textured geomembrane,
- a geosynthetic clay liner (GCL), and
- a 12-inch clay layer (hydraulic conductivity (K) less than or equal to $1x10^{-7}$ cm/sec).

Leak detection system:

- a 12-inch layer of drainage sand ($K \geq 1x10^{-2}$ cm/sec),
- a network of 6-inch diameter perforated HDPE pipe with sampling,
- a geocomposite drainage net and piping system, and
- an internal leak detection sump and pump system within each cell.

Secondary liner system:

- a 60-mil HDPE textured geomembrane.

The entire double liner system is underlain by and a 12 inch clay layer, having a hydraulic conductivity (K) less than or equal to $1x10^{-7}$ cm/sec.

2.2 Leak Detection Flow Rates

Fluid within the leak detection layer will flow to the individual LDS pump stations. There are several potential sources of fluid that could be present in the leak detection layer. These include construction water and liquids that enter the LDS before waste filling begins; liquids that enter the LDS system from areas not in contact with wastes, such as along the perimeter of the landfill cells in the vicinity of the anchor trench, and any fluid which may flow through the liner system due to defects in the primary liner system. The amount of these fluids can vary depending on the site conditions.

3.0 ACTION LEAKAGE RATES \ACTION LEVELS\ AND RESPONSE ACTIONS

3.1 Background

40 CFR § 265.302 defines Action Leakage Rate as the “maximum design flow rate that the leak detection system can remove without the fluid head on the bottom liner exceeding one foot.” The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction operation, and location of LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS and proposed response actions (e.g. the action leakage rate must consider decreases in flow capacity of the system over time resulting from siltation, and clogging, rib layover and creep of synthetic components of the system overburden pressure, etc.) U.S.EPA initially proposed a range for ALRs of between 5 and 20 gallon per acre per day (gpad) for waste management units with a composite liner system (Federal Register, 1987). In a supplemental document supporting final rulemaking, U.S.EPA acknowledged that these values may not be achievable in waste facilities meeting the minimum U.S.EPA design standards for double lined facilities (U.S.EPA, 1992). U.S.EPA recommended an ALR of 100 gpad for landfill facilities. This recommendation was based on measurements of actual flow rates in leakage detection systems of operating facilities, which meet the U.S.EPA minimum design requirements, and a theoretical analysis using a sophisticated three-dimensional seepage model. In recommending the 100 gpad, U.S.EPA states "leakage rates above this value often indicate that 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 that may be readily identified and repaired."

The information contained in the supplemental U.S.EPA document (U.S.EPA, 1992) suggests that facilities constructed with proper QA/QC, as proposed for the Expansion cells, typically have flow rates in their LDS of less than 100 gpad; whereas, only 70 percent of the well-designed facilities with good QA/QC can meet the original proposed upper bounds of 20 gpad, included in U.S.EPA's original proposal. The Expansion cells will be constructed with an extensive amount of QA/QC testing and oversight as is currently done for the existing landfill

cells. Therefore, site-specific ALRs were being proposed to the Expansion as described in Section 3.2

3.2 Landfill Cells Action Leakage Rates

For Cells 11 through 16, two ALRs will be used to monitor and evaluate the primary liner's performance. These ALR's have been established based on the EPA guidance and the site specific design assumptions, characteristics, and QA/QC Plans. Each ALR has an appropriate Response Activity (RA) associated with it. The purpose of defining two ALRs is to provide an initial response level set at a low level that triggers an initial review and increased monitoring of the data collected from the LDS, and a second level that warrants a more immediate investigation of potential sources of primary liner leaks. The exceedance of the first ALR would trigger a more frequent sampling regime. Then a more detailed analysis of LDS water quality to determine the cause for the ALR exceedance. The first ALR (ALR-I) will require obtaining additional measurements during the work week to confirm the initial results; notification of the MEDEP after obtaining four weekly sets of readings; continue monitoring the LDS during the work week for four consecutive months to confirm the ALR-I is consistently being exceeded. If four consecutive monthly readings indicate a leak, then monitor the individual LDS sumps for detection monitoring water quality parameters. The second ALR (ALR-II) will indicate a potential compromise of the primary liner system requiring a more immediate action, including additional investigations and the notification of MEDEP.

The Action Leakage Rates established for the cells consist of two liner leakage rates that were utilized to evaluate the potential impact of landfill leakage on the surrounding environment.[1]

- The first ALR (ALR-I) is set at 4.6 gallons gpad. This value was used to evaluate the effect on site groundwater if three 1 cm^2 holes develop in the secondary liner

[1] In a total liner failure, the amount of leachate that would enter the environment will be controlled by the hydraulic conductivity of the soil present under the liner including the imported clay layer. Volume III of the MEDEP Application contained a contaminant transport analysis (Section 4.0) as required by the MEDEP Solid Waste Management Rules (Section 401.2.D.).

system. This ALR is below the 20 gpad that has historically been used in the State of Maine.

- The second ALR (ALR-II) is set 92 gpad. This value was used in the contaminant transport analysis to evaluate potential effect of on-site groundwater assuming no liner is present.[2]

The total leachate leakage rates for the individual cells based on these ALRs are summarized in Table 1.

TABLE 1

ACTION LEAKAGE RATES – EXPANSION CELLS

Cell ID	Cell Area (Acres)	LDS-ALR-I (gallons per day)	LDS-ALR-II (gallons per day)
11	9.5	44	874
12	12.6	58	1159
13	11.8	54	1085
14	6.7	31	616
15	6	28	552
16	7.1	33	653

3.3 Leak Detection System Action Levels

To determine if an ALR has been exceeded in a landfill cell, the monthly measured specific conductance value of the LDS discharge will be compared to a calculated Leak Detection System Action Level (LDSAL). The LDSAL will be calculated using ALR values in Table 1; the base LDS flow rate and the baseline LDS specific conductance measurement collected before active cell operations, and the specific conductance measurements of the leachate. The LDSAL will be calculated for each cell using the equation: LDSAL = *{[(base flow rates) * (the baseline specific conductance)] + [action leakage rates) * (leachate specific conductance)] /((base flow rate to the underdrain) + action leachate rates))*.

Tables 2 shows the general specific conductance values associated LDSAL-I and LDSAL-2 for Cell 11 with for the solution to this equation for each of the ALRs, and assumed values for both

[2] The contaminant transport analysis demonstrated that a leak of this level would not result in contamination at sensitive receptors.

baseline flow in the LDS and Specific conductance of the leachate. As the facility is operated, operational data will be incorporated into the calculation of the LDSALs for each of the individual cells. The collection of this data, and its incorporation into determining the LDSAL, is discussed in Section 4.1.

TABLE 2

LEAK DETECTION SYSTEM ACTION LEVELS

Cell	Cell Size acres	Total Leachate Seepage Flows (gpd)		Baseline Values			Leak Detection System Action Levels	
		ALR I 4.6 gpad	ALR II 92 gpad	Flow gpd	LDS Cond. μmhos/cm	Leach. Cond. μmhos/cm	LDSAL I μmhos/cm	LDSAL II μmhos/cm
11	9.5	44	874	2,025	400	20,000	817	6,309

3.4 Response Actions

NEWSME will notify the MEDEP within 15 working days of obtaining four consecutive monthly readings from the leak detection discharge, suggesting exceedance of ALR-I (as determined by comparing the specific conductance measurement to the corresponding LDSAL). After notifying the MEDEP, NEWSME will monitoring the leak detection discharges at weekly intervals for four consecutive months, and notify the MEDEP of the results. If the results from the four months of weekly monitoring program suggests that liner seepage in excess of the ALR-I rate has occurred, a sample of the water from the offending LDS will be analyzed for the detection monitoring parameters contained in the facility's Environmental Monitoring Plan, at the end of the four months to assist in evaluating the source of the fluid in the LDS system. The MEDEP will be kept informed either verbally or written of the results of the sampling. NEWSME will prepare a report summarizing the results of the sampling and submit it to the MEDEP for its review within 60 days of receiving the detection monitoring test results. The report will contain recommendations for addressing the ALR-1 exceedance.

If the results of LDS monitoring exceed the LDSAL value associated ALR-II rate, NEWSME will notify MEDEP within 10 working days, and after consultation with MEDEP will submit a plan to the MEDEP which identifies the approach it will implement to evaluate the cause of the exceedance of ALR-II and identify appropriate corrective actions. Upon receipt of approval of

this plan, NEWSME will undertake the plan and provide MEDEP with monthly progress reports. NEWSME will continue to collect measurements of flow and specific conductance from the LDS on a weekly basis until NEWSME and MEDEP agree to a modified plan.

4.0 MONITORING PROCEDURES

4.1 Monitoring Frequency

To implement the Plan, water quality and quantity samples will be collected from the LDS for each landfill cell. The total flows will be obtained from the totalizing flow meters installed on the discharge lines for the LDSs. The water quality samples will be collected from the sampling port on the LDS pump station discharge from each cell.

During the initial baseline period of operations, after a cell has been constructed and waste placed in the cell, LDS water quality and quantity samples will be collected at a frequency defined in Table 3. The baseline period is anticipated to last up to a year after the construction of a cell is completed and waste is placed in the cell.[4] Data collected during this baseline period will be used to calculate the LDSALs used to monitor the performance of the primary liner, and provide baseline conductivity measurements at each sampling port. After this baseline period, the frequency of data collection will be modified during the operating and closure life of the facility. The frequency of sample collections during the operational and closure period is summarized in Table 3. At the end of each calendar year, the data from that preceding year will be incorporated into the calculation of the UALs values used to monitor the primary liner performance. This will be done by calculating the monthly-means of the leachate specific conductance measurement, and recalculating the LDSAL values using this data for each cell. NEWSME will make appropriate recommendations for changes to the methodology for calculating the LDSALs based on the data collected as part of the annual report prepared for the Landfill. NEWSME will make no changes to the methodology until it receives MEDEP's approval.

[4] The baseline period will be extended after initial waste in placed in the landfill cell provided the data collected suggests that the liner system is functioning as designed.

TABLE 3

LINER ACTION PLAN SAMPLING FREQUENCY

Item	Baseline Period[2]	After Baseline Period Provided LDSAL-I is not Exceeded	After Baseline Period If LDSAL-I is Exceeded for Four Consecutive Months	After Baseline Period If LDSAL-II is Exceeded
LDS Flow Rate(gpd)	Bi-Weekly	Monthly	Weekly	Daily
LDS Specific Conductance (μmhos/cm)	Bi-Weekly	Monthly	Weekly	Weekly
Leachate Specific Conductance(μmhos/cm)	Bi-weekly	Monthly	Weekly	Weekly
Leak Detection Water Quality Characterization	1	1	2	As Required[3]

Notes:
1. Leak detection water quality will be characterized as outlines in the Facility's EMP.
2. The sample period during the baseline period may be decreased as the data collected is consistent. The data will be collected no less than monthly during the baseline period.
3. A sample will be obtained after four consecutive months of LDSAL-1 exceedance.

4.2 Reporting Procedures

During the baseline period of operation for each cell, NEWSME will submit a report to the MEDEP with the results of the sampling program three times per year. The report will include cumulative flow data from the LDS with specific conductance measurements. After the baseline period for each cell, NEWSME will submit a yearly report presenting all of the data collected during the preceding year, and any recommended changes to the monitoring program, such as adjustments of the LDSAL values for each cell.

APPENDIX Q
THIOPAQ OPERATIONS AND MAINTENANCE MANUAL



Operated by NEWSME Landfill Operations, LLC

2828 Bennoch Road, Old Town, Maine 04468

OPERATIONS MANUAL

Juniper Ridge Landfill

Gas Treatment Facility

Old Town, ME

April 2016

(Revised April 2020)

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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, which is located off of the Bennoch Rd 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 treat hydrogen sulfide from the landfill gas (LFG) generated by the Juniper Ridge Landfill (JRL) prior to combustion using an onsite gas flare. In the future a Renewable Natural Gas Processing Facility has been proposed and is anticipated to be online by 2021 or 2022.

The design capacity of the system is 5000 SCFM at 5000 ppm hydrogen sulfide (H_2S). The facility employs the same Thiopaq® treatment technology as is currently utilized at the neighboring Pine Tree Landfill, and includes ancillary systems to compress and cool the LFG, cool the Thiopaq solution, provide compressed air to the necessary valves and pumps, pump wastewater from the facility, and power and control the facility operations.

EXISTING WETLAND
SEE NOTE 10 ON DWG C-100

BEDROCK OUTCROP (TYP)

CLEARING LIMIT LINE
(LIMIT OF WORK) (TYP)

EXISTING OVERHEAD
ELECTRIC LINE (TYP)

PROTECT EXISTING
WELLS (TYP)
SEE NOTE 6 ON
DWG C-100

END OF EXISTING
LEACHATE FORCE MAIN

CANTILEVER SLIDING GATE (TYP)
SEE DWG C-308

24' WIDE PERMANENT
PAVED ACCESS ROAD

14' WIDE GRAVEL
ACCESS ROAD
SEE DWG C-301

EXISTING 18" DIA
HDPE CORR CULVERTS
(TO BE REMOVED)

END OF EXISTING
24" DIA GAS HEADER

CELL 12 LINER LIMIT (TYP)

CHAIN LINK FENCE (TYP)
SEE DWG C-308

PEDESTRIAN GATE (TYP)
SEE DWG C-308

EXISTING WETLAND
SEE NOTE 10 ON DWG C-100

EXISTING GRAVEL PARKING AREA
GRAVEL TO BE STOCKPILED FOR OWNER

ADMINISTRATION BUILDING
SUPPLY WELL (TO BE ABANDONED)

ADMINISTRATION BUILDING
FOUNDATION (TO BE REMOVED)

LEACHATE LOADING RACK
(TO BE RELOCATED)
SEE DWG C-311

FORMER SCALE HOUSE
SUPPLY WELL

FORMER LANDFILL SCALES
CONCRETE FOUNDATION
AND ASPHALT RAMPS
(TO BE REMOVED)

LANDFILL ACCESS RAMP
SEE DWG C-108

EXISTING FORCE MAIN
AND GRAVITY DRAIN
(TO BE ABANDONED)
SEE NOTE 13

EXISTING SUBSURFACE
WASTEWATER DISPOSAL FIELD

SITE CONTROL POINT (TYP)
SEE NOTE 7 ON DWG C-100

EXISTING LEACHATE
LOADING RACK DRAIN LINE

EXISTING 6"x10"
LEACHATE FORCE MAIN

DETENTION
POND 1

DETENTION
POND 5

PERMITTED TILL
AND BORROW PIT

BORROW PIT AND DETENTION POND 10
MAINTENANCE ACCESS ROAD
SEE DWG C-109

DETENTION POND 10
(SEE DWG C-109)

EXISTING PRIMARY ACCESS ROAD

CELL 11 LINER LIMIT

EXISTING CATCH BASIN
AND CULVERT (TYP)

EXISTING TEMPORARY PAVED
ROAD TO BE REMOVED
SEE NOTE 12

EXISTING MONITORING WELLS
AND PIEZOMETERS
SEE NOTE 6

EXISTING UTILITIES AND CHAINLINK
FENCE TO BE REMOVED
SEE NOTE 8

APPROXIMATE LOCATION
OF SHALLOW BEDROCK

PERMITTED WOOD WASTE
HANDLING AREA

CELL 12
CELL 11
CELL 10
CELL 9
CELL 8
CELL 7
CELL 6
CELL 5
CELL 4
CELL 3B
CELL 3A
CELL 2
CELL 1

CELL 4 PUMP
STATION

CELL 8
PUMP STATION

CELL 5 PUMP STATION

LEACHATE
POND

DETENTION POND 9

EXISTING SUBSURFACE
WASTEWATER DISPOSAL FIELD

LFG TREATMENT
FACILITY

STORAGE
BUILDING

MAINTENANCE/
ADMINISTRATIVE
BUILDING

EXISTING LFG
FLARE LOCATION

EXISTING LEACHATE STORAGE
TANK PUMP STATION

EXISTING LEACHATE
STORAGE TANK

SMH-17

STORAGE BUILDING
(FORMER ADMINISTRATION BUILDING)

EXISTING 24" LFG HEADER

EXISTING LFG KNOCKOUT
STRUCTURE (TYP)

DETENTION
POND 6

PROPERTY LINE

UTILITY MANHOLE (TYP)

EXISTING (2) 24" HDPE CULVERTS

LIMIT OF EXISTING CELLS
LINER SYSTEM (TYP)

EXISTING 8"x12"
LEACHATE FORCEMAIN

EXISTING UNDERGROUND
ELECTRIC (TYP)

WATER LOADING RACK
SEE DWG C-311

100 0 200 400 FEET

NOTES:

1. SEE DWG C-100 FOR GENERAL NOTES PERTAINING TO CELL 12 CONSTRUCTION.
2. BORINGS & TEST PIT LOCATIONS ARE APPROXIMATE AND BASED ON FIELD SURVEY BY SEVEE & MAHER ENGINEERS, INC., CUMBERLAND, MAINE.
3. GRUB AND STRIP IN ALL AREAS WHERE FILL WILL BE PLACED TO REMOVE ORGANIC AND OTHER DELETERIOUS MATERIAL OR 4-INCHES IN ALREADY DEVELOPED AREAS AND 14-INCHES IN UNDEVELOPED AREAS.
4. CONTRACTOR SHALL SUBMIT TO THE ENGINEER A WRITTEN PLAN FOR EXCAVATION, EXCAVATION STABILITY, AND A STORMWATER MANAGEMENT PLAN FOR DIVERSION OF WATER DRAINAGE OFF THE GEOSYNTHETIC COVER LOCATED ON EXISTING SIDESLOPE OF CELLS ADJACENT TO CELL 12 PRIOR TO CELL 12 EXCAVATION ACTIVITIES.
5. PROPOSED GRADES WITHIN THE PROPOSED LINER LIMIT OF CELL 12 REPRESENT BASE GRADES PRIOR TO PLACEMENT OF THE IMPORTED CLAY AND CONSTRUCTION OF THE LINER SYSTEM. THE PROPOSED GRADES SHOWN OUTSIDE THE PROPOSED LINER LIMIT ARE SUBGRADE OF ROAD, SEE SECTION 1 ON DRAWING C-301.
6. EXISTING MONITORING WELLS AND PIEZOMETERS SHOWN WITHIN LIMIT OF WORK HAVE BEEN PREVIOUSLY ABANDONED. LOCATIONS ARE SHOWN FOR SUBSURFACE INFORMATION REFERENCE.
7. FILL SOILS TO BE USED ON SITE SHALL COME FROM: CELL EXCAVATION, THE DETENTION POND 10 CONSTRUCTION, AND THE SOIL STOCKPILE AREA IDENTIFIED ON DWG C-101.
8. REMOVE APPROXIMATELY 1,200 LF OF FENCE WITHIN THE LIMIT OF WORK SHOWN ON THE DRAWING AND THE DOUBLE SWING GATE TIE-IN LOCATIONS SHOWN ON THE DRAWING. REUSE FENCING WHEN POSSIBLE AT PROPOSED FENCE LOCATIONS SHOWN ON THE DRAWINGS.
9. LOCATION OF FORCE MAIN AND LANDFILL GAS HEADER PIPE EXTENSION AND ELECTRICAL SHOWN ON DWG C-200.
10. LOCATION OF LANDFILL ACCESS ROADS AND STORMWATER CONTROL FEATURES SHOWN ON DRAWING C-108.
11. CONTRACTOR SHALL REMOVE EXISTING ADMINISTRATIVE BUILDING FOUNDATION AND LEACHATE LOADING RACK AND ASSOCIATED ABOVE AND BELOW GROUND UTILITIES. ANY PIPES CUT AT LIMIT OF WORK SHALL BE SURVEYED AND CAPPED AT DIRECTION OF ENGINEER. THE LOADING RACK SHALL BE RELOCATED TO THE LOCATION SHOWN ON DRAWING C-102.
12. EXISTING PAVEMENT SHALL BE GROUND AND THE GRAVEL BASE SHALL BE REMOVED AND STOCKPILED ON-SITE FOR OWNERS USE.
13. EXISTING FORCE MAIN AND GRAVITY DRAIN SHALL BE DISCONNECTED FROM THE ADMINISTRATIVE BUILDING AND CAPPED WITH FUSED END CAPS, ONCE PIPE MATERIAL HAS BEEN CONFIRMED.

DWG: EXCON-SITEDEV LMN: EXCON-SITEDEV CTB: SME-STD REV: 4/9/2020

FIGURE 1
EXISTING CONDITIONS/ SITE DEVELOPMENT PLAN
JUNIPER RIDGE LANDFILL EXPANSION
OLD TOWN, MAINE

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

C:\Users\mclark\Documents\Landfill\Current\Drawings\Operations Manual\2020\Autff\Figures\EXCON-SITEDEV.dwg, 4/9/2020 1:42:58 PM, vjm



Figure 2: Photo of Juniper Ridge Landfill Gas Treatment Facility

2.0 DESCRIPTION OF FACILITY AND MEDEP APPROVALS

The 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 Hydrogen Sulfide (H2S) from the landfill gas, before the gas is flared. Construction of the Facility began in 2014 and commenced operation in January of 2015.

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 Juniper Ridge Landfill 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 will report directly to the Landfill Engineer & Environmental 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. 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 the Juniper Ridge Landfill, is designed to actively collect Landfill Gas (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, two 200 horse power motors used to power the blowers, and two knockout pots. 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” PLC (Primary Logic Controller) 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.

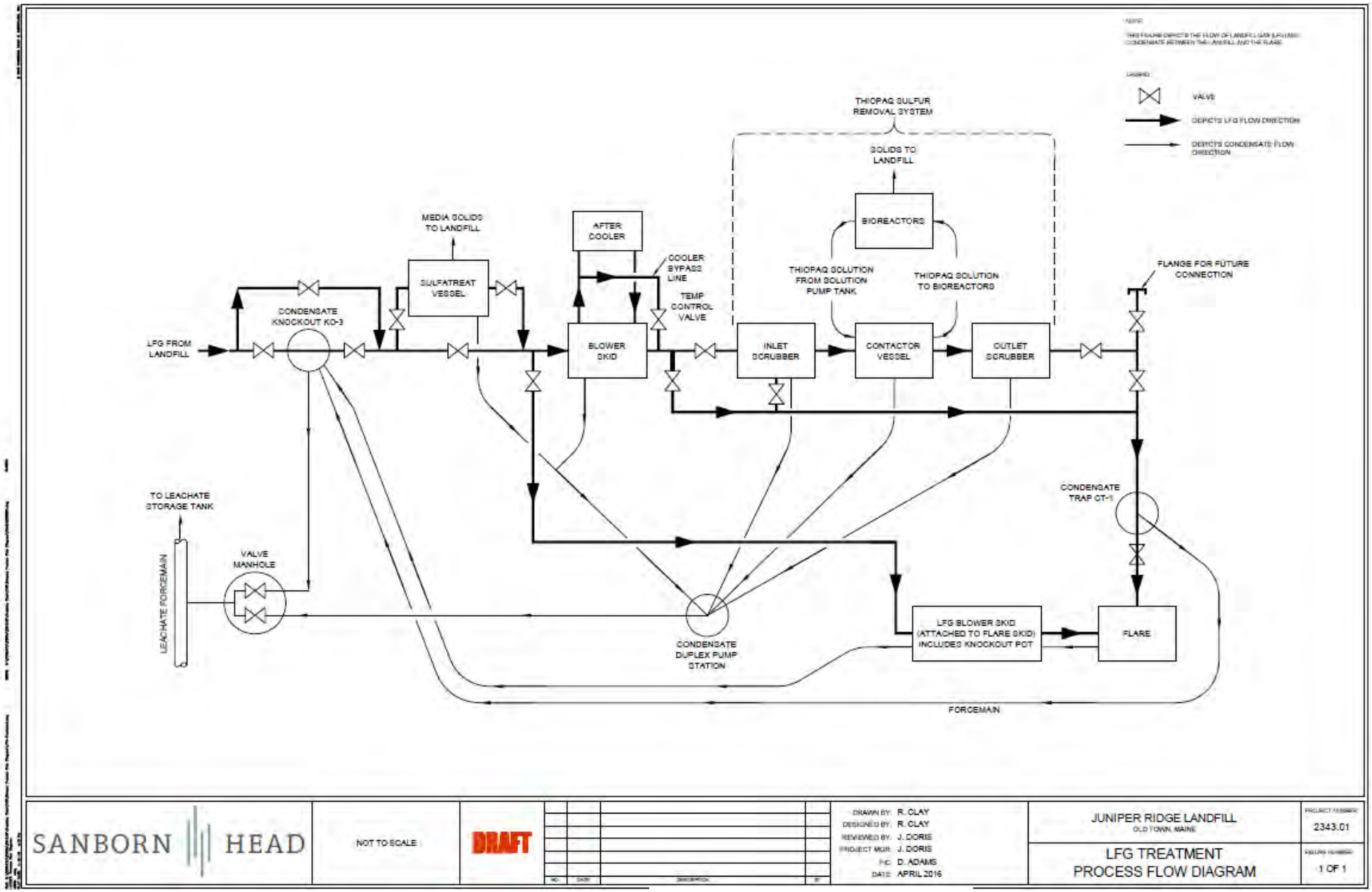


Figure 3: Process Flow Diagram

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

The gas subsequently passes through the outlet scrubber (knock out pot) for further condensate removal, and then goes to the flare through an underground pipe. It passes through a condensate trap next to the flare skid, before the gas is destroyed through combustion in the flare. A pipe and valve is also in place to allow for additional uses of the gas. A Renewable Natural Gas Processing Facility has been proposed and is anticipated to be online by 2021 or 2022.

The flare skid is located west of the facility. A flame arrestor, igniter, pressure bypass, primary logic controller 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.

5.2 Thiopaq Solution Flow

5.2.1 Bioreactors

The Thiopaq® Solution, rich in dissolved H_2S, travels from the contactor the bioreactor. Air is introduced in the contactor, which allows Thiobacillus bacteria to carry out the biological reaction of Sodium Bi-Sulfide ($NaHS^-$) with Oxygen (O_2). This regenerates the Sodium Hydroxide ($NaOH^-$) 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, Sodium Hydroxide (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. Sodium Hydroxide (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”, where foam rises into the vent pipe.

5.3 Process Control

Most of the process control functions are automated through three PLCs (Primary Logic Controllers) 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. This 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, Total Suspended Solids (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 SO2 emissions based on the assumption that TRS compounds are converted to SO2 during combustion. Records of SO2 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 extend 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 with 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, grease, filter changes, calibrations, inspections, cleaning and testing.

8.0 RECORD KEEPING

Records of chemistry tests, hydrogen sulfide 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 cooperating 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.

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

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

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.

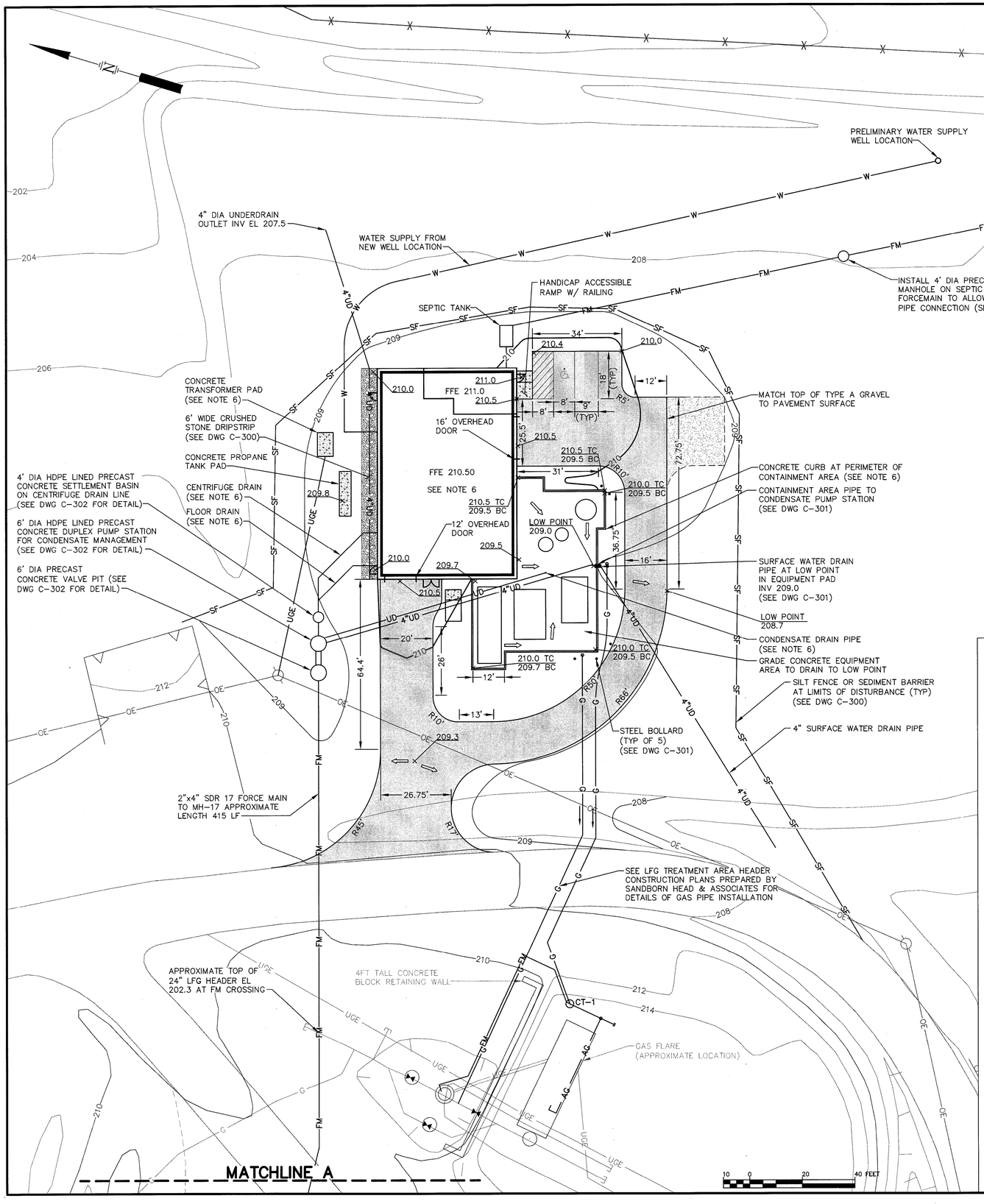
The solid waste disposal facility shall only accept solid waste that is subject to recycling and source reduction programs, voluntary or otherwise, at least as effective as those imposed by 38 MRSA Chapter 13.

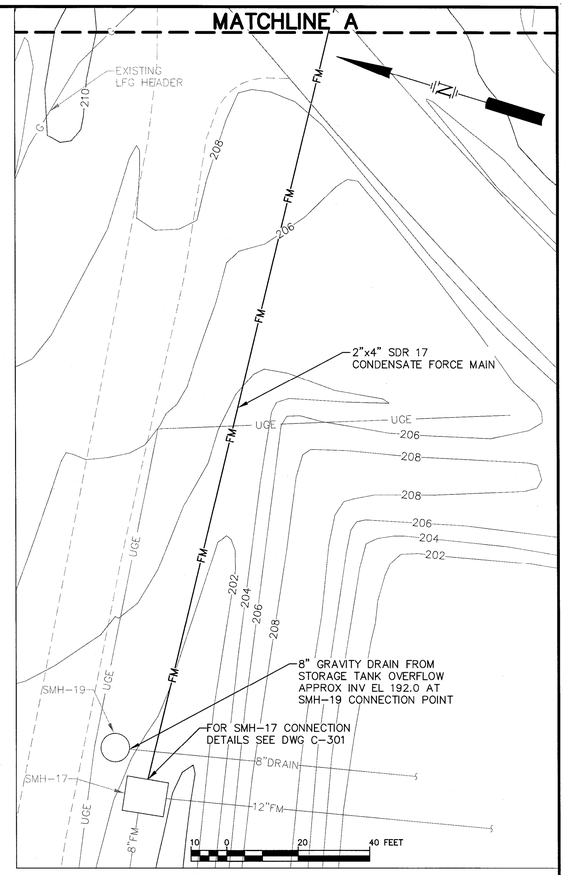
11. **Deed Requirements for Solid Waste Disposal Facilities.** Whenever any lot of land on which an active, inactive, or closed solid waste disposal facility is located is being transferred by deed, the following must be expressly stated in the deed:

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





LEGEND

LINETYPES

SF — SF	SILT FENCE
G	BELOW GRADE GAS PIPE
AG — 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

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.

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

N:\projects\Closed\OldTown\Landfill\Layout\Bldg Permitting Addition\Arch\BASE.dwg, 5/9/2014 12:53:24 PM, jrl

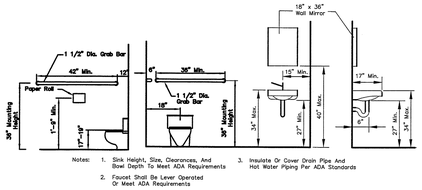
APPENDIX C

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)

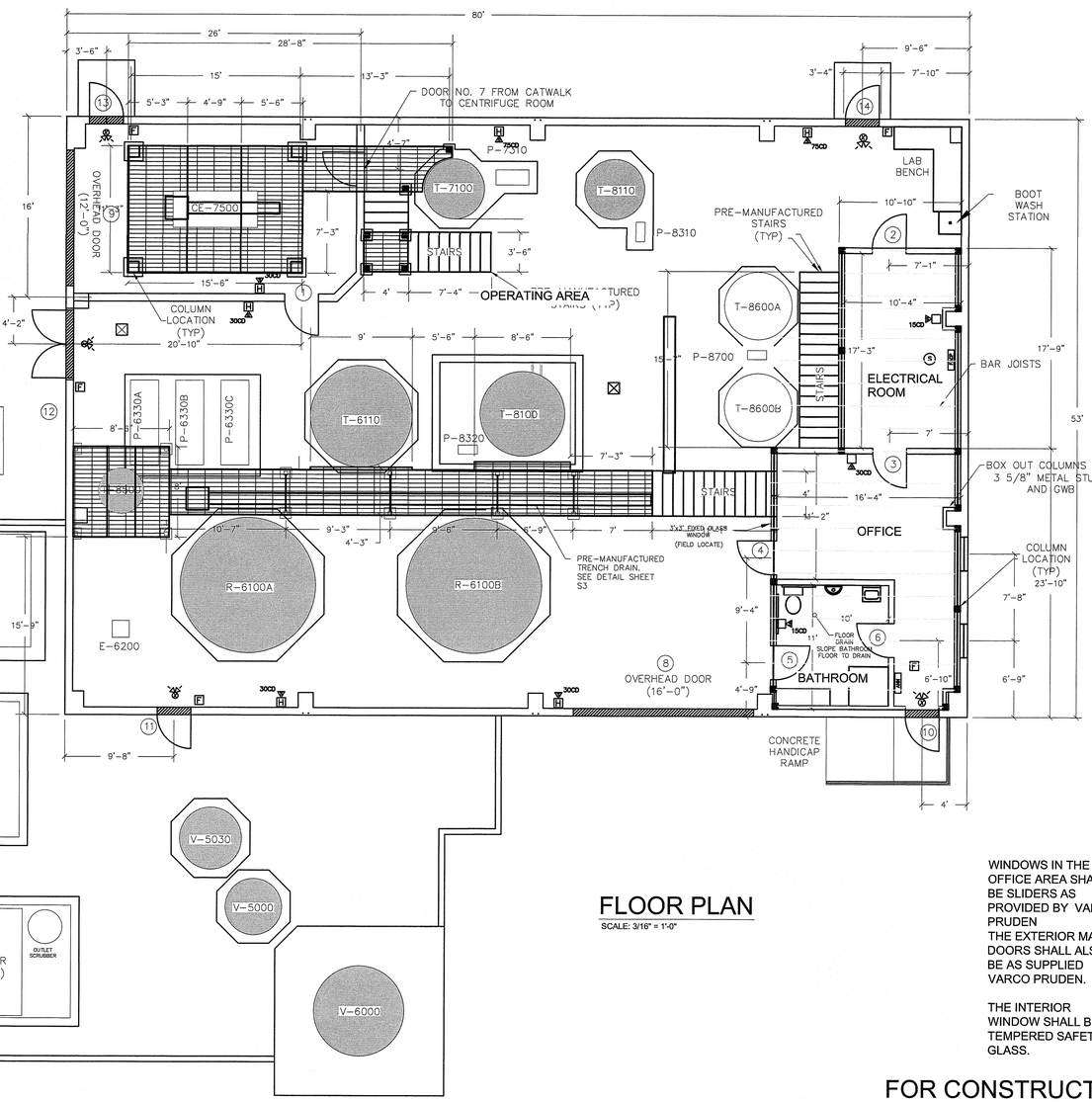
NOTE: All Doors to Meet A.D.A and Maine State Access Requirements.
1. DOOR HARDWARE IS TO BE OPERABLE WITH SINGLE EFFORT (E.G. LEVER TYPE) PER THE AMERICANS WITH DISABILITIES ACT OF 1990.
2. ALL EXIT DOORS SHALL HAVE AN EXIT SIGN COMPLYING WITH SECTIONS 4.30.1, 2.30.4, 4.30.5 AND SECTION 4.30.6 OF THE 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.



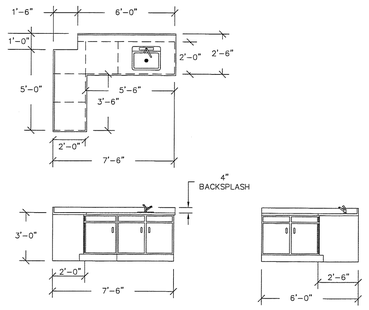
SEE PLAN SHEETS S1 AND S2 FOR EXTERIOR SLAB DETAILS

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.

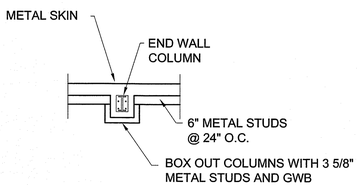


LABORATORY CABINET DETAIL

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

N:\CAD\Land Projects\2014\8-14-JUNIPER-RIDGE\dwg\8-14-working-2.dwg, 8/5/2014 2:11:28 PM, SAVIN 3406WD PS

APPENDIX R
JRL RNG GAS TREATMENT SYSTEM
MONITORING AND SSM PLAN

Docusign Envelope ID: 819C7091-9339-4691-B4DA-F76568F876F7

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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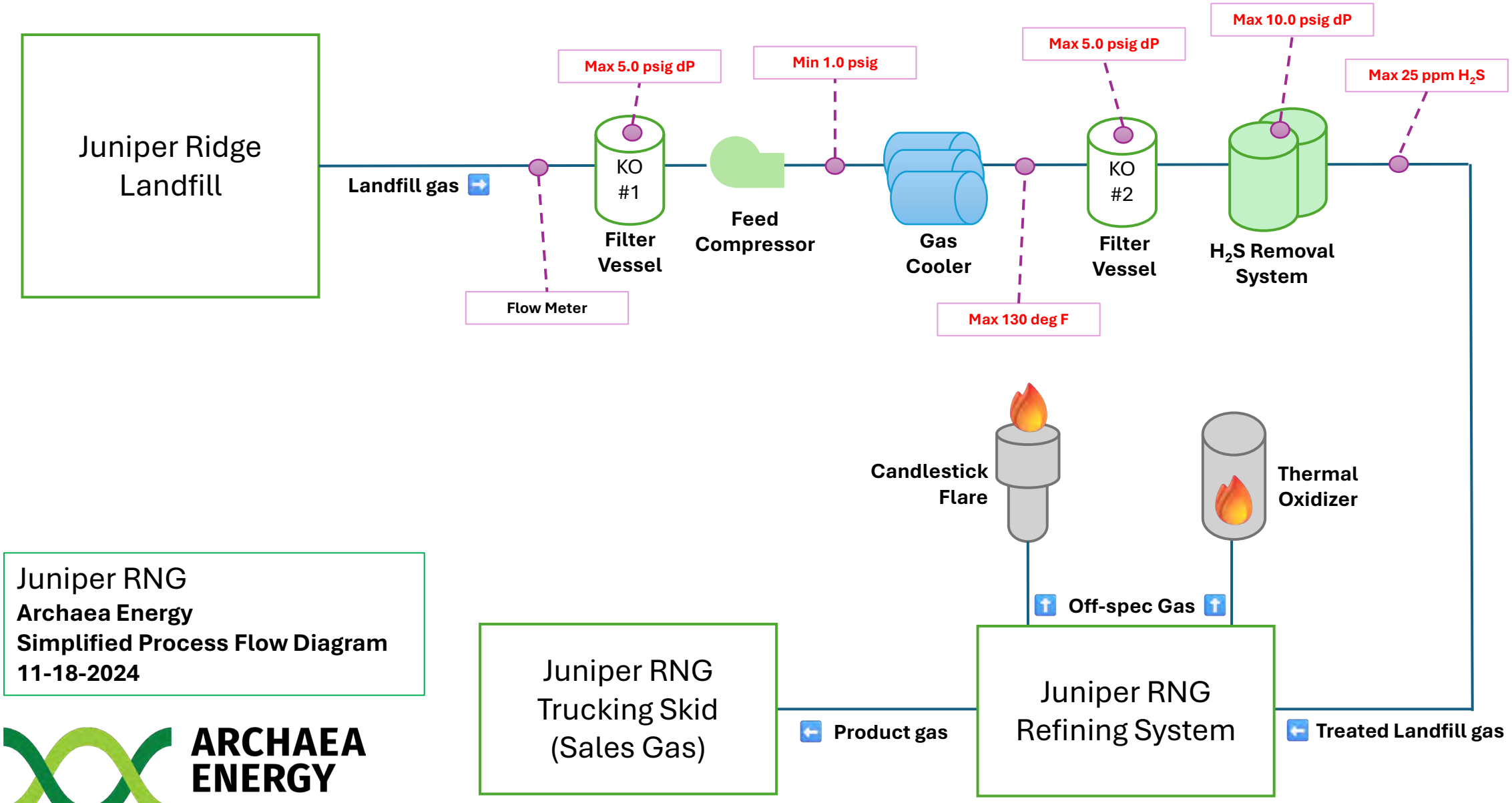
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Appendix A. Simplified Block Flow Diagram

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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).

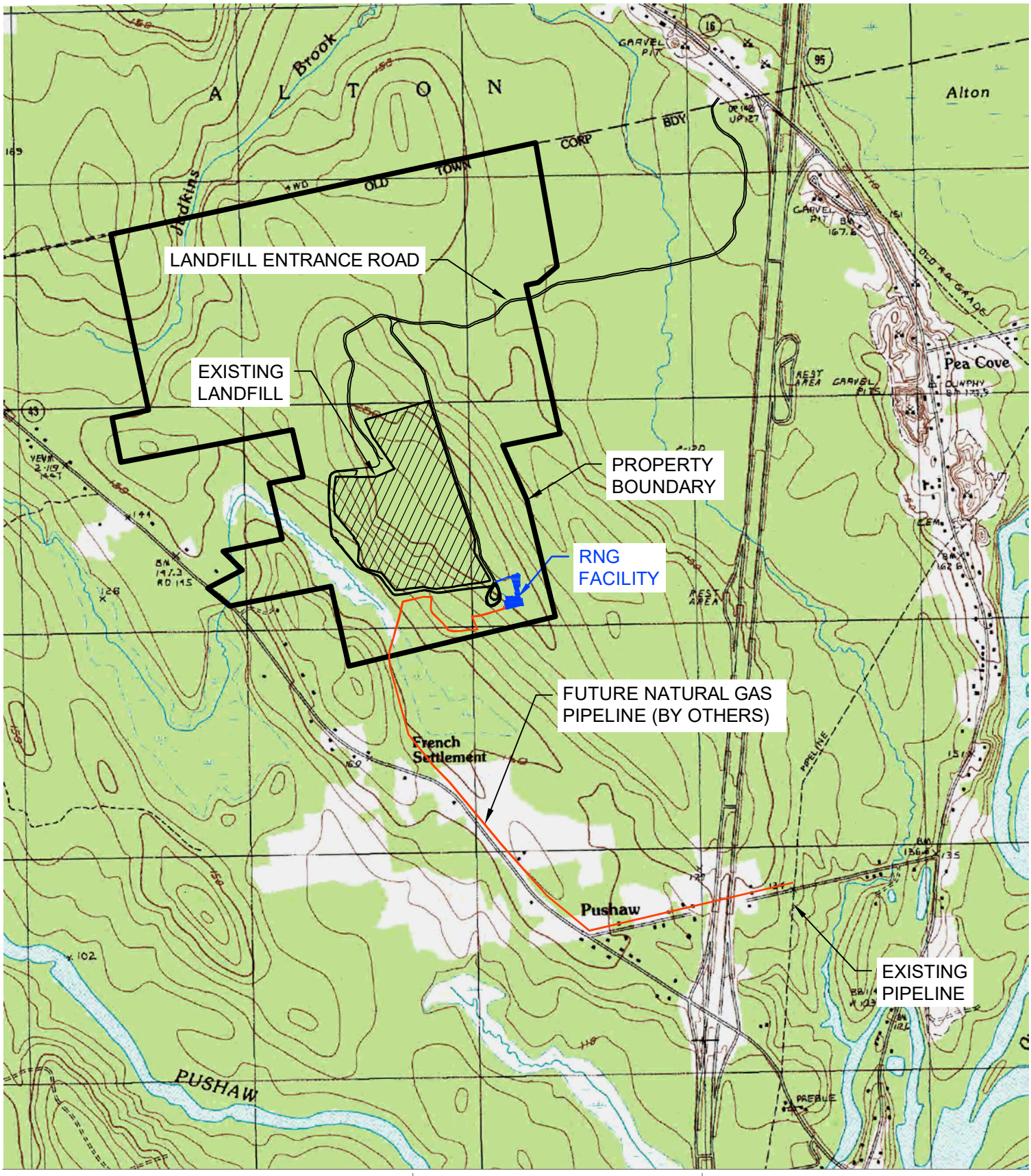
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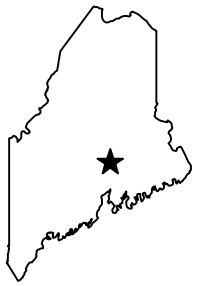
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Figure

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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:

$$\text{Analyte concentration, ppm} = \frac{\text{pksamp}}{\text{pkstd}} \text{ X } \text{Std}$$

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.