



State of Utah

GARY R. HERBERT  
*Governor*

SPENCER J. COX  
*Lieutenant Governor*

Department of  
Environmental Quality

Alan Matheson  
*Executive Director*

DIVISION OF WASTE MANAGEMENT  
AND RADIATION CONTROL  
Scott T. Anderson  
*Director*

March 15, 2017

Eric Urbani  
Promontory Point Resources  
32 East Exchange Place, Suite 100  
Salt Lake City, UT 84111

RE: Permit Modification  
Promontory Point Landfill  
Box Elder County

Dear Mr. Urbani:

Enclosed is the approved permit modification for Promontory Point Landfill Facility, in Box Elder County, Utah. This modification addressed the new owners and operators, a new landfill design and a new financial assurance mechanism. The public comment period on the permit modification request began November 2, 2016 and ended on December 7, 2016. Comments were received and responses were provided by this office.

Prior to acceptance and disposal of any solid waste at Promontory Landfill Facility, the following items must be submitted to the Division for review and approval.

1. Ground Water monitoring requirements outlined in Section III.F of the Permit.
2. Final Standby Trust Agreement, to fulfill financial assurance mechanism, as addressed in Section IV.D. The proposed changes that were made to the text of our Standby Trust Agreement for your financial assurance mechanism cannot be approved. A copy of the approved Standby Trust Agreement is enclosed with this letter. A revised Standby Trust Agreement must be resubmitted with the appropriate signatures with approved payment bonds.
3. Contracts with local governments must be approved prior to receipt of solid waste as outlined in Section I.B, Acceptable Waste and Section V.G, Contract, of the permit.

The expiration date of this permit remains August 31, 2021 as shown on the permit page. If renewal of this permit is desired, a renewal application should be submitted 180 days prior to the permit expiration date.

DSHW-2017-001090

195 North 1950 West • Salt Lake City, UT  
Mailing Address: P.O. Box 144880 • Salt Lake City, UT 84114-4880  
Telephone (801) 536-0200 • Fax (801) 536-0222 • T.D.D. (801) 903-3978  
[www.deq.utah.gov](http://www.deq.utah.gov)  
Printed on 100% recycled paper

If you have any questions, please call Matt Sullivan at (801) 536-0241.

Sincerely,



Scott T. Anderson, Director  
Division of Waste Management and Radiation Control

STA/MBS/kl

Enclosure: Permit Modification  
DSHW-2016-0011981  
DSHW-2016-0011982  
DSHW-2016-0011983  
DSHW-2016-0011984  
DSHW-2016-0011985

c: Lloyd C. Berentzen, MBA, Health Officer, Bear River Health Department  
Grant Koford, EHS, Environmental Health Director, Bear River Health Department

**DIVISION OF WASTE MANAGEMENT AND RADIATION CONTROL  
PERMIT RENEWAL**

**Promontory Point Landfill  
CLASS I LANDFILL**

Pursuant to the provisions of the *Utah Solid and Hazardous Waste Act*, Title 19, Chapter 6, Part 1, Utah Code Annotated (UCA) 1953, as amended (the Act) and the *Utah Solid Waste Permitting and Management Rules*, Utah Administrative Code (UAC) R315-301 through 320 adopted thereunder, a Permit is issued to

Promontory Point Resources, LLC  
as owner and operator

to own, construct and operate the Promontory Point Landfill located at and around the surrounding vicinities of Section 19, Township 6 North, Range 5 West, Salt Lake Base and Meridian, Box Elder County, Utah as shown in the permit renewal application that was determined complete on May 25, 2011, Tracking Number 2008.02932.

Promontory Point Resources, LLC (Permittee) is subject to the requirements of UAC R315-301 through 320 and the requirements set forth herein.

All references to UAC R315-301 through 320 are to regulations that are in effect on the date that this Permit becomes effective.

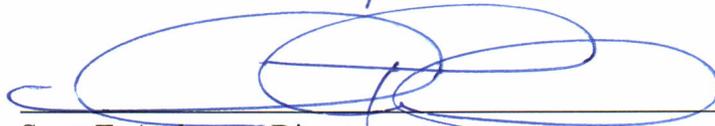
This Permit became effective: September 1, 2011

This Permit shall expire at midnight August 31, 2021

Closure Cost Revision Date: August 31, 2016

Permit signed the 1<sup>st</sup> day of September, 2011

Modification signed the 15<sup>th</sup> day of March, 2017



Scott T. Anderson, Director  
Division of Waste Management and Radiation Control

## FACILITY OWNER/OPERATOR INFORMATION

LANDFILL NAME: Promontory Point Landfill

OWNER NAME: Promontory Point Resources, LLC

OWNER ADDRESS: 32 East Exchange Place  
Suite 100  
Salt Lake City, Utah 84111

OWNER PHONE NO.: (435) 414-9880

OPERATOR NAME: same as owner

OPERATOR ADDRESS: same as owner

OPERATOR PHONE NO.: same as owner

TYPE OF PERMIT: Class I Landfill

PERMIT NUMBER: 0202R1

LOCATION: Landfill site is located in Township 6 North, Range 5 West, Section 19, SLBM, Box Elder County (and all other geographical coordinates as outlined in the application); Latitude: 41° 12' 55", Longitude: 112° 28' 5".

DIRECTIONS TO FACILITY: Location of site is on the west side of the southern tip of the Promontory Point Peninsula. Access routes considered to the landfill are by way of the Union Pacific Railroad causeway, a private dike or a county road from the north connecting to State Route 83.

PERMIT HISTORY: Permit was signed September 1, 2011.  
Permit Modification #1 was approved on July 16, 2015. This was a minor modification in accordance with UAC R315-311-2(a)(ix) changing the name of the owner and operator from *Utah Landfill & Ballast, LLC* to *Promontory Landfill, LLC*.  
Permit Modification #2 was approved on March 15, 2017. This was a major modification in accordance with UAC R315-311-2(1)(d) changing the name of the owner and operator and landfill name from *Promontory Landfill, LLC* and *Promontory Landfill* to *Promontory Point Resources, LLC* and *Promontory Point Landfill*, respectively. It also included modifications to the landfill design, construction and closure and post-closure cost estimates.

---

The term "Permit," as used in this permit is defined in UAC R315-301-2(55). The term "Director" as used in this permit, refers to the Director of the Division of Waste Management and Radiation Control.

The renewal application September 8, 2008, *Promontory Landfill LLC Class I Landfill Permit Application*, Tracking Number 2008.02932, was deemed complete on the date shown on the signature page of this Permit.

Attachments to this permit are hereby incorporated into this Permit. All representation made in the attachments are part of this Permit and are enforceable under UAC R315-301-5(2). Where differences in wording exist between this Permit and the attachments, the wording of this Permit supersedes that of the attachments.

Compliance with this Permit does not constitute a defense to actions brought under any other local, state or federal laws. This Permit does not exempt the Permittee from obtaining any other local, state or federal approvals required for the facility operation.

The issuance of this Permit does not convey any property rights, other than the rights inherent in this Permit, in either real or personal property, or any exclusive privileges other than those inherent in this Permit. Nor does this Permit authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations, including zoning ordinances.

The provisions of this Permit are severable. If any provision of this Permit is held invalid for any reason, the remaining provisions shall remain in full force and effect. If the application of any provision of this Permit to any circumstance is held invalid, its application to other circumstances shall not be affected.

By this Permit, the Permittee is subject to the following conditions.

## PERMIT REQUIREMENTS

### I. GENERAL COMPLIANCE RESPONSIBILITIES

#### A. General Operation

The Permittee shall operate the landfill in accordance with all applicable requirements of UAC R315-302 and 303 for a Class I landfill that are in effect as of the date of this Permit unless otherwise noted in this Permit. Any permit noncompliance or noncompliance with any applicable portions of UCA 19-6-101 through 125 and applicable portions of UAC R315-301 through 320 constitutes a violation of the Permit or applicable statute or rule and is grounds for appropriate enforcement action, permit revocation, modification, or denial of a permit renewal application.

#### B. Acceptable Waste

This Permit is for the disposal of non-hazardous solid waste that may include:

1. Municipal solid waste;
2. Commercial waste;
3. Industrial waste;
4. Construction/demolition waste;
5. Special waste as allowed by UAC R315-315 and authorized in Section III-I of this Permit and limited by this section; and
6. Conditionally exempt, small quantity generator hazardous waste as defined by UAC R315-303-4(7)(a)(i)(B) and PCBs as defined by UAC R315-315-7(2).

Acceptable wastes are restricted to wastes that are received under sole contracts with local governments, within Utah, for waste generated within the boundaries of the local government. Each contract shall be approved by the Director prior to acceptance of the waste at the landfill.

#### C. Prohibited Waste

1. Hazardous waste as defined by UAC R315-1 and R315-2;
2. Containers larger than household size (five gallons) holding any liquid, non-containerized material containing free liquids or any waste containing free liquids in containers larger than five gallons; or

3. PCBs as defined by UAC R315-301-2, except as allowed in Section IB (Acceptable Waste) of this Permit.
4. Regulated asbestos-containing material.
5. All wastes not received by contracts approved by the Director are prohibited.

Any prohibited waste received and accepted for treatment, storage or disposal at the facility shall constitute a violation of this Permit, of UCA 19-6-101 through 125 and of UAC R315-301 through 320.

D. Inspections and Inspection Access

The Permittee shall allow the Director or an authorized representative of the Division or representatives from the Bear River Health Department to enter at reasonable times and:

1. Inspect the landfill or other premises, practices or operations regulated or required under the terms and conditions of this Permit or UAC R315-301 through 320;
2. Have access to and copy any records required to be kept under the terms and conditions of this Permit or UAC R315-301 through 320;
3. Inspect any loads of waste, treatment facilities or processes, pollution management facilities or processes, or control facilities or processes required under this Permit or regulated under UAC R315-301 through 320; and
4. Create a record of any inspection by photographic, videotape, electronic or any other reasonable means.

E. Noncompliance

If monitoring, inspection or testing indicates that any permit condition or any applicable rule under UAC R315-301 through 320 may be or is being violated, the Permittee shall promptly make corrections to the operation or other activities to bring the facility into compliance with all permit conditions or rules.

In the event of any noncompliance with any permit condition or violation of an applicable rule, the Permittee shall promptly take any feasible action reasonably necessary to correct the noncompliance or violation and mitigate any risk to the human health or the environment. Actions may include eliminating the activity causing the noncompliance or violation and containment of any waste or

contamination using barriers or access restrictions, placing of warning signs or permanently closing areas of the facility.

The Permittee shall:

1. Document the noncompliance or violation in the operating record on the day the event occurred or the day it was discovered;
2. Notify the Director by telephone within 24 hours or the next business day following documentation of the event; and
3. Provide written notice of the noncompliance or violation and measures taken to protect public health and the environment within seven days of notification.

Within thirty days of the documentation of the event, the Permittee shall submit to the Director a written report describing the nature and extent of the noncompliance or violation and the remedial measures taken or to be taken to protect human health and the environment and to eliminate the noncompliance or violation. Upon receipt and review of the assessment report, the Director may order the Permittee to perform appropriate remedial measures including development of a site remediation plan for approval by the Director.

In an enforcement action, the Permittee may not claim as a defense that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with UAC R315-301 through 320 and this Permit.

Compliance with the terms of this Permit does not constitute a defense to actions brought under any other local, state or federal laws. This Permit does not exempt the Permittee from obtaining any other local, state or federal permits or approvals required for the facility operation.

The issuance of this Permit does not convey any property rights, other than the rights inherent in this Permit, in either real or personal property, or any exclusive privileges other than those inherent in this Permit. Nor does this Permit authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations including zoning ordinances.

The provisions of this Permit are severable. If any provision of this Permit is held invalid for any reason, the remaining provisions shall remain in full force and effect. If the application of any provision of this Permit to any circumstance is held invalid, its application to other circumstances shall not be affected.

F. Revocation

This Permit is subject to revocation if any condition of this Permit is not being met. The Permittee will be notified in writing prior to any proposed revocation

action and such action will be subject to all applicable hearing procedures established under UAC R315-12 and the Utah Administrative Procedures Act.

As part of the revocation the Director shall exercise the option to require payment of funds under the financial assurance mechanism held by the Director.

G. Attachment Incorporation

Attachments to the Permit Application are incorporated by reference into this Permit and are enforceable conditions of this Permit, as are documents incorporated by reference into the attachments. Language in this Permit supersedes any conflicting language in the attachments or documents incorporated into the attachments.

II. DESIGN AND CONSTRUCTION

A. Design and Construction

The Permittee shall construct any landfill cell, waste treatment facility and final cover in accordance with Attachment 1 and the Utah Solid Waste Permitting and Management Rules (UAC R315-301 thru 320).

Prior to construction of any landfill cell, engineered control system, waste treatment facility or final cover, the Permittee shall submit construction design drawings and a Construction Quality Control and Construction Quality Assurance (CQC/CQA) Plan to the Director for approval.

The Permittee shall notify the Director of completion of construction of any landfill cell, engineered control system, waste treatment facility or final cover. Landfill cells may not be used for treatment or disposal of waste until all CQC/CQA documents and construction related documents including as-built documents are approved by the Director. The Permittee shall submit as-built drawings for each construction event that are signed and stamped by an engineer registered in the State of Utah.

The Permittee shall notify the Director of any proposed incremental closure, placement of any part of the final cover or placement of the full final cover. Construction of any portion of the final cover shall be considered as a separate construction event and shall be approved separately from any other construction or expansion of the landfill. Design approval must be received from the Director prior to construction and shall be accompanied by a CQC/CQA Plan for each construction season where incremental or final closure is performed.

A qualified party, independent of the owner, shall perform the quality assurance function on liner components, cover components and other testing as required by

the approved CQC/CQA Plan. The results shall be submitted as part of the as-built drawings to the Director.

All engineering drawings submitted to the Director shall be stamped and approved by a professional engineer with a current registration in Utah.

If ground water is encountered during excavation of the landfill, the Director shall be notified immediately and a contingency plan implemented or alternative construction design developed and submitted for approval.

B. Run-On Control

Drainage channels and diversions shall be constructed as specified in Attachment 2 and maintained at all times to effectively prevent runoff from the surrounding area from entering the landfill.

C. Equivalent Design

An equivalent design described in Attachment 1 which uses a geosynthetic clay liner in place of the liner required by UAC R315-303-3(3)(a)(ii) has been approved by the Director.

III. LANDFILL OPERATION

A. Plan of Operation

The Plan of Operation included in Attachment 3 and the solid waste permit issued by the Director shall be kept onsite at the landfill or at the location designated in Section III. K of this Permit. The landfill shall be operated in accordance with the Plan of Operation in Attachment 3. If necessary, the facility owner may modify the Plan of Operation, provided that the modification meets all of the requirements of UAC R315-301 through 320 is as protective of human health and the environment in accordance with UAC R315-311-2. Any modification to the Plan of Operation shall be noted in the operating record.

Any modification to the Plan of Operation must be submitted to the Director for approval and is considered a minor permit modification in compliance with UAC R315-311-2(1)(a)(xiii) unless the Director determines the change should be subject to public comment under UAC R315-311-2(1)(b).

B. Security

The Permittee shall operate the Landfill so that unauthorized entry to the facility is restricted. All facility gates and other access routes shall be locked during the time the landfill is closed. At least two persons employed by the Permittee shall be at the landfill during all hours that the landfill is open. Fencing and any other

access controls as shown in Attachment 3 shall be constructed to prevent access of persons or livestock by other routes.

C. Training

The Permittee shall provide training for onsite personnel in landfill operation, including waste load inspection, hazardous waste identification and personal safety and protection.

D. Burning of Waste

Intentional burning of solid waste is prohibited and is a violation of UAC R315-303-4(2)(b). All accidental fires shall be extinguished as soon as reasonably possible.

E. Daily Cover

The solid waste received at the landfill shall be completely covered at the end of each working day with a minimum of six inches of earthen material. At the end of each day of operation, the amount of cover placed shall be recorded in the operating record and certified by the operator.

An alternative daily cover material may be used when the material and operation meets the requirements of UAC R315-303-4(4)(b) through (d) or when the alternative daily cover meets the requirement of UAC R315-303-4(4)(e).

F. Ground Water Monitoring

The Permittee shall monitor the ground water underlying the landfill in accordance with the Ground Water Monitoring Plan and the Ground Water Monitoring Quality Assurance/Quality Control Plan contained in Attachment 4. If necessary, the facility owner may modify the Ground Water Monitoring Plan and the Ground Water Monitoring Quality Assurance/Quality Control Plan, provided that the modification meets all of the requirements of UAC R315-301 through 320 and is as protective of human health and the environment in accordance with UAC R315-311-2. Any modification to the Ground Water Monitoring Plan and the Ground Water Monitoring Quality Assurance/Quality Control Plan shall be noted in the operating record. Plan changes that are found by the Director to be less protective of human health or the environment than the approved plan are a major modification and are subject to the requirements of UAC R315-311.

The Permittee shall submit a detailed Ground Water Monitoring Quality Assurance/Quality Control Plan prior to receipt of waste.

G. Gas Monitoring

The Permittee shall monitor explosive gases at the landfill in accordance with the Gas Monitoring Plan contained Attachment 4 and shall otherwise meet the requirements of UAC R315-303-3(5). If necessary, the Permittee may modify the Gas Monitoring Plan, provided that the modification meets all of the requirements of UAC R315-301 through 320 and is as protective of human health and the environment in accordance with UAC R315-311-2(1). Any modification to the Gas Monitoring Plan shall be noted in the operating record. Plan changes that are found by the Director to be less protective of human health or the environment than the approved plan are a major modification and are subject to the requirements of UAC R315-311.

If the concentrations of explosive gases at any of the facility structures, at the property boundary or beyond the property boundary ever exceed the standards set in UAC R315-303-2(2)(a), the Permittee shall immediately take all necessary steps to ensure protection of human health and notify the Director. Within seven days of detection, the Permittee shall record in the operating record the explosive gas levels detected and a description of the immediate steps taken to protect human health. The Permittee shall also implement a remediation plan that meets the requirements of UAC R315-303-3(5)(b). The plan shall be approved by the Director prior to implementation.

#### H. Waste Inspections

The Permittee shall visually inspect incoming waste loads to verify that no wastes other than those allowed by this Permit are disposed in the landfill. A complete waste inspection shall be conducted at a minimum frequency of 1% of incoming loads, but no less than one complete inspection per day. Loads to be inspected are to be chosen on a random basis. The operating record shall contain documentation that each load is received under a contract approved by the Director.

All loads suspected or known to have one or more containers capable of holding more than five gallons of liquid shall be inspected to ensure that each container is empty.

All loads that the operator suspects may contain a waste not allowed for disposal at the landfill shall be inspected.

Complete random inspections shall be conducted as follows:

1. The operator shall conduct the random waste inspection at the working face or an area designated by the operator.
2. Loads subjected to complete inspection shall be unloaded at the designated area;

3. Loads shall be spread by equipment or by hand tools;
4. A visual inspection of the waste shall be conducted by personnel trained in hazardous waste recognition and recognition of other unacceptable waste; and
5. The inspection shall be recorded on the waste inspection form found in Attachment 3. The form shall be placed in the operating record at the end of the operating day.

I. Disposal of Special Wastes

If incinerator ash is accepted for disposal, it shall be transported in such a manner to prevent leakage or the release of fugitive dust. The ash shall be completely covered with a minimum of six inches of material, or other methods or material, if necessary, to control fugitive dust. Ash may be used for daily cover when its use does not create a human health or environmental hazard.

Animal carcasses may be disposed in the landfill working face and must be covered with other solid waste or earth by the end of the operating day in which they are received. Alternatively, animal carcasses may be disposed in a special trench or pit prepared for dead animals. If a special trench is used, animals placed in the trench shall be covered with six inches of earth by the end of each operating day.

J. Self Inspections

The Permittee shall inspect the facility to prevent malfunctions and deterioration, operator errors and discharges that may cause or lead to the release of wastes or contaminated materials to the environment or create a threat to human health or the environment. These general inspections shall be completed no less than quarterly and shall cover the following areas: waste placement, compaction, cover, cell liner, leachate collection system, fences and access controls, roads, run-on/run-off controls, ground water monitoring wells, final and intermediate cover, litter controls and records. A record of the inspections shall be placed in the daily operating record on the day of the inspection. Areas needing correction, as noted on the inspection report, shall be corrected in a timely manner. The corrective actions shall be documented in the daily operating record.

K. Recordkeeping

The Permittee shall maintain and keep on file at the field office on-site, a daily operating record and other general records of landfill operation as required by UAC R315-302-2(3). The landfill operator, or other designated personnel, shall date and sign the daily operating record at the end of each operating day.

1. The daily operating record shall include the following items:
  - a. The number of loads of waste and the weights or estimates of weights or volume of waste received each day of operation and recorded at the end of each operating day;
  - b. Major deviations from the approved plan of operation recorded at the end of the operating day the deviation occurred;
  - c. Results of other monitoring required by this Permit recorded in the operating record on the day of the event or the day the information is received;
  - d. Records of all inspections conducted by the Permittee, results of the inspections and corrective actions taken shall be recorded in the record on the day of the event.
  
2. The general record of landfill operations shall include the following items:
  - a. A copy of this Permit including the Permit Application;
  - b. Results of inspections conducted by representatives of the Division and/or representatives of the Bear River Health Department, when forwarded to the Permittee;
  - c. Closure and Post-closure care plans;
  - d. Records of employee training; and
  - e. Results of groundwater monitoring; and
  - f. Results of landfill gas monitoring.

L. Reporting

The Permittee shall prepare and submit to the Director an Annual Report as required by UAC R315-302-2(4). The Annual Report shall include: the period covered by the report, the annual quantity of waste received, an annual update of the financial assurance mechanism, any leachate analysis results, all ground water monitoring results, the statistical analysis of ground water monitoring results, the results of gas monitoring, the quantity of leachate pumped and all training programs completed.

M. Roads and Routes

All access roads and routes, within the landfill boundary, used for transporting waste to the landfill for disposal shall be improved and regularly maintained as necessary to assure safe and reliable all-weather access to the disposal area.

#### IV. CLOSURE REQUIREMENTS

##### A. Closure

The final cover of the landfill shall be as shown in Attachment 5. The final cover shall meet, at a minimum, the standard design for closure as specified in UAC R315-303-3(4) plus sufficient cover soil or equivalent material to protect the low permeability layer from the effects of frost, desiccation and root penetration. A quality assurance plan for construction details of the final landfill cover shall be submitted to and approved by the Director prior to construction of any part of the final cover at the landfill. A qualified person not affiliated with the landfill owner shall perform permeability testing on the recompacted clay placed as part of the final cover.

##### B. Title Recording

The Permittee shall meet the requirements of UAC R315-302-2(6) by recording with the Box Elder County Recorder as part of the record of title that the property has been used as a landfill. The recording shall include waste locations and waste types disposed.

##### C. Post-Closure Care

Post-closure care at the closed landfill shall be done in accordance with the Post-Closure Care Plan in Attachment 5. Post-closure care shall continue until all waste disposal sites at the landfill have stabilized and the finding of UAC R315-302-3(7)(c) is made.

##### D. Financial Assurance

A financial assurance mechanism that meets the requirements of UAC R315-309, covering closure and post-closure care costs shall be proposed by the Permittee, submitted to the Director and approved prior to receipt of waste. The Permittee, prior to receipt of waste, shall establish the approved mechanism and fund it as required. The financial assurance mechanism(s) shall be adequately maintained to provide for the cost of closure at any stage or phase or anytime during the life of the landfill or the permit life, whichever is shorter and shall be fully funded within ten years of the date waste is first received at the landfill. The Permittee shall keep the approved financial assurance mechanism in effect and active until closure and post-closure care activities are completed and the Director has released the facility from all post-closure care requirements.

If a trust fund is chosen as the financial assurance mechanism, the first payment to the fund will be 10% of the estimated closure and post-closure care costs. If a trust fund is used, annual payments shall be determined by the following formula:

$$NP=[CE-CV]/Y$$

where NP is the next payment, CE is the current cost estimate for closure and post-closure care (updated for inflation or other changes), CV is the current value of the trust fund and Y is the number of years remaining in the pay-in period.

The Permittee shall notify the Director of the establishment of the approved financial assurance mechanism and must receive acknowledgment from the Director that the established mechanism complies with applicable rules.

E. Financial Assurance Annual Update

An annual revision of closure and post-closure costs for inflation and financial assurance funding as required by UAC R315-309-2(2) shall be submitted to the Director as part of the annual report.

F. Closure Cost and Post-Closure Cost Revision

The Permittee shall submit a complete revision of the closure and post-closure cost estimates by the Closure Cost Revision Date listed on the signature page of this Permit any time the facility is expanded, any time a new cell is constructed or any time a cell is expanded.

V. ADMINISTRATIVE REQUIREMENTS

A. Permit Modification

Modifications to this Permit may be made upon application by the Permittee or by the Director. The Permittee will be given written notice of any permit modification initiated by the Director.

B. Permit Transfer

This Permit may be transferred to a new permittee or new permittees by meeting the requirements of the permit transfer provisions of UAC R315-310-11.

C. Expansion

This Permit is for a Class I Landfill. The landfill shall operate according to the designs in Attachment 1 and Plan of Operation described in Attachment 3. Any expansion of the current footprint designated in the description contained in Attachment 1, but within the property boundaries designated in the Permit

Application, shall require submittal of plans and specifications to the Director. The plans and specifications shall be approved by the Director prior to construction.

Any expansion of the landfill facility beyond the property boundaries designated in the description contained in Attachment 1 shall require submittal of a new permit application in accordance with UAC R315-310.

Any addition to the acceptable wastes described in Section 1B shall require submittal of all necessary information to the Director and the approval of the Director. Acceptance for PCB bulk product waste under UAC R315-315-7(3)(b) can only be done after approval by the Director and modification of Section IC of this Permit.

D. Expiration

Application for permit renewal shall be made at least six months prior to the expiration date, as shown on the signature (cover) page of this Permit. If a timely renewal application is made and the permit renewal is not complete by the expiration date, this Permit will continue in force until renewal is completed or denied.

E. Status Notification

Eighteen months from the date of this Permit, the Director shall be notified in writing of the status of the construction of this facility unless construction is complete and operation has commenced. If construction has not begun within 18 months, the Permittee shall submit adequate justification to the Director as to the reasons that construction has not commenced. If no submission is made or the submission is judged inadequate by the Director, this Permit will be revoked.

F. Construction Approval and Request to Operate

The Permittee shall meet each of the following conditions prior to receipt of waste:

1. Notify the Director that all the requirements of this Permit have been met and all required facilities, structures and accounts are in place as required.
2. Submit to the Director, for approval, documentation that all local zoning requirements and local government approvals have been obtained for operation of this landfill.
3. Submit to the Director, prior to the construction of any portion of the landfill, including offices, fences, and gates, documentation that the

Permittee owns or has a lease that allows this property to be used as a landfill.

4. Shall not construct any portion of the landfill where the bottom elevation is less than five feet above the historic high ground water level.

G. Contract Approval

The Permittee must receive waste only from local governments that have contracts with the facility owner. All new contracts and changes in existing contracts must be reviewed and approved by the Director prior to receipt of waste.

## **List of Attachments**

- Attachment 1 – Design & Construction
- Attachment 2 – Run-on & Run-off Controls
- Attachment 3 – Plan of Operation
- Attachment 4 – Monitoring Plan
- Attachment 5 – Closure & Post-Closure

File: - Permit #0202R1

**Attachment 1**  
**Design & Construction**

## **2.0 PERMIT MODIFICATION REQUEST AND UPDATES**

This section describes the proposed design modification elements previously listed in Section 1.2 as compared to those elements included in the Promontory Landfill LLC Class I Landfill Permit Application. Also, as required in the Solid Waste Renewal Permit, this section presents the closure and post-closure cost estimate revision which is due by August 31, 2016.

### **2.1 LINER ALTERNATIVES**

Alternatives to the permitted liner design are proposed in order to gain flexibility in construction as certain materials meeting performance requirements become available that may be utilized in the liner construction. These alternatives are proposed for Phase 1 and future phases, as applicable.

#### **2.1.1 PERMITTED LINER DESIGN**

The permitted composite liner design consists of a clay layer and a HDPE layer. A clay layer consisting of a geocomposite clay layer (GCL) has been previously approved as the low permeable soil component. The HDPE layer would be 60 mil or thicker to minimize puncture risk. The HDPE would be protected from site soils by the clay layer. The leachate collection system would consist of a geonet. Overlaying the leachate collection layer would be a 20 ounce/yard nonwoven filter geotextile mat. The purpose of this mat is to separate the leachate collection system and the waste. A protective soil layer will be placed on top of the geotextile mat to protect the mat and geonet from protrusions and to also provide a buffering and filtration function. The protective layer will consist of a homogenous material with an average particle size less than ½-inch diameter, and a maximum particle size less than 1 inch diameter.

#### **2.1.2 PROPOSED LEACHATE COLLECTION LAYER ALTERNATIVES**

In order to utilize construction materials as they become available, two lateral drainage layer alternatives are presented one which includes soil operations layer, geotextiles and gravel, while the second consisting of only a thick layer of course sand. The two alternatives are described below. Detailed design and support calculations are included in the Design Report portion of this document included in Section 3.0.

##### **2.1.2.1 ALTERNATIVE 1**

Alternative 1 includes the following from bottom to top (see Figure C-501, Detail 3):

- Prepared liner subgrade;

- GCL (non-woven);
- 60-MIL HDPE Geomembrane (textured on both sides);
- Cushion geotextile;
- Nine (9) inch gravel drainage layer;
- Non-woven geotextile filter fabric; and
- Minimum 18-inch protective soil cover.

#### 2.1.2.2 ALTERNATIVE 2

Alternative 2 includes the following from bottom to top (see Figure C-501, Detail 2):

- Prepared liner subgrade;
- GCL;
- 60-MIL HDPE Geomembrane (textured on both sides); and
- Minimum 18-inch coarse sand.

## 2.2 LINER LOW-PERMEABILITY LAYER SUBSTITUTION

An alternative to the permitted low-permeability layer of the liner design is proposed in order to gain flexibility in construction as certain materials become available that may be utilized in the liner construction. This alternative is proposed for Phase 1 and future phases, as applicable.

### 2.2.1 PERMITTED LOW-PERMEABILITY LAYER

The permitted composite liner design consists of a clay layer and a HDPE layer. A clay layer consisting of a GCL, is presented in the permit document and is also allowed in Section II.C of the Solid Waste Permit Renewal issued September 1, 2011 (see Appendix A). Section II.C indicates that the facility has been approved for an equivalent design which uses a geosynthetic clay liner in place of the liner required in Utah Administrative Code (UAC) R315-303-3(3)(a)(ii).

### 2.2.2 PROPOSED LOW-PERMEABILITY LAYER

The low-permeability layer portion of the liner is proposed to utilize clay soils in lieu of a GCL, at the owner's option should appropriate materials become available. The clay layer will meet the prescriptive requirements of UAC R315-303-3(3)(a)(ii) which requires that the lower liner be constructed of at least two feet of recompacted clay or other soil material with a permeability of no more than  $1 \times 10^{-7}$  cm/sec. Detailed design and support calculations are included in the Design Report portion of this document included in Section 3.0.

## **2.3 BASE GRADE MODIFICATION**

An alternative to the permitted base grade is proposed for stability and operational concerns. This alternative is proposed for Phase 1 and future phases, as applicable. It is proposed that the base grades be excavated to the maximum extent possible maintaining a five-foot separation between the historical high level of groundwater and the bottom of the lowest liner component, along with a three percent sheet grade as opposed to the currently permitted five percent grade (see Figures C-101 and C-301). The proposed grade decrease is still within the allowed base grade in UAC R315-303-3(3)(a)(ii) which allows for base grades as flat as two percent. It is proposed that flowlines of the leachate collection pipes be greater than one percent. Detailed design and support calculations are included in the Design Report portion of this document included in Section 3.0.

## **2.4 LEACHATE UTILIZATION**

An alternative to leachate utilization is proposed. The currently permitted use/disposal of leachate is for either dust control/compaction water on lined areas or pumped to evaporation basins. It is proposed that the leachate may also be recirculated into the waste thus increasing anerobic digestion and landfill gas production which may be used to generate electricity. Leachate recirculation is allowed by UAC R315-303-3(2)(b) on landfills with composite liners like the PLF. Leachate recirculation would only occur in lined portions of the facility. Leachate production would be closely monitored to ensure that the moisture holding capacity of the refuse is not exceeded.

## **2.5 FILL SLOPE MODIFICATION**

Modification of the design of the final fill slopes is proposed. The currently permitted final fill slopes are set at 4:1 (horizontal:vertical) gross or approximate 3.5:1 slopes between 15-foot benches. The proposed modification to the final fill slopes will be gross 3:1 or 2.5:1 slopes between 15-foot benches (see Figure C-102). This design modification is supported by the stability analysis provided in Appendix E and discussed in Section 3.1.4. This modification is proposed for Phase 1 and future phases, as applicable.

## **2.6 ALTERNATIVE FINAL COVER DESIGN**

The current permitted final cover design for the PLF is as follows (from bottom to top):

- GCL;
- 40 MIL Very Flexible Polyethylene (VFPE);
- Bi-planar Geocomposite; and
- 18 inches of site soils.

An alternative to the permitted final cover is proposed as allowed in UAC R315-303-3(4)(a)(i) and (ii) which allows the director to approve an alternative cover design if it can be documented that the alternative cover achieves an equivalent reduction in infiltration as achieved by the standard design and the alternative final cover provides equivalent protection from wind and water erosion as achieved by the standard design. The proposed alternative design will consist of a monolithic soil evapotranspiration cover for placement on final fill slopes which will be designed to a depth and soil type which will perform equivalently to the prescriptive standard in UAC R315-303-3(4). Detailed design and support calculations will be presented at the time of closure when final cover materials have been selected and modeled.

## 2.7 CLOSURE AND POST-CLOSURE MAINTENANCE COST ESTIMATE REVISION/UPDATE

As required in the Solid Waste Renewal Permit, the closure cost estimate revision/update is due by August 31, 2016. In light of the design of Phase 1, the closure and post-closure cost estimates have been updated from 2008 to 2016 rates and reflects the costs of placement of the proposed alternative final cover on the final fill slopes and the prescriptive cover on the deck areas. The post-closure costs reflect the appropriate maintenance costs for each final cover type.

The cost estimates assume that closure activities would be implemented as each phase within the disposal site is completed. These closure activities would minimize the need for further maintenance, and minimize or eliminate the threat to human health and the environment from post-closure escape of solid waste constituents, leachate, contaminated run-off or waste decomposition products to the ground, groundwater, surface water or the atmosphere.

The previous cost estimate prepared as part of the permit application assumed the first module to close to be 20 acres. The redesign of the landfill development provides for the initial phase to consist of 31 acres; therefore the cost estimates are based on closure of the first 31 acres of the PLF. Table A and B presents the revised/updated costs, and supporting documentation is included in Appendix G. The closure and post-closure costs have been prepared as required by UAC R315-309-2 and in accordance with UAC R315-309-2(3)(a) and (b).

## **3.0 PHASE 1 DESIGN**

This section describes the design and proposed construction of Phase 1 which meets the design requirements of UAC R315-303 for Class I landfills as well as the Solid Waste Permit Renewal conditions for the PLF. Design elements include the liner design configuration, design criteria and supporting calculations. Construction design elements include the excavation, subgrade preparation, composite liner system, leachate collection and removal system (LCRS), operations layer, and surface water drainage control system. In addition, this section summarizes the CQA plan and operational requirements for Phase 1.

### **3.1 DESIGN**

#### **3.1.1 LINER CONFIGURATION**

The Phase 1 development area will be the initial phase in the development of the PLF (see Figure C-100). The limits of disturbance for the Phase 1 area is approximately 43 acres, of which approximately 34 acres are to be lined. Within this configuration, the floor area consists of approximately 26.6 acres and the slopes 4.2 acres. The liner plans for Phase 1 is shown on C-101, C-103 and C-105 of the Construction Plans (Appendix B).

The base of Phase 1 is designed at a minimum three (3) percent sheet flow gradient and the LCRS mainline is at two (2) percent. Subgrade elevations were set to maintain positive gravity flow of liquids through the LCRS to the sump. A pump will be installed in the sump and leachate will be pumped into tanks located to the south west of the cell. The excavation slopes are comprised of a maximum of 3:1 (horizontal:vertical) slope grades.

#### **3.1.2 DESIGN CRITERIA**

The Phase 1 liner system reflects current design criteria requirements in UAC R315-303-3(3). These criteria are discussed in the following applicable construction element sections.

#### **3.1.3 DESIGN CALCULATIONS**

Design calculations were performed for various elements of the Phase 1 liner system. The following calculations are included in Appendix D.

- Liner and LCRS Pipe Calculations:
  - Geotextile cushion;

- LCRS pipe strength;
- LCRS pipe capacity;
- LCRS pipe spacing;
- Hydrologic and hydraulic calculations for stormwater drainage systems; and
- Leachate Generation - HELP Modeling.

#### 3.1.4 SLOPE STABILITY ANALYSIS

Analysis of slope stability is mandated for subgrade slopes by 40 CFR, Part 258.15, which requires the operator to ensure against landfilling over unstable areas which may compromise the integrity of landfill structural components. Final refuse fill slope stability is governed in UAC R315-302-1(2)(b).

A slope stability analysis, which was based on site-specific geotechnical field investigations, proposed liner materials and calculations for static and pseudostatic slope stability, was prepared for the Phase 1 design. The methods and results of this work are documented in a report titled Slope stability Evaluation, Promontory Point Landfill Cell 1, Phase 1A, Ogden Utah (see Appendix E). Static and pseudostatic slope stability calculations were completed for subgrade, liner, interim fill, and final fill slope geometries for Phase 1.

#### 3.1.5 CONSTRUCTION ELEMENTS

##### 3.1.5.1 EXCAVATION

The geometry for the Phase 1 excavation is shown on Sheets C-101, C-103, and C-105 of the Construction Plans (Appendix B). The excavated soils will be stockpiled onsite, used within the cell or exported. Total excavation is approximately 785,000 cubic yards, see the break down by phase in Table 1.

**Table 1**  
**Earthwork Volumes**

<b>Phase</b>	<b>Excavation (CY)</b>
Phase 1A	448,000
Phase 1B	228,000
Phase 1C	109,000
<b>Total</b>	<b>785,000</b>

### 3.1.5.2 COMPOSITE LINER

For the liner construction, a composite liner system (two-layer low-permeability systems) and an LCRS are proposed, which meet the requirements specified in UAC R315-303-3(3)(a) and (b) and the Promontory Landfill LLC Class I Landfill Permit Application document. The UAC contains design requirements for a prescriptive liner system and also allow an operator to develop and submit for approval, an alternative liner design in accordance with UAC R315-303-3(3)(b). An alternative liner and LCRS were approved by the Utah Solid and Hazardous Waste Control Board for the PLF which allows a GCL in lieu of the two-foot low-permeability soil layer. Dependent upon materials availability either the prescriptive low-permeability soil layer or GCL may be utilized in the composite liner construction.

Appendix D contains design support calculations for the composite liner system. The calculations check the integrity of the liner material to resist puncture, shearing and tearing. Appendix D also includes calculations for the leachate collection and recovery system design.

Where the edges of the Phase 1 composite liner system meet future liner systems of adjacent phases, the soil and geosynthetic components from each liner system will be appropriately joined and/or welded together to form a continuous liner between the phases as shown in the Construction Plans. A representative of the geosynthetic installation contractor and CQA personnel will approve the condition of the subgrade prior to placement of geosynthetic materials.

The liner design consists of the side slope and bottom areas as described in the following two sections.

### **3.1.5.2.1 Side Slopes**

The composite liner system for the slope liner section is comprised of the following (from bottom to top as shown below in Figure C-501, Detail 4):

- Prepared liner subgrade;
- Geotextile-backed GCL or two-foot low-permeability soil layer (with a hydraulic conductivity less than or equal to  $1 \times 10^{-7}$  cm/sec);
- 60-MIL HDPE Geomembrane (textured on both sides);
- 16 ounce cushion geotextile; and
- 24-inch protective soil cover.

The composite liner system has been designed to prevent migration of leachate into the underlying ground and facilitate leachate collection by the LCRS.

### **3.1.5.2.2 Floor Areas**

The composite liner system for the bottom liner section (gradients less than 5:1) is comprised of the following (from bottom to top as shown below in Figure C-501, Details 2 and 3):

- Prepared liner subgrade;
- Geotextile-backed GCL or two-foot low-permeability soil layer (with a hydraulic conductivity less than or equal to  $1 \times 10^{-7}$  cm/sec);
- 60-MIL HDPE Geomembrane (textured on both sides);
- Cushion geotextile;
- Six (6) inches gravel drainage layer;
- Non-woven geotextile filter fabric; and
- 18-inch protective soil cover.

Or

- Prepared liner subgrade;
- Geotextile-backed GCL or two-foot low-permeability soil layer (with a hydraulic conductivity less than or equal to  $1 \times 10^{-7}$  cm/sec);
- 60-MIL HDPE Geomembrane (textured on both sides); and
- 18-inch coarse sand.

The composite liner system has been designed to prevent the migration of leachate into the underlying ground and facilitate leachate collection by the LCRS.

The HDPE geomembrane or flexible membrane liner (FML) will be textured on the surface placed over the finished subgrade and will be overlain by geotextile. This allows the geotextile to move above the FML without affecting the integrity of the low-

permeability performance of the waste containment system. The floor FML will be textured on both sides to provide the highest possible friction interface on the floor and increase the stability of the waste prism.

The construction drawings contain details for anchoring of the liner materials at the top of slope. These anchors provide restraint against pull out, which is not likely to occur given the proposed uniform waste filling operation which will provide buttressing and support of the liner system. All anchor trenches shall be monitored during construction and density tests shall be completed in accordance with the CQA plan.

### 3.1.5.3 LEACHATE COLLECTION AND REMOVAL SYSTEM

A LCRS shall be installed above the FML on the floor, bench, and slope areas. The LCRS was designed in consideration of the following criteria:

- Provide for efficient collection and removal of leachate by gravity flow; and
- Limit the maximum amount of hydraulic head on the primary liner to less than 12 inches.

Modeling of potential leachate was performed using the United States Environmental Protection Agency (EPA) Hydrologic Evaluation of Landfill Performance (HELP) version 3.07. The HELP model output files for each run are included in Appendix D.

The HELP Model was developed to provide landfill designers and regulators with a tool for rapid, economical screening of alternative designs. The computer program uses climatologic, soil, and design data to produce daily estimates of water movement across, into, through, and out of the landfill. To accomplish this; daily precipitation, runoff, infiltration, surface evaporation, subsurface evapotranspiration, stored soil moisture, percolation, and subsurface lateral drainage are modeled to maintain a water balance. The model utilizes daily climatic data to develop a daily water balance for up to thirty years.

The HELP Model was used to evaluate and design of both base liner section options and the slope liner for conformance with regulatory requirements. Specifically, the HELP Model was used to evaluate the total head on the liner and to determine leachate generation rates for use in designing and sizing the leachate pipes and storage tanks.

A review of historic climatic records from nearby weather stations revealed that the largest amount of rain in one year was 33.93 inches recorded at Brigham City waste plant in 1983. The Brigham City waste plant is approximately 24 mile north east of PPL. The 33.93 inch annual rainfall was used and HELP synthetically generated precipitation for a five year period for the intermediate condition to determine the worst

case scenario, or highest leachate generation rate to be expected. The default weather data from Salt Lake City was used for the final condition, with 200 feet of refuse over 30 year duration to determine the range of leachate generation to be expected.

The input used in the HELP to model the proposed liner design profile are listed in the first section of each HELP Model output file: The input listing shows layer type, thickness, and soil characteristics. The soil characteristics are default values suggested by the HELP Model to simulate the soils to be used in the proposed design. The HDPE layer was assumed to have a pinhole density of 3 per acre and installation defect of 3 per acre, and a placement quality of "3-good".

The following table summarizes the main input values and results for the various scenarios.

**Table 2  
HELP Results**

<b>Liner Section</b>	<b>Refuse Thickness (feet)</b>	<b>Duration (years)</b>	<b>Max Head Over Liner (Inches)</b>	<b>Peak Leachate Generation (cf/ac)</b>	<b>Average Annual Leachate Total (cf/ac/year)</b>
<b>Interim Condition</b>					
Base Alt. 1	20	5	1.04	503.66	4,698.91
Base Alt. 2	20	5	2.29	386.3	4,663.92
Slope	10	5	3.91	286.74	4,759.77
<b>Final Condition</b>					
Base Alt. 1	200	30	0.43	203.64	933.43
Base Alt. 2	200	30	1.56	258.32	933.43
Slope	100	30	8.73	135.90	3,591.77

### **3.1.5.3.1 Leachate Tank Sizing**

The HELP results were used to size the leachate tank for the initial phase. Cell 1 will have approximately 15 acres of base liner and 4 acres of slope liner, using the average leachate generation rates listed in Table 2 results in a total leachate flow of approximately 1,860 gallons per day. The leachate tanks have a capacity of 8,700 each, two tanks will be installed during Phase 1 construction (see Sheet C-504) for a total capacity of 17,400 gallons; therefore, the tanks will have to be emptied every 9 days on average. However, the yield values in the HELP analysis are conservative as they do not account for phasing over time and closure of certain areas. Therefore, the

## CHAPTER II

### FACILITY CHARACTERIZATION

#### 2.1 GENERAL SETTING

The landfill site is not currently zoned. A Conditional Use Permit was issued by Box Elder County Planning Department and is included in Appendix B. The entrance of the facility would be located at 41°12'55" north latitude and 112°28'05" east longitude.

#### 2.2 FACILITY DESCRIPTION

Figure 2.1 shows the boundary of the 2006-acre facility covered by this Permit Application. The figure indicates the proposed buffer and disposal areas. The disposal area covers approximately 1000 acres and is bounded by a 1006-acre buffer area meeting State and Federal requirements.

#### 2.3 PROOF OF OWNERSHIP AND FACILITY LEGAL DESCRIPTION

Figure 2.1 also details the ownership of lands surrounding the proposed landfill facility. As the figure indicates, Chournos Promontory and Young Resources, hold title to much of the adjacent property. Both of these owners are participants in Promontory Landfill LLC. Proof of ownership is included in Appendix C. The following is a property description of the proposed landfill facility:

#### **PROMONTORY LANDFILL PARCEL-2006 ACRES.**

##### **Property Description.**

The real property situated in Box Elder County, Utah, more particularly described as follows:

The East half of the Northwest Quarter, Section 19, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Southwest Quarter, Section 19, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Southwest Quarter, Section 19, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The West half of the Northeast Quarter, Section 30, township 6 North, Range 5 West, Salt Lake Base and Meridian.

The West half of the Northwest Quarter, Section 30, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Southeast Quarter, Section 13, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The Southeast Quarter of the Southeast Quarter of the Southeast Quarter, Section 14, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The Northeast Quarter of the Northeast Quarter of the Northeast Quarter, Section 14, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The South half of the Northeast Quarter of the Northeast Quarter, Section 23, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The Southeast Quarter of the Northeast Quarter, Section 23, Township 6 North Range 6 West, Salt Lake Base and Meridian.

Less: The existing County Road and all the land lying Westerly of said County Road.

The Northeast Quarter of the Southeast Quarter, Section 23, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Less: The existing County Road and all land lying Westerly of said County Road.

The Southeast Quarter of the Southeast Quarter, Section 23, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Less: The existing County Road and all land lying Westerly of said County Road.

The Northeast Quarter, Section 24, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The South half, Section 24, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The Northeast Quarter, Section 25, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The Southeast Quarter, Section 25, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Less: The existing County Road and all land lying Southerly of said County Road.

---

The Southwest Quarter, Section 25, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Less: The existing County Road and all land lying Southwesterly of said County Road.

The Northwest Quarter, Section 25, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Less: The existing County Road and all land lying Southwesterly of said County Road.

The West half of the Southwest Quarter of Section 18, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Southeast Quarter of the Southwest Quarter of Section 18, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The West half of the Northeast Quarter of the Southwest Quarter of Section 18, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Southeast Quarter of the Northeast Quarter of the Southwest Quarter of Section 18, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Northwest Quarter of the Northwest Quarter of Section 19, Township 6 North, Range 5 West, Salt Lake Base and Meridian.

The Southwest Quarter of Section 13, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Less: The Northwest Quarter of the Northwest Quarter of the Southwest Quarter of Section 13, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

The Northwest Quarter of Section 24, Township 6 North, Range 6 West, Salt Lake Base and Meridian.

Together with all improvements, appurtenances and any water rights thereto belonging.

---

## **Attachment 2**

### **Run-on & Run-off Controls**

### 3.1.5.4 STORMWATER DRAINAGE CONTROL

Stormwater is water that does not come into contact with the refuse. Stormwater drainage can be described as being either run-on - stormwater flows entering the developed portion of the site from adjacent undeveloped areas, or run-off - stormwater flow coming from the developed portion of the site that has not had contact with refuse, i.e. stormwater flows over native cut slopes or intermediate cover.. All stormwater that comes into contact with refuse is considered leachate and must remain within the boundaries of the landfill liner and be managed as leachate. The landfill run-off will be kept separated from the run-on flows.

The diversion channels are designed to handle the 25-year, 24-hour storm event. The quantity of flow expected for the run-on condition of the Phase 1 landfill cell was determined by using the precipitation rainfall depth of 2.25 inches (NOAA precipitation frequency data server Atlas 14). The Runoff Curve Number varies across the tributary area from 63 for soil type A and 88 for type D soils. The areas of the various hydrologic soil types was determined using the Web Soil Survey website from the USDA. Vegetation was assumed to be poor condition desert shrub. The 48 acre tributary is divided into eastern and western. The time of concentration was calculated using Kirpich and Manning's equations for sheet flow, shallow concentrated flow and channelized flow accordingly. The peak flow generated was determined by applying the US Soil Conservation Science Technical Release 55 (TR-55) method. Details of the input parameters and model output are included in Appendix D. Table 3 shows the peak discharge generated from the run-on.

**Table 3**  
**25-Year, 24-Hour Peak Flow**

Subarea	Peak Discharge (cfs)
A1 (Western Run-On)	14.68
B1 (Eastern Run-On)	41.72

The diversion channels that convey the run-on around the site consist of earthen swales that are lined with an erosion control blanket. The channels were sized using Flowmaster hydraulic software from Bentley Systems Inc.

The run-off from the Phase 1 landfill cell will be managed through temporary drainage facilities consisting of benches, down drains, and drainage swales. Run-off from the landfill as well as the onsite facilities will be routed through the detention basin to

capture sediment and pollutants prior to the stormwater discharging from the site. If required, culverts will be placed along the access road as needed.

Stormwater that collects inside of the landfill cell but does not come into contact with refuse will drain to an earthen lined pond located in the northern portion of the cell. As the landfill expands through the phases 1A, 1B, and 1C the pond will be reconstructed to accommodate the runoff volume of the subsequent interim drainage conditions. The 2 year, 24 hour storm event of 1.32 inches was multiplied by the tributary area to determine the size of the ponds. Figures D-2 through D-4 show the various pond configurations and calculations (Appendix D). Stormwater that accumulates at the interior basin will be allowed to settle prior to pumping to site drainage facilities.

#### 3.1.5.5 CONSTRUCTION SWPPP

The draft construction stormwater pollution prevention plan (SWPPP) has been prepared for the Phase 1 landfill cell in accordance to Utah Administrative Code R317-8-3.9. The Utah Pollutant Discharge Elimination System (UPDES) requires construction stormwater permits for construction activities that disturb one acre or more.

The permit requires submission of a Notice of Intent (NOI) by creating an account on the Utah.gov website. The construction general permit must be renewed annually and the online account can be used to renew the permits. An owner or operator may submit a Notice of Termination (NOT) form at the end of the construction activity. A draft construction SWPPP is included in Appendix H.

#### 3.1.5.6 INDUSTRIAL SWPPP

Operators of facilities that have industrial stormwater discharges are covered by the General Multi-Sector Industrial Storm Water Permit. Coverage is based on the facility's Standard Industrial Classification (SIC) code which is 4953 for Refuse Systems.

The permit requires submission of a Notice of Intent (NOI) by creating an account on the Utah.gov website. The general permit cycle is for 5 years and the online account can be used to renew the permits. A draft industrial SWPPP is included in Appendix I.

#### 3.1.6 CONSTRUCTION QUALITY ASSURANCE

To verify that the liner installation has been completed in accordance with the Construction Plans and Specifications and that the work meets applicable regulatory requirements, construction will be monitored in accordance with the procedures and

**Attachment 3**

**Plan of Operation**

compactors. Waste will be placed and compacted in a manor to optimize both production and compaction.

Operations at the tipping face will not take place without temporary 12' high fencing to control fugitive waste. Said fence shall move with the operation being placed within 200 feet or less from the tipping face. Tipping operations will be limited to one area at a time to control the amount of exposed waste. The size of the working face will be minimized and anticipated to be less than one-half acre.

Daily and intermediate cover will be generated from borrow areas within the buffer zone or from processing operations in Little Valley. A minimum of 1000 cubic yards of cover material will be available in stockpile or accessible from borrow areas at all times. This adequately covers the anticipated maximum size working face by a factor of two which leaves plenty of material available for contingencies. The cover material will be loaded, transported, and deposited on the refuse with rubber-tired wheel scrapers, fine graded with bulldozers (as needed), and compacted with the landfill compactor (or a soil compactor at the direction of the Landfill Operator). If an area is not to be actively landfill more that 30 days, intermediate cover will be applied. Intermediate cover shall have a minimum thickness of 12 inches.

The final cover for the Class I cell would be designed using Bentomat (ST), 40 mil VFPE, bi-planar drainage net and 18 inches of site soils. The cover would then be seeded and lightly compacted to support vegetation and reduce erosion.

### 5.2.2 Equipment

The Owner would maintain the necessary equipment to off-load, spread and compact waste, control dust, and perform other facility operations. The following Table 5.1 is a preliminary list of the possible equipment that may be used on the site.

**Table 5.1**  
**PROMONTORY LANDFILL EQUIPMENT LIST**

<b>Equipment Description</b>	<b>No. of Pieces</b>	<b>Purpose</b>
Front-end Loader	1	Handle MSW at unloading facility
Articulatated off-road truck, Cat D400E size	2	Haul solid waste from rail siding to cells
Self-loading scraper, Cat 623 size	2	Excavate for cells; haul covered material
Track mounted dozer Cat D8 size	1	Place solid waste in cells
Track mounted dozer Cat D9 size	1	Cell and cover material excavation
Landfill compactor, Cat 836G size	1-2	Compact solid waste
Motorgrader, Cat 140G size	1	Construct/maintain haul roads and cells
Front-end loader, Cat 966IT size	1	Handle bail garbage; road/berm construction
Truck mounted 4000 gallon water tand	1	Dust control
Tractor mounted 10,000 gallon water wagon	1	Dust control
Super sucker vacuum truck	1	Clean rail cars
Steam boiler	1	Heat water to clean railcars
Railroad locomotive	1	Move railcars

### 5.3 ON-SITE SOLID WASTE HANDLING PROCEDURES

Daily operation of the Class I Landfill and related facilities would be under the direction of the Landfill Manager. In the event of the Landfill Manager's absence, a Senior Operator would be the designee in charge of the landfill.

A landfill entrance sign will be constructed and will provide the landfill name, hours of operation, list of materials not accepted by the landfill, and emergency contact information.

At the beginning of each working day, the Landfill Manager would be responsible for informing operators of any special off-loading conditions, for either trucks or the railroad, and where to direct solid waste for disposal. The Landfill Manager or Senior Operator would be responsible for directing each transport vehicle to the proper location for disposal of its

waste. This could alternatively be accomplished through the placement of directional signs. The Landfill Manager or the Senior Operator would be at the landfill during all operating hours.

The Owner probably would elect to construct scales for the Class I Landfill. The scale operator would perform load counts on a daily basis and make a record of the load source.

Incoming refuse directed toward the landfill would be deposited at the working face under direction the Landfill Manager or Senior Operator.

#### 5.4 MONITORING SCHEDULE

A Monitoring Plan has been developed to help in the prevention of problems that may preventable through careful monitoring and inspection. The schedule provides details on groundwater monitoring, leachate monitoring, and landfill gas monitoring. A copy of the Monitoring Plan is included in Appendix M.

#### 5.5 EMERGENCY OPERATIONS PLAN

The Emergency Operations Plan for the proposed facility is included in Appendix N. The Emergency Operations Plan provides protocols for landfill employees in cases of emergency. Should an emergency happen, the DEQ may elect to waive daily cover requirements on C & D Materials.

#### 5.6 CONTINGENCY PLAN

The Contingency Plan is designed to minimize hazards to human health or the environment from any unplanned sudden or non-sudden discharge to air, soil, surface, or groundwater. The provisions of this plan would be carried out immediately upon an emergency situation or release, which could threaten human health or the environment. Emergency evacuation of

the site could be necessary given the nature of the waste materials stored and processed at the site. Incidents at the landfill could be caused by fire, explosion, or toxic vapor generation.

#### 5.6.1 Fire or Explosion

A fire suppression area shall be designated as the location for any burning materials to be moved or to be consolidated on for fire suppression activities. This areas shall not be located within 150 feet of any exposed HDPE liner or within 5 vertical feed of any existing liner. This area may move from time to time to be in close proximity to the working area of the landfill operations.

**Vehicle Fires:** In the event that a disposal vehicle carrying a burning or smoldering load of waste enters the landfill site:

1. The vehicle should be directed to the designated fire suppression area as previously outlined above.
2. Once burning waste is removed from the vehicle, the application of cover material by landfill equipment or the application of water by the on-site water truck will be used to extinguish the fire. Suffocation with cover material will be the primary method used to extinguish fire.
3. Vehicles and any equipment in the "fire zone" will be inspected and sprayed with water while working to quench the fire.
4. Precautions should be taken throughout the entire fire-fighting operation including using a hot-spot observer.
5. If, at any time, additional assistance is required, local fire-fighting units will be contacted.

**Ground Fire/Below Cover Fire:** In the even that waste placed on the ground or waste that was previously covered erupts into fire:

1. It will be isolated from previously deposited waste immediately. This will be done by either moving burning waste to the designated fire suppression area or by concentrating the burning waste in one spot using landfill equipment.
2. Once burning waste is separated from other exposed waste, the fire will be extinguished by the application of cover material by landfill earth moving equipment or the application of water by the on-site water truck. Suffocation using cover material will be the primary method used to extinguish fire.
3. Vehicles and any equipment in the "fire zone" would be inspected and sprayed with water while working to quell the fire.
4. Precautions should be taken throughout the fire-fighting operation, including using a hot-spot observer.
5. If, at any time, additional assistance is required, local fire-fighting units will be contacted.

**Explosion:** In the event that an explosion should occur at the landfill or in any structure associated with the landfill site:

1. All personnel and equipment in the area, including those in surrounding buildings will be evacuated immediately.
2. All landfill personnel will be accounted for.
3. Local emergency personnel will be contacted.
4. The Landfill Supervisor will be informed of the situation if he/she is not already at the site.
5. The explosion area will be restricted to all personnel until cleared for reentry by local emergency personnel.
6. Precautions should be taken throughout the entire emergency response operations.
7. The President of Promontory Landfill, LLC or his/her designee will be the only person authorized to make statements to the media.

### 5.6.2 Explosive Gas Release

Methane gas release would be detected using a methane detection meter capable of measuring methane levels below the 25% Lower Explosion Limit. Gas monitoring would be conducted around the disposal area and in any of the facility structures. Upon detection of explosive gases equal to or above the lower explosion limit, the Owner or Operator would take the following steps:

1. Immediately upon detection, steps would be taken to protect human health. These steps would include accounting for all landfill personnel and moving all equipment and personnel away from the release area, shutdown of any electrical devices that could cause ignition, notify emergency personnel (fire, police) and advise them of the situation, monitor the release area and surrounding areas with a combustible gas indicator and document reading for placement into the operating record, determination of the cause of explosive gas, and keep the area closed until corrective actions are taken.
2. Within 24 hours the Executive Secretary would be notified.
3. Within seven days of detection, the explosive gas levels would be recorded in the operating record along with a description of the steps taken to protect human health.
4. Within 60 days of detection, a remediation plan that had been approved by the Executive Secretary would be implemented and a copy of the plan placed in the operating record. Upon implementation, the Executive Secretary would be notified.

### 5.6.3 Failure of Drainage Containment System

If the containment system were to fail, the following actions would be taken:

1. Construct berms and ditches to divert water around the containment failure area using site soils or readily available materials.

2. Analyze and evaluate the extent of damage to the containment system.
3. Identify the mechanism of failure.
4. If warranted call a qualified professional to discuss possible solutions.
5. Develop and implement corrective actions.

#### 5.6.4 Temporary Equipment Breakdown / Extreme Weather Events

The Operator owns numerous pieces of equipment that could be promptly mobilized if warranted. If this equipment were not available, rental equipment is readily accessible along the Wasatch Front. Should an extreme weather event occur, waste entering the facility would be temporarily stored in the transfer building. Haulers would be notified to temporarily stop shipping waste. Waste would then be briefly stored at the Transfer Stations until the event passed. Transfer Stations are designed for adequate storage for temporary extreme events like this.

#### 5.7 ALTERNATIVE WASTE HANDLING AND DISPOSAL PLAN

In the event of a major equipment failure, solid waste would be loaded and shipped to an alternative waste disposal facility such as Box Elder County, Elko County, or other available landfills in the area. A contract will be negotiated for an alternative disposal location prior to the facility operating.

#### 5.8 PROCEDURES FOR CONTROLLING DISEASE VECTORS

The use of daily cover and the exclusion of specific types of solid waste are necessary to control vectors and the subsequent spread of disease. Special waste such as infectious waste, liquid waste and tires, which may directly carry disease or lead to the propagation of disease

vectors, would be immediately covered at the working face. Landfill personnel to the extent possible would inspect the site for signs and indications of disease vectors. If observations were made the Landfill Manager would be contacted immediately. If disease vectors were to become a problem, pest control specialists would be contacted to reduce the spread of disease.

#### 5.9 PROCEDURES FOR EXCLUDING THE RECEIPT OF HAZARDOUS WASTE

A "Prohibited Waste" control program designed to detect and deter attempts to dispose of hazardous and other unacceptable waste would be implemented at the proposed Promontory Landfill Facility. The program is designed to protect the health and safety of employees, customers, and the general public, as well as protect against contamination of the environment. The Landfill Manager would be in charge of hazardous waste activities.

The waste disposed at the proposed landfill would be visually inspected prior to final placement. The waste would be inspected at off-site transfer stations and on-site. Further information about each of these inspection locations are listed below:

- The proposed landfill only accepts waste from any transfer stations that have a waste inspection plan approved by the Executive Secretary. Operators at the transfer stations would visually inspect waste for hazardous materials before loading for transit.
- On-site inspection would be conducted at the working face. Landfill operators will be trained in the recognition of prohibited waste. A random testing program would be conducted of all waste that has not already been inspected at transfer stations. These inspections would be conducted on one percent of all loads not obtained from transfer stations with a waste inspection plan approved by the Executive Secretary. A sample form for these inspections has been included in Appendix O. All waste would be visually inspected, as it is being placed, spread and compacted in the cell and upon finding any unacceptable waste the following steps would be taken:

1. Using landfill equipment such as an excavator or a loader, separate the questionable waste from the other waste in the load. Move the questionable waste away from the operating area of the tipping floor or tipping face so that operations can continue.
2. Notify the Landfill Supervisor immediately of the problem and the Generator of the waste and wait for direction
3. Keep all other landfill personnel and equipment away from the questionable wastes until notified by the Landfill Supervisor or his/her designee to do otherwise.
4. The Landfill Supervisor shall notify the generator of the problem and allow the Generator 24 hours to remove the material from the premises.
5. If the Generator does not respond in a timely fashion, remove the waste from the Landfill and dispose of it in a facility appropriate for the type of waste. Note the details of all actions in the Operating Record.

#### 5.10 GENERAL TRAINING AND SAFETY PLAN

Each employee at the landfill facility would be trained to have a working knowledge of the maintenance and operational techniques necessary to operate and maintain the landfill facility in a manner to preserve human health, safety, and the environment. Training would be accomplished through on-the-job training (OJT) and classroom training sessions. The Landfill Manager, or a designated professional trainer, would be in charge of directing the training programs. Initial training would be completed within three months of employment followed by an annual review of basic waste management skills.

##### 5.10.1 Training Schedule

The Landfill Manager would be required to pass the SWANA Manager of Landfill Operations (MOLO) course or equivalent. In addition, operators are required to take

one or both of the SWANA training courses: Landfill Operator Training, and Waste Screening or equivalent. Continuing education efforts include the following:

**Introductory Training**

Synopsis of solid waste regulations, record keeping, and transporter requirements.

- Requirement: All Personnel
- Method: OJT
- Review: Quarterly

**Policies and Procedures**

Security, inspections and emergency response.

- Requirement: All Personnel
- Method: Lecture/Video Course, OJT
- Review: Quarterly

**Safety**

Personal protection, hazardous waste recognition, hazardous material handling, emergency response, and first aid.

- Requirement: All Personnel
- Method: Classroom/Video Course
- Review: Annual

A Safety Training meeting is held once a week taking a minimum of 15 minutes. Training documents would be kept with the Plan of Operation for a rolling five year period.

## 5.11 RECORD KEEPING AND REPORTING

The Landfill Manager would maintain the following operating records for the landfill:

- Records of maintenance
- Records of training and notification procedures
- Records of groundwater monitoring
- Records of landfill gas monitoring
- Records of weights and volume, number of trucks and railcars
- Deviations from the plan of operation
- Records of placement or recirculation of leachate
- Records of any gas condensate
- Prepare an annual report and place the report in the facility's operating record.

Sample forms for maintenance and gas monitoring are provided in Appendix O.

## APPENDIX L FUGITIVE WASTE PLAN

### Introduction

Promontory Landfill LLC is committed to use management, engineering, process, and personnel controls to aggressively limit the occurrence of fugitive waste.

### Description of potential fugitive waste generators and prevention and control steps.

Waste loads entering the landfill must be covered. Promontory Landfill LLC will purchase containers that are equipped with covers. In the unlikely event of receiving an uncovered load, it will be stopped for corrective actions. First time violators will receive a one-time warning. Repeat violators will be subject to increased disposal fees.

Upon entering the site, waste loads will be taken to an enclosed transfer station. The transfer station will specifically be designed with prevention of fugitive waste in mind. The transfer of waste from incoming containers either by truck or rail will be contained within the transfer station. Incoming containers would be removed and loaded to onsite haul trucks for transit and unloading at the working face. Empty containers will be cleaned either at the working face, inside the transfer building, or in a fenced compound before being placed back into service. Waste inside the transfer station will be picked up daily with though cleaning conducted weekly.

The closest weather station to Promontroy Landfill sits atop the mountain above the landfill. Per Dr. Hohne Horel of the Department of Meteorolgy at the University of Utah, the wind data generated from this weather station is not necessarily representative of the conditions at the landfill site due to the difference in elevation and topography. The applicant therefore, will construct and operate a weather station at the landfill site. Information from the weather station will be recorded into the Daily Operating Record. From this information, the applicant will be able to ascertain what wind events (velocity, duration, and direction) compromise the effectiveness of applicant's fugitive waste control measures.

Data from the applicant's weather station will be initially collected for one year. Within 60 days of the end of the first year's operations, applicant will present to the Executive Secretary for approval a protocol outlining wind thresholds (velocity, duration, and direction) requiring possible cessation of operations at the tipping face.

During the first year while applicant is developing its data base and protocol applicant will voluntarily cease placing waste at the tipping face during any wind event in which the following occur:

- Wind direction is from due north to due east.
- Wind velocity exceeds 35 mph for 30 minutes or longer.

Prior to implementation of a protocol, the applicant will take necessary preventative actions to stop fugitive waste during cessation of operations caused by wind events.

The buffer area around the disposal area will be given special attention, as it is the final opportunity to prevent fugitive waste from leaving the site. A five-foot high berm would be built and topped with a 15-foot high fence. The fence and berm combination would begin on the hill along the east side, wrap around the south side of the property and then run along the west side to a point where the property begins to gain significant elevation. The remainder of the property would be fenced with a 6-foot high fence. Fencing would be inspected weekly and waste cleanup and repair of the fence would occur as necessary. Positive control of fugitive waste will include the cleanup of the site, including buffer areas on a weekly basis, and after wind events from due north to due east during which the tipping face is exposed in excess of 35 mph that last more than thirty minutes to minimize the amount of waste reaching the perimeter fence. The drivers of the haul trucks will inspect haul roads and spills will be cleaned up as reported. Spills inside the site would be cleaned up as detected. Any waste that escapes the site would be collected and disposed of before the end of the next working day.

At the working face, fugitive waste will be minimized in multiple ways. First the working face will be reduced to the smallest workable area as possible. It is anticipated the working face will be about a half acre. Next temporary 12' high fencing will be placed around the working face to keep fugitive waste from moving out onto the site. Other temporary fencing will be erected if necessary to contain waste on site.

## APPENDIX N

### EMERGENCY OPERATIONS PLAN

This document provides landfill employees with information on how to respond and what to expect in the case of a major disaster, such as an earthquake. The Promontory Landfill Facility (hereafter referred to as the Facility), in an effort to respond to various disasters that could seriously threaten lives and property, has developed this Emergency Operations Plan. This Plan is not meant as a stand-alone plan; the intent is to use this plan in conjunction with State, County, and Local Emergency Operations Plans. The Department of Environmental Quality may elect to waive requirements for daily cover on construction and demolition materials during an emergency.

#### ASSUMPTIONS

1. The Facility is expected to continue normal operation and must maintain normal daily operation besides handling the disposal of emergency, nonhazardous rubble material. Because of the location of the Facility and the types of structures located on the premises, the Facility is expected to be minimally affected by most major disasters.
2. The Facility will be most heavily impacted approximately 72-hours after an emergency, when the clean up, removal and disposal of rubble begins. The Facility may then need to be open around the clock (24-hour operation). All of the Facility personnel and equipment will be needed to run the operation.
3. The primary responsibility of Landfill resources would be the Rail Transfer Area/Landfill operations.

#### FIRST RESPONSE

##### DURING WORKING HOURS

1. Remain calm and reassure others. Avoid objects that could fall. Do not touch downed power lines or objects touching downed power lines. This is especially significant at the Landfill.
2. Report your location, physical condition, and area damage to your supervisor.
3. Provided the Facility areas are not severely damaged or inaccessible, continue with normal duties. In the event that certain areas are severely damaged, perform other duties as assigned by the Supervisor.
4. The Supervisor should check all areas for structure damage and also check on site utilities. If necessary, turn these utilities off. Call the Weber and Box Elder County dispatch at (801) 399-8411 and (435) 734-3800 to report findings.

5. All efforts will be made to contact Facility employees' families and others that employees have listed on the Family Notification List. Employees will be notified of family status as soon as possible.

#### **AFTER WORKING HOURS**

1. Contact the Facility and give your location, status, and availability. If you are unable to get to the Landfill notify the supervisor.
2. The first person to arrive at the Landfill should check all structures for damage and check utilities (power, sewer, gas and water) lines. If necessary, turn these off.
3. After all structures and utilities have been inspected, perform normal duties unless otherwise assigned by the Supervisor.
4. The Supervisor should check all areas for structure damage and also check on site utilities. If necessary, turn these utilities off. Call the Weber and Box Elder County dispatch at (801) 399-8411 and (435) 734-3800 to report findings.

#### **FACILITY OPERATIONS**

1. The Landfill will maintain regularly scheduled working hours.
2. When the emergency cleanup begins, approximately 72-hours later, the Facility may need to be open 24-hours per day.
3. When 24-hour operation begins, all Facility personnel and equipment will be needed to run the Rail Transfer Area and Landfill operations.
4. During the clean up and disposal of rubble, City/County and State Health Department inspectors will need to be at the clean-up site to determine if the substance being disposed of contains hazardous material. If so determined, then the governing authorities (federal, state or local) must arrange for proper disposal at a designated hazardous waste disposal facility (not the Promontory Landfill Facility).
5. During 24-hour operation employees should expect to work 12-hour shifts. Management will decide which employees take the first shift and which employees take the second shift according to employee availability.

## RANDOM INSPECTION FORM

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Inspected by: \_\_\_\_\_

Load Origin: \_\_\_\_\_

How was the inspection conducted?

---

---

---

---

---

What was found during inspection?

---

---

---

---

---

---

---

---

Is corrective action necessary? If so what?

---

---

---

---

---

---

**QUARTERLY INSPECTION LOG**  
**Promontory Landfill LLC**

Area of Inspection	Needs Repair	Date of Repair	Comments
Off-loading Area			
Scale House			
Run-on/Run-off			
Roads			
Harborage			
Leachate Collection			
Gas Collection			
Perimeter Fencing and Access Gates			
Fugitive Waste collection System			
Fugitive Waste			
Cell			
Date:	Inspector:		

Note: Annual Report due before March 1.



**Attachment 4**  
**Monitoring Plan**

# APPENDIX M

---

## ***MONITORING PLAN***

The purpose of this monitoring schedule is to help prevent problems that may be preventable through identification and prompt remediation efforts. A sample schedule for monitoring and inspection of the landfill facilities to ensure proper operation and maintenance is provided in the Appendix O. Listed below are monitoring guidelines for groundwater monitoring, leachate monitoring and control system, and landfill gas monitoring system.

### **1. Groundwater Monitoring System**

Background concentrations of the constituents will be established using a statistical analysis method approved by the Executive Secretary. Eight independent samples will be obtained and analyzed during the first year immediately after the permit is issued and prior to the receipt of MSW from the up gradient and down gradient wells. After background concentrations have been determined, groundwater monitoring would be conducted semi-annually in the spring and fall from the up-gradient and down-gradient wells. The well locations and a typical well design are shown in the attached Figure I-1, I-2, I-3, and I-4. Groundwater samples will be analyzed for detection of constituents per the Utah State Administrative Code R315-308 Ground Water Monitoring Requirements. The list of constituents provided below are current as of August 2009 for detection monitoring. The Landfill Operator shall be responsible for insuring compliance with current regulations for detection monitoring.

**A detailed, site-specific groundwater monitoring plan, including well logs, well design, and updated sampling and analysis procedures will be submitted and approved after the initial monitoring well development and prior to facility operation.**

### Groundwater Detection Monitoring

		Groundwater Protection Standard	Detection Limits	
			EPA 6020	Cold Vapor AAS
Inorganic Constituents	CAS	(mg/l)	(mg/l)	(mg/l)
Ammonia (as N)	7664-41-7			
Carbonate/Bicarbonate				
Calcium				
Chemical Oxygen Demand (COD)				
Chloride				
Iron	7439-89-6			
Magnesium				
Manganese	7439-96-5			
Nitrate (as N)				
pH				
Potassium				
Sodium				
Sulfate				
Total Dissolved Solids (TDS)				
Total Organic Carbon (TOC)				

<b>Heavy Metals</b>				
Antimony	7440-36-0	0.006	0.003	
Arsenic	7440-38-2	0.01	0.005	
Barium	7440-39-3	2	0.005	
Beryllium	7440-41-7	0.004	0.001	
Cadmium	7440-43-9	0.005	0.001	
Chromium		0.1	0.005	
Cobalt	7440-48-4	2	0.03	
Copper	7440-50-8	1.3	0.012	
Lead		0.015	0.003	
Mercury	7439-97-6	0.002		0.0002
Nickel	7440-02-0	0.1	0.01	
Selenium	7782-49-2	0.05	0.001	
Silver	7440-22-4	0.1	0.002	
Thallium		0.002	0.001	
Vanadium	7440-62-2	0.3	0.03	
Zinc	7440-66-6	5	0.03	
<b>Organic Constituents</b>				
Acetone	67-64-1	4	0.005	0.005
Acrylonitrile	107-13-1	0.1	0.01	0.05
Benzene	71-43-2	0.005	0.0005	0.001

Bromochloromethane	74-97-5	0.01	0.0005	0.001
Bromodichloromethane <sup>1</sup>	75-27-4	0.1	0.0005	0.001
Bromoform <sup>1</sup>	75-25-2	0.1	0.0005	0.001
Carbon disulfide	75-15-0	4	0.0005	0.001
Carbon tetrachloride	56-23-5	0.005	0.0005	0.001
Chlorobenzene	108-90-7	0.1	0.0005	0.001
Chloroethane	75-00-3	15	0.0005	0.001
Chloroform <sup>1</sup>	67-66-3	0.1	0.0005	0.001
Dibromochloromethane <sup>1</sup>	124-48-1	0.1	0.0005	0.001
1,2-Dibromo-3-chloropropane	96-12-8	0.0002	0.000005	0.00001
1,2-Dibromoethane	106-93-4	0.00005	0.000005	0.00001
1,2-Dichlorobenzene (ortho)	95-50-1	0.6	0.0005	0.001
1,4-Dichlorobenzene (para)	106-46-7	0.075	0.0005	0.001
trans-1,4-Dichloro-2-butene	110-57-6		0.01	0.02
1,1-Dichloroethane	75-34-3	4	0.0005	0.001
1,2-Dichloroethane	107-06-2	0.005	0.0005	0.001
1,1-Dichloroethylene	75-35-4	0.007	0.0005	0.001
cis-1,2-Dichloroethylene	156-59-2	0.07	0.0005	0.001
trans-1,2-Dichloroethylene	156-60-5	0.1	0.0005	0.001
1,2-Dichloropropane	78-87-5	0.005	0.0005	0.001
cis-1,3-Dichloropropene	10061-01-5	0.002	0.0005	0.001

trans-1,3-Dichloropropene	10061-02-6	0.002	0.0005	0.001
Ethylbenzene	100-41-4	0.7	0.0005	0.001
2-Hexanone	591-78-6	1.5	0.005	0.01
Methyl bromide	74-83-9	0.01	0.0005	0.001
Methyl chloride	74-87-3	0.003	0.0005	0.001
Methylene bromide	74-95-3	0.4	0.0005	0.001
Methylene chloride	75-09-2	0.005	0.001	0.005
Methyl ethyl ketone	78-93-3	0.17	0.005	0.01
Methyl iodide	74-88-4		0.001	0.01
4-Methyl-2-pentanone	108-10-1	3	0.005	0.01
Styrene	100-42-5	0.1	0.0005	0.001
1,1,1,2-Tetrachloroethane	630-20-6	0.07	0.0005	0.001
1,1,2,2-Tetrachloroethane	79-34-5	0.005	0.0005	0.001
Tetrachloroethylene	127-18-4	0.005	0.0005	0.001
Toluene	108-88-3	1	0.0005	0.001
1,1,1-Trichloroethane	71-55-6	0.2	0.0005	0.001
1,1,2-Trichloroethane	79-00-5	0.005	0.0005	0.001
Trichloroethylene	79-01-6	0.005	0.0005	0.001
Trichlorofluoromethane	75-69-4	10	0.0005	0.001
1,2,3-Trichloropropane	96-18-4	0.04	0.0005	0.001
Vinyl acetate	108-05-4	37	0.005	0.01

Vinyl Chloride	75-01-4	0.002	0.0005	0.005
Xylenes	1330-20-7	10	0.0005	0.001

<sup>1</sup>The ground water protection standard of 0.1 mg/l is for the total of Bromodichloromethane, Bromoform, Chloroform, and Dibromochloromethane.

The water samples would be collected using currently accepted and approved techniques and technologies. The protocols for sampling would consist of water level measurements, detection of immiscible layers, well purging, field measurements, sample collection, sample handling and preservation, and sample custody. Samples would be tested using a state certified laboratory. Each sampling protocol is discussed in detail below.

- Water level measurements would be read to the nearest 0.01 foot. Elevations at each well would be known for cross-references and determination of ground water levels in the area. Measurements would be taken from the same location at each well.
- Detection of immiscible layers would begin with screening organic vapors with a monitor prior to any evacuation of water. If concentrations were to exceed 25 percent of the lower explosive limit, landfill personnel would immediately contact the Landfill Manager. If concentrations were below 25 percent of the lower explosive limit, an interface probe would be lowered into the well to detect and measure the thickness of any possible immiscible layer that may develop. The probe would further be lowered to the bottom of the well to register the presence of any dense organic liquids. If any immiscible layers were found, samples would carefully be retrieved.
- The water level and interface probes will be cleaned prior to use and between each sampling point by washing with soapy (Alconox®) water solution; spraying de-ionized water on the outside surfaces; and wiping the outside surface with a paper towel.
- Each well would be equipped with a dedicated low flow pump designed to be non-aerating or non-leaching. In preparation for taking water samples, each monitoring well would be micro-purged to obtain a fresh sample. Micropurging of a well would be performed by removing water from the well using the low flow pump. When purging a well, purging would continue until the pH, conductivity, turbidity, and water temperature have stabilized or until

at least three well volumes of water would be purged from the well. Stabilization would occur when pH, conductivity, turbidity, and water temperature readings do not exceed 10 percent deviation over at least three measurements. If the well is purged dry, samples will be taken as soon as a sufficient volume of ground water has entered the well.

Field measurement samples would be collected in a clean beaker once the well was properly purged. All probes or instruments would be kept in designated containers to prevent cross contamination between samples. All instruments would be cleaned according to manufacturer's recommendations after and prior to taking any measurements. The dedicated pumps will likely be powered by a gas-powered generator. Care will be taken during sampling to ensure that the generator is located downwind of the sampling area to prevent contamination from the generator exhaust.

Field measurements and field notes would include:

- name of collector
- time of sample
- weather conditions
- air temperature
- date of sample
- monitoring well identification number
- lower explosive limit
- immiscible layers found with thickness information
- static water level
- water temperature
- turbidity
- electrical conductivity
- pH
- dissolved oxygen
- well yield
- sampling procedures and methods
- sampling identification number
- preservatives used

- containers used
- parameters requested
- daily instrument drift
- general comments section.

This information would be recorded on the Water Sample Worksheet (included at the end of this document) and kept in a field notebook. All measurement instruments would be calibrated at the beginning of the day and rechecked after all the sampling was complete to record any possible instrument drift.

- The pumping rate shall not exceed 100 millimeter/minute. The degree of sensitivity to pH or volatilization would determine the order in which parameters are sampled. Sampling containers and procedures for preparations of samples would be provided by the testing laboratory.
- Quality assurance samples will include, but not be limited to a trip blank, field blank, and field duplicates. The trip blank will be a vial of reagent grade water included in each cooler during sampling and shipping. This blank is used to provide an indication of contamination introduced as a consequence of the sampling and shipping procedure. The field blank will be a vial of reagent grade water filled in the field along with other samples taken at a selected well. This blank is used to provide an indication of contamination induced during the sampling process. Field duplicates will be collected at a rate of 10 percent. If fewer than 10 samples are collected one field duplicate will be included.
- Once the samples were collected and prepared to laboratories recommendations, the sample would be immediately labeled, recorded in the field book, and placed in a sampling cooler. The samples would be recorded on a chain-of-custody and remain with the sampler until formally released to another individual.
- Custody of the samples would be documented on a chain of custody form. Samples would remain in the custody of the sampler until samples are checked in and relinquished to the laboratory or until they were relinquished for transport to the laboratory.

All data received would be reviewed to assess data validity. Each data report would be checked to insure the following:

- Identification numbers of the samples match.
- Chain of custody and field notes matches the sample information.
- Sample analysis was performed using requested methods and acceptable time limits.
- Reporting limits conform to current detection limits.
- Blank results have been included and are acceptable.
- MS/MSD results are representative and are included.
- All QA/QC sampling results are included and acceptable.

If there were any potential problems with the data reports or discrepancies, the laboratory would be notified immediately. If necessary, new samples would be collected and tested. Data would be analyzed by:

- Concentrations of naturally occurring constituents would be plotted at each well on control charts for that specific well. Each constituent would be analyzed to determine whether groundwater is being impacted.
- Look for the presence of non-naturally occurring compounds. If these compounds were reported, the validity of the results would be reviewed. If results appear to be potentially valid, new samples would be collected and tested.

Semi-annual reports would be prepared and would include the following in an electronic format:

- Description of procedures, including the quality assurance/quality control, followed during the collection of samples.
- Results of field measured parameters.
- Chain of custody and quality assurance/quality control procedures followed by the laboratory.
- Laboratory results with detection limits and testing methods used.
- Statistical analysis of the laboratory results.

After background constituent and levels have been established, the Owner would determine what statistical method would be used to determine whether a significant change has occurred compared to the background water quality.

## **2. Leachate Monitoring and Control System**

The proposed Class I Landfill would be equipped with a leachate monitoring and control system. The system is comprised of a network of piping providing gravity flow to centrally located sumps positioned at the lowest elevation of the cell. The sumps would be activated if more than one foot of standing leachate is detected above the liner. The leachate would be pumped at a low flow rate to an evaporation basin or sprayed back on the surface of the landfill to suppress fugitive dust. Evaporation basins would accommodate peak flows. If the evaporation basins were unable to meet the demand generated by the leachate collection system, additional evaporation basins would be constructed.

## **3. Landfill Gas Monitoring System**

Rule R315-303 Landfilling Standards require landfill gases to be monitored to protect air quality and limit explosive gas emissions. A hand-held field explosive gas meter would be used for recording at the site. The meter would be calibrated as recommended by the manufacture by using a methane standard. Concentrations would not be allowed to exceed 25% of the lower limit in facility structures and 100% of the lower limit around the disposal area boundary.

Quarterly monitoring would be performed at the locations indicated on Figure 4.5 and within all facility structures. Readings would be taken at the ground level. If a monitoring event were to exceed the regulatory limit, procedures would be taken as noted in Section 5.2

## Water Sampling Worksheet

Site : \_\_\_\_\_

Sample Date : \_\_\_\_\_

Sample ID : \_\_\_\_\_

Sample Time : \_\_\_\_\_

Grab

Groundwater

Surface water

**Well Drilled Depth** \_\_\_\_\_ ft. -

**Static Depth to Water** \_\_\_\_\_ ft. \*  gal./ft. \* 3 case volumes =

**Calculated Purge Volume** \_\_\_\_\_ gal.

**Conversion Factors – Well Casing Size**

2"	3"	4"
<b>0.16</b> gal./ft.	<b>0.36</b> gal./ft.	<b>0.65</b> gal./ft.

**Actual Volume Removed** \_\_\_\_\_ gal.

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

### Water Quality Measurements

	pH	Conductivity mS/cm	Turbidity NTU	Temperature °C

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

Instruments used :

Calibration Date :

Sampled By :

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Landfill Gas Quarterly Monitoring Results  
 Promontory Landfill LLC  
 Year \_\_\_\_\_ Quarter \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Name of Gas Sample Collector \_\_\_\_\_  
 Temperature \_\_\_\_\_ Weather \_\_\_\_\_

Monitoring device should be calibrated prior to initiating sampling.

Accomplished? Yes \_\_\_ No \_\_\_

Methane Monitoring Location	Measured % LEL	<u>Regulatory Action Limit</u> (% LEL)
1. Administrative Building		25
2. SW Corner of Rotary Dump		25
3. SW Corner of Bottom Dump Area		25
4. SE Corner of Intermodal Area		25
5. NW Corner of the Scale House		25
6. North Boundary		100
7. South Boundary		100

- Gas Sample Collector: If measured % LEL equals or exceeds internal action limit, contact the facility manager.
- Facility Manager: If measured %LEL equals or exceeds regulatory action limit, notify the State Director in compliance with 40 CFR 258.23(c).

Comments:

---



---



---



---



---



---



---

**Attachment 5**  
**Closure & Post-Closure**

## 2.3 BASE GRADE MODIFICATION

An alternative to the permitted base grade is proposed for stability and operational concerns. This alternative is proposed for Phase 1 and future phases, as applicable. It is proposed that the base grades be excavated to the maximum extent possible maintaining a five-foot separation between the historical high level of groundwater and the bottom of the lowest liner component, along with a three percent sheet grade as opposed to the currently permitted five percent grade (see Figures C-101 and C-301). The proposed grade decrease is still within the allowed base grade in UAC R315-303-3(3)(a)(ii) which allows for base grades as flat as two percent. It is proposed that flowlines of the leachate collection pipes be greater than one percent. Detailed design and support calculations are included in the Design Report portion of this document included in Section 3.0.

## 2.4 LEACHATE UTILIZATION

An alternative to leachate utilization is proposed. The currently permitted use/disposal of leachate is for either dust control/compaction water on lined areas or pumped to evaporation basins. It is proposed that the leachate may also be recirculated into the waste thus increasing anaerobic digestion and landfill gas production which may be used to generate electricity. Leachate recirculation is allowed by UAC R315-303-3(2)(b) on landfills with composite liners like the PLF. Leachate recirculation would only occur in lined portions of the facility. Leachate production would be closely monitored to ensure that the moisture holding capacity of the refuse is not exceeded.

## 2.5 FILL SLOPE MODIFICATION

Modification of the design of the final fill slopes is proposed. The currently permitted final fill slopes are set at 4:1 (horizontal:vertical) gross or approximate 3.5:1 slopes between 15-foot benches. The proposed modification to the final fill slopes will be gross 3:1 or 2.5:1 slopes between 15-foot benches (see Figure C-102). This design modification is supported by the stability analysis provided in Appendix E and discussed in Section 3.1.4. This modification is proposed for Phase 1 and future phases, as applicable.

## 2.6 ALTERNATIVE FINAL COVER DESIGN

The current permitted final cover design for the PLF is as follows (from bottom to top):

- GCL;
- 40 MIL Very Flexible Polyethylene (VFPE);
- Bi-planar Geocomposite; and
- 18 inches of site soils.

An alternative to the permitted final cover is proposed as allowed in UAC R315-303-3(4)(a)(i) and (ii) which allows the director to approve an alternative cover design if it can be documented that the alternative cover achieves an equivalent reduction in infiltration as achieved by the standard design and the alternative final cover provides equivalent protection from wind and water erosion as achieved by the standard design. The proposed alternative design will consist of a monolithic soil evapotranspiration cover for placement on final fill slopes which will be designed to a depth and soil type which will perform equivalently to the prescriptive standard in UAC R315-303-3(4). Detailed design and support calculations will be presented at the time of closure when final cover materials have been selected and modeled.

## **2.7 CLOSURE AND POST-CLOSURE MAINTENANCE COST ESTIMATE REVISION/UPDATE**

As required in the Solid Waste Renewal Permit, the closure cost estimate revision/update is due by August 31, 2016. In light of the design of Phase 1, the closure and post-closure cost estimates have been updated from 2008 to 2016 rates and reflects the costs of placement of the proposed alternative final cover on the final fill slopes and the prescriptive cover on the deck areas. The post-closure costs reflect the appropriate maintenance costs for each final cover type.

The cost estimates assume that closure activities would be implemented as each phase within the disposal site is completed. These closure activities would minimize the need for further maintenance, and minimize or eliminate the threat to human health and the environment from post-closure escape of solid waste constituents, leachate, contaminated run-off or waste decomposition products to the ground, groundwater, surface water or the atmosphere.

The previous cost estimate prepared as part of the permit application assumed the first module to close to be 20 acres. The redesign of the landfill development provides for the initial phase to consist of 31 acres; therefore the cost estimates are based on closure of the first 31 acres of the PLF. Table A and B presents the revised/updated costs, and supporting documentation is included in Appendix G. The closure and post-closure costs have been prepared as required by UAC R315-309-2 and in accordance with UAC R315-309-2(3)(a) and (b).

**TABLE A**

**PROMONTORY LANDFILL LLC  
PRELIMINARY CLOSURE COST ESTIMATE**

	Description	Quantity	Unit	Unit Cost	Total
<b>1</b>	<b>FINAL COVER<sup>1.0</sup></b>				
	Mobilization/Demobilization <sup>1.1</sup>	1	ls	\$200,000	\$200,000
	Preliminary Grading/Subgrade Preparation <sup>1.2</sup>	1,357,000	sf	\$0.10	\$135,700
	GCL (Deck)	191,353	sf	\$0.75	\$143,515
	40 MIL VFPE Liner (Deck)	191,353	sf	\$0.80	\$153,082
	Geocomposite (Deck)	191,353	sf	\$0.65	\$124,379
	Final Grading/Vegetative Cover 18" Thick (Deck)	191,353	sf	\$0.30	\$57,406
	Evapotranspirative Cover (Slopes) <sup>1.3</sup>	123,342	cy	\$3.00	\$370,025
	Settlement Monument Installation	3	ea	\$500	\$1,500
	Construction Survey	1	ls	\$50,000	\$50,000
	<b>Item 1 Subtotal</b>				<b>\$1,235,607</b>
<b>2</b>	<b>FINAL COVER CONSTRUCTION QUALITY ASSURANCE<sup>2.0</sup></b>				
	Monitoring, Inspecting, Testing and Reporting	30	ac	\$10,000	\$300,000
	<b>Item 2 Subtotal</b>				<b>\$300,000</b>
<b>3</b>	<b>EROSION CONTROL (REVEGETATION)<sup>3.0</sup></b>				
	Dill Seeding	4.4	ac	\$2,100	\$9,240
	Hydroseeding	26.8	ac	\$2,500	\$67,000
	<b>Item 3 Subtotal</b>				<b>\$76,240</b>
<b>4</b>	<b>ENVIRONMENTAL CONTROL</b>				
	Monitoring and Control Systems <sup>4.0</sup>	-	-	-	\$0
	Raise LFG Well Heads <sup>4.1</sup>	30	ea	\$1,200	\$36,000
	Synthetic Boots (Deck)	4	ea	\$879	\$3,516
	<b>Item 4 Subtotal</b>				<b>\$39,516</b>
<b>5</b>	<b>DRAINAGE CONTROL SYSTEM</b>				
	Drainage Control System (incl. berms, downdrains, inlets, etc.) <sup>5.0</sup>	30	ac	\$12,000	\$360,000
	<b>Item 5 Subtotal</b>				<b>\$360,000</b>
<b>6</b>	<b>STRUCTURE REMOVAL/ABANDONMENT</b>				
	Demolition-Scale House/Salvage Scales <sup>6.0</sup>	1	ls	\$50,000	\$50,000
	Decommissioning of Environmental Control System <sup>6.1</sup>	-	-	-	\$0
	<b>Item 6 Subtotal</b>				<b>\$50,000</b>
<b>7</b>	<b>CONSTRUCTION MANAGEMENT</b>				
	Construction Management <sup>7.0</sup>	30	ac	\$12,000	\$360,000
	<b>Item 7 Subtotal</b>				<b>\$360,000</b>
	<b>TOTAL PRELIMINARY CLOSURE COST</b>				<b>\$2,421,363</b>

Footnotes\*:

- 1.0 Assumes all soil necessary for closure is stockpiled on site.
- 1.1 Includes necessary permits, health & safety plan, SWPPP, bid bond, office equipment, trailer, utilities, office support, general labor, and miscellaneous charges to be incurred by the contractor. Based on approximately 7% of total construction cost including final cover, gas system modification and drainage improvements.
- 1.2 Includes: scarifying and recompacting the interim cover and subgrade preparation, assumes 1' of material is in place.
- 1.3 Evapotranspirative cover is based on a 4-foot thick cover section, volume of earthwork assumes 1-foot of cover is in place.
- 2.0 Based on the Final Cover CQA procedures included with the permit revision.
- 3.0 Assumes the usage of native plant species that exhibits low long-term maintenance needs, thus eliminating the need for an irrigation system.
- 4.0 No cost is included in this category because the gas monitoring system, groundwater monitoring system and leachate collection system will be in-place at closure.
- 4.1 Assumes one LFG extraction well per acer will need to be extended through the final cover, wells in the liner area will also require a synthetic boot.
- 5.0 Costs for constructing downdrains, inlets, bench channels and top deck berm. Does not include perimeter drainage and basins, that will be in place prior to closure.
- 6.0 Cost assumes the removal of scales and the scale house, any required backfill, and disconnecting electrical components.
- 6.1 Assumes that no environmental control systems will be decommissioned/abandoned at closure.
- 7.0 Cost (including final report) for construction management services includes third party construction management throughout the duration of construction.

TABLE B

PROMONTORY LANDFILL LLC  
PRELIMINARY ANNUAL POST-CLOSURE MAINTENANCE COST ESTIMATE

Item No.	Description	Quantity	Unit	Unit Cost	Annual Cost
1	<b>EROSION CONTROL/VEGETATIVE LAYER MAINTENANCE</b>				
	Hydroseeding	0.5	ac	\$2,500	\$1,250
	Vegetative Layer/Final Grading Maintenance <sup>1.0</sup>	0.25	ac	\$136,608	\$34,152
	Quarterly Inspections <sup>1.1</sup>	16	hr	\$80	\$1,280
<b>Item 1 Subtotal</b>					<b>\$36,682</b>
2	<b>GAS COLLECTION/CONTROL/MONITORING SYSTEM <sup>2.0</sup></b>				
	Quarterly Inspections	64	hr	\$80	\$5,120
<b>Item 2 Subtotal</b>					<b>\$5,120</b>
3	<b>LEACHATE REMEDIATION/CONTROL</b>				
	Leachate Collection/Removal System Sampling <sup>3.0</sup>	2	ea	\$1,300	\$2,600
	Quarterly Inspections <sup>3.1</sup>	32	hr	\$80	\$2,560
<b>Item 3 Subtotal</b>					<b>\$5,160</b>
4	<b>GROUNDWATER MONITORING SYSTEM AND SURFACE WATER MONITORING</b>				
	Groundwater Sampling/Analysis/Inspections				
	Semi-Annual Sampling <sup>4.0</sup>	8	ea	\$200	\$1,600
	Lab Analysis <sup>4.0</sup>	8	ea	\$1,280	\$10,240
	Monitoring and Statistical Analysis	40	hr	\$80	\$3,200
	Surface Water Sampling/Analysis/Inspections <sup>4.1</sup>	40	hr	\$80	\$3,200
Repair and Maintenance (assume replacement of a well every 5 years)	1	ls	\$10,000	\$2,000	
<b>Item 4 Subtotal</b>					<b>\$20,240</b>
5	<b>DRAINAGE MAINTENANCE/IMPROVEMENTS</b>				
	Drainage Maintenance/Improvements	1	ac	\$12,000	\$12,000
<b>Item 5 Subtotal</b>					<b>\$12,000</b>
6	<b>REPORTING</b>				
	Annual Summary Report <sup>6.0</sup>	80	hrs	\$80	\$6,400
<b>Item 6 Subtotal</b>					<b>\$6,400</b>
7	<b>CORRECTIVE ACTION</b>				
	Corrective Action	-	-	-	\$0
<b>Item 7 Subtotal</b>					<b>\$0</b>
<b>SUBTOTAL PRELIMINARY ANNUAL POST-CLOSURE MAINTENANCE COST</b>					<b>\$85,602</b>
<b>TOTAL 30 YEAR PRELIMINARY POST-CLOSURE MAINTENANCE COST</b>					<b>\$2,568,063</b>

Footnotes\*:

- 1.0 Cover stabilization, settlement repair and erosion control. Cost based on closure cost estimate, converted to a cost per acre, includes mob, survey and all cover components.
- 1.1 Includes cost for quarterly inspections for cover erosion, settlement, fencing and vegetation.
- 2.0 All monitoring frequencies are in accordance with the Utah Administrative Code Rule R315-303.
- 3.0 Assumes that leachate generation will be a negligible following closure.
- 3.1 Cost includes quarterly inspections of the sumps and clean out pipes.
- 4.0 Assumes groundwater system consists of 4 wells each sampled semi-annually for a total of 8 samples per year. Cost includes semi-annual sampling and lab analysis of the groundwater monitoring system. Refer to Appendix M of the Permit Application for the groundwater monitoring plan and list of constituents.
- 4.1 Cost includes sampling, analysis and quarterly inspections of the surface water monitoring system.
- 5.0 Based on closure cost estimate, assumes 1 ac of drainage will be repaired each year.
- 6.0 Cost includes annual reports for gas collection/control system, leachate collection system and groundwater/surface water monitoring system.
- 7.0 The site is not currently constructed, therefore there are no known releases of contaminants.