

Riverbend Landfill Company

Operations Plan



13469 SW Hwy 18

McMinnville, OR 97128

Revised:

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Available Documents

- Site Layout Drawing
- Site Development Plan
- RLC Operating Permit
- Special Waste Management Plan
- Spill Prevention Control and Countermeasure Plan (SPCC)
- Storm Water Pollution Control Plan (SWPCP)
- Closure and Post-Closure Plan and Financial Assurance Plan
- Landfill Gas Management Plan
- MSE Berm Stability Monitoring Plan
- MSE Berm Inspection and Maintenance Plan

Review Record

The purpose of this Operations Plan is to describe the procedures for operating RLC. The Operations Plan is a summary of general information pertaining to permit and regulatory conditions with regards to facility operations. The document will be used by site operations and engineering personnel to ensure that disposal, maintenance, and other ancillary operations are conducted in a manner to ensure compliance with all permit and regulatory requirements. The Ops Plan will be reviewed periodically and updated as landfill conditions, equipment, procedures and/or regulations change.

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7/22/2013	Updated to reflect site operations and revised ADC Section.	Jeff O’Leary
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ACRONYMS

ADC	Alternative Daily Cover
ACM	Asbestos Containing Material
AST	Above-ground Storage Tank
C&D	Commercial and Demolition Debris
CED	Covered Electronic Devices
CFR	Code of Federal Regulations
CQA	Construction Quality Assurance
EC	Emergency Coordinator
ECYCLE	Oregon Electronics Recycling Program
EMD	Environmental Management Department
EMP	Environmental Monitoring Plan
gpm	gallons per minute
HDPE	High Density Polyethylene
LCRS	Leachate Collection and Removal System
LSCS	Leachate Secondary Collection System
LFG	Landfill gas
LFGTE	Landfill Gas to Energy
MSW	Municipal Solid Waste
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
O&M	Operations and Maintenance Manual
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
OP	Operating Plan
ORS	Oregon Revised Statutes
PCS	Petroleum Contaminated Soil
PVC	Poly-Vinyl Chloride
PFRP	Process to Significantly Reduce Pathogens
POTW	Publicly Owned Treatment Works
PPM	Parts Per Million
RLC	Riverbend Landfill Company
SCFM	Standard Cubic Feet per Minute
SPCC	Spill Prevention, Control, and Countermeasures Plan
SWDP	Solid Waste Disposal Permit
SWMP	Special Waste Management Plan
SWPCP	Stormwater Pollution Control Plan
TCLP	Toxicity Characteristic Leaching Procedure
WM	Waste Management, Inc.

1. Introduction

This Operations Plan (Ops Plan) for the Riverbend Landfill has been developed as required by the Oregon Department of Environmental Quality (DEQ) in order to:

- Comply with OAR 340-94-040(11)(b) and Section 7.3 of Solid Waste Disposal Permit No. 391 issued to RLC.
- Describe the methods of operation at RLC and planned development in accordance with all regulatory and permit requirements.

As such this plan can be used by site personnel to provide clarification and ensure proper site operations.

Operating provisions summarized by this plan will require reassessment and modification as the facility develops and changes. Experience may suggest alternative methodologies that would improve site operations. Therefore, the provisions of the Ops Plan shall be updated accordingly.

Regulatory compliance at the site will be considered based on applicable permit conditions and regulations which are cited or integrated herein. These provisions shall not be modified without the specific written approval of the Department. Design and operating provisions contained in this Ops Plan that are not specifically required by permit or regulations may be modified with the approval of RLC's appropriate authorities and will not constitute governmental compliance requirements.

1.1. *Permit Requirements*

Riverbend Landfill Company (RLC) is an operating subsidiary of Waste Management, Inc (WM) under Solid Waste Disposal Site Permit No. 345 (SWDP), issued by the DEQ on December 3, 1999, to accept municipal solid waste (MSW) and approved special waste. In accordance with Oregon Revised Statutes (ORS) 459.245(2), the SWDP is in effect until December 1, 2009. Although the SWDP has an expiration date of December 1, 2009, it has been administratively extended by the DEQ in compliance with Oregon Administrative Rule (OAR) 340-093-0070(6)(b)(C) (DEQ, 2012b).

The DEQ requires that the landfill be designed, constructed, operated, and closed in accordance with US Environmental Protection Agency (EPA) Subtitle D standards (40 CFR Part 258) as described by Oregon Administrative Rules (OAR) 340-93 and 340-94 and DEQ's Landfill Permit Application Instructions. The initial permit application document for Riverbend Landfill is contained in three volumes:

- **Landfill Permit Application for the Riverbend Sanitary Landfill, Volume I – Permit Application** (Sweet-Edwards/EMCON, 1990)
- **Landfill Permit Application for the Riverbend Sanitary Landfill, Volume II – Engineering Calculations** (Sweet-Edwards/EMCON, 1990)

- **Landfill Permit Application for the Riverbend Sanitary Landfill, Volume III – Construction Specifications and QA/QC (Sweet-Edwards/EMCON 1990)**

2. Landfill Location

2.1. Landfill Location

WM owns and operates RLC, located at 13469 SW Highway 18, approximately three miles southwest of McMinnville, Oregon.

The permitted landfill footprint is approximately 87.4 acres which has been used for, or are available for solid waste disposal in eight modules, designated as Modules (Mod) 1, 2, 3, 4, 5, 6, 7, 8 and 9 which includes the Mechanically Stabilized Earthen (MSE) Berm. The landfill is bordered on the South by the Yamhill River, farmlands and forest to the north and west, and an unnamed tributary of the South Yamhill River on the East. Vehicular traffic enters the landfill property at the north side from Hwy 18.

The landfill is protected from flooding of the South Yamhill River by a floodway control berm located along the south and east portions of the north boundaries of the landfill. The flood control berm has been constructed to a nominal elevation of 145 feet, which exceeds the design 100-year flood elevation.

2.2. Modules 1, 2, and 3

Modules 1, 2, and 3 were constructed sequentially from 1982 to 1993. These Modules were developed successively from west to east. Final cover and a landfill gas collection system were constructed over the southern side of these modules during 1994. The slopes of the area are currently covered with a combination of 10-mil thick reinforced polyethylene plastic and clean soil with vegetation for stormwater control. The extent of the final cover and gas collection system are described in:

- **Construction Report for Closure of Modules 1, 2, and 3, Riverbend Landfill (EMCON 1995)**

2.3. Module 4

Module 4 was built in 1994 east of the south part of Module 3. It contains a double composite liner system, a primary leachate collection and recovery system (LCRS) and a leachate secondary collection system (LSCS). A ridge is aligned from the north to south along the approximate centerline of Module 4. The LCRS and LSCS consist of two parallel trench systems aligned from the north to south on each side of the central ridge.

The two LCRS and LSCS trenches in Module 4 drain into two sumps located on the south side of the Module. The east sump drains by gravity to the west sump. In addition, the LCRS in Modules 1, 2, and 3 (see above) and Module 5 (see below) drain to a LCRS sump. The west sump contains pumps to remove the liquids and conveys it to the leachate pond, which represents the storage portion of the on-site leachate management

system for the landfill. Design details for Module 4 are found in the following references:

- **Engineering Design Report, Riverbend Landfill: Module 4 Liner and Module 5 Excavation, McMinnville, Oregon** (EMCON, July 1993)
- **Construction Designs, Riverbend Landfill: Module 4 Liner and Module 5 Excavation, McMinnville, Oregon** (EMCON, July 1993)
- **Contract Documents, Riverbend Landfill: Module 4 Liner and Module 5 Excavation, McMinnville, Oregon** (EMCON, July 1993)
- **Design Clarification, Riverbend Landfill: Module 4, McMinnville, Oregon** (EMCON, August 1993)
- **Construction Quality Assurance (CQA) Manual, Riverbend Landfill: Module 4 Liner and Module 5 Excavation, McMinnville, Oregon** (EMCON, July 1993)
- **Geosynthetics Contract Documents, Riverbend Sanitary Landfill: Module 4 Liner and Module 5 Excavation, McMinnville, Oregon** (EMCON, July 1993)
- **Construction Report, Riverbend Sanitary Landfill: Module 4 Liner and Module 5 Excavation, McMinnville, Oregon** (EMCON, November 1993)

2.4. Module 5

Module 5 was built during 1995 north of Module 4 and east of the north part of Module 3. Design and construction details for Module 5 are in the following references:

- **Engineering Design Report, Riverbend Landfill: Module 5 McMinnville, Oregon** (Dames and Moore, February 22 1995)
- **Construction Drawing RB -1 to RB-14: Sanifill Northwest, Riverbend Module 5, McMinnville, Oregon** (Dames and Moore, April 4, 1995)
- **Technical Specification, Riverbend Landfill: Module 5, McMinnville, Oregon** (Dames and Moore, 1995)
- **Construction Quality Assurance Manual, Riverbend Landfill: Module 5, McMinnville, Oregon** (Dames and Moore, 1995)
- **Construction Quality Assurance, Riverbend Landfill: Module 5 Construction, McMinnville, Oregon, Oregon, Volumes I and II** (Golder, September, 1995)

Module 5 is contiguous with Module 4. A ridge is aligned from north to south along the approximate centerline of Module 5. This ridge is a continuation of the Module 4 ridge. The LCRS and LSCS in Module 5 consist of two parallel trench systems aligned on either side of the central ridge. The LCRS and LSCS of Module 5 drain by gravity into the LCRS and LSCS of Module 4. Additionally, the LCRS and LSCS in Module 5 have been designed and constructed so that future planned modules to the north and Modules 1, 2, 3, and 5 could also discharge into these systems.

2.5. Modules 6 and 7

GeoSyntec Consultants designed module 6 and 7, which were constructed in 1997 and 1998 respectively. Design and construction details for Modules 6 and 7 are contained in the following references:

- **Design Report, Modules 6 and 7 Expansion** (GeoSyntec Consultants, March 1997)
- **Construction Drawings, Module 6 Construction** (GeoSyntec Consultants, April, 1997)
- **Technical Specification for the construction of Module 6** (GeoSyntec Consultants, April 1997)
- **Construction Quality Assurance (CQA) for Module 6 Construction** (GeoSyntec Consultants, March 1997)
- **Construction Drawings, Module 7 Construction** (GeoSyntec Consultants, February 1998)
- **Technical Specification for the Construction of Module 7** (GeoSyntec Consultants, April 1998)
- **Construction Quality Assurance (CQA) for Module 6 Construction** (GeoSyntec Consultants, March 1998)

Module 6 adjoins the east edges of Modules 4 and 5, and Module 7 adjoins the east edge of Module 6. Both Modules have double composite liners and incorporate both LCRS and LSCS. These Modules were constructed with side slopes of 2 Horizontal (H) to 1 Vertical (V) against the flood control berm compared to maximum slopes of 3(H) to 1(V) in prior modules. As an associated feature, a geosynthetic clay liner (GCL) was used in lieu of low permeability soil, in the primary composite liner on the side slopes.

Module 7 is sloped to drain into Module 6 that slopes to a sump on the south side of the landfill. This sump is equipped with pumps that transfer liquids from the LCRS and LSCS to the leachate lagoon.

2.6. Module 8

Module 8 has been constructed essentially as separate modules 8A, 8B, 8C and 8D with associated overliners. Reference Module 8 Engineering Design and Construction files for project documentation.

Module 8 (A, B, C and D) has been constructed as four separate construction events from 2002 to 2009, essentially adding additional liner from the east to the west. Each module includes a similar liner system to that in Module 4-7 with the following modifications. Side Slopes – Due to the module configuration the side slope areas were not steepened in the areas of Module 8.

Soil Composite – Module 8A included a low permeability soil layer composite utilizing 2-feet of re-compacted soil liner on the cell floor areas. Modules 8C and 8D were modified to utilize geocomposite soil liner (GCL) material.

2.7. Module 9-Mechanically Stabilized Earthen Berm

Module 9 and mechanically stabilized earthen (MSE) berm is located adjacent to existing Module 1 and the western portion of Module 8D and includes Phase 1 of the MSE berm. The Phase 1a MSE berm is approximately 40 feet high along the western portion of Module 8D and decreases in height to ramps located at the northwestern and southwestern ends. The outside slope of the MSE berm is vegetated and the inside slope

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consists of a cohesive engineered backfill material. The width at the top of the MSE berm is 34 feet and accommodates a perimeter drainage ditch, two-way road traffic (highway vehicles only), and the anchor trench for the composite liner and the future final cover. The outside slope of the MSE berm is 1 (H) to 3 (V) whereas the inside slope is generally 1 (H) to 1 (V) or flatter.

To monitor the performance of the MSE berm, an instrumentation program has been developed and implemented by the Landfill. Instrumentation consists of:

- **Slope Inclinometers** – Slope inclinometers (SI) are used to measure the magnitude and rate of shear strain to provide information regarding slope movement.
- **Vibrating Wire Piezometers** – Vibrating wire piezometers (PZ) are used to measure the pore pressure at a specific depth in the soil stratum.
- **Extensometers** – Extensometers (EX) are used to monitor vertical displacement (settlement or heave) in the foundational soil and MSE berm.

Surface water runoff from the Mod 9 slopes are intercepted by ditches that flow onto downchutes. The downchutes also collect water runoff from the top deck. The downchutes discharge into energy dissipater structures which direct the runoff into the perimeter ditch. The perimeter ditches discharge into a drop inlet/headwall which direct the flow into pipes. The pipes direct the water to surface water ponds.

Leachate from the Mod 9-MSE is removed by and LCRS sump system and conveyed to the existing landfill leachate pond. A SCADA system monitors the liquid head on liner compliance requirements.

3. Site Personnel

This section provides information on staffing, training, emergency responses, health and safety, and posted information.

3.1. Staffing

At least two RLC employees are required to be onsite during business hours to ensure safe and efficient operations. The minimal duties and responsibilities of the various staff positions are summarized in Table 3-1.

Table 3-1 LANDFILL PERSONNEL DUTIES AND RESPONSIBILITIES

Job Title	Duties and Responsibilities
District Manager	Provide administrative oversight to all landfill and recycling activities, communications, personnel, operations, construction, compliance and office administration.
Operations Lead	Manage and direct daily landfill operations and supervise field employees, provide training for new employees in operations policies, equipment usage, equipment maintenance and operation, and safety procedures, special waste acceptance, fill sequencing and road construction.
Office Manager	Provide administrative support to manager's, supervise clerical staff and gate attendants, oversee the on-site accounting and computer systems and act as site payroll/benefits administrator.
Scale Attendant	Inspect, weigh/measure incoming loads, direct traffic to appropriate disposal and recycling areas, and collects disposal fees.
Laborer	Assist in all operational activities, control on-site traffic, check incoming loads, monitor waste disposal operations, conduct routine load inspections, and police recycling and restricted access areas.
Safety Manager	Implement health and safety programs and provide oversight during emergency situations.
Site Engineer	Responsible overall engineering for the landfill, including, gas systems, stormwater, fill sequencing and road construction.
Environmental Protection Specialist	Oversees environmental issues and compliance for the landfill, performs site inspections, investigations and permitting, interacts with regulatory agencies.
Mechanic	Assist in all operational activities. Inspect, maintain and repair landfill equipment.
Operator	Assist in all operational activities, operate light and heavy landfill equipment and monitor waste loads as they are unloaded. Responsible for grading road and tipping area.
Technician(s)	Monitors the leachate conveyance and landfill gas system. Performs sampling duties, inspection duties and performs maintenance to various landfill components.

3.2. Training

Training is considered an ongoing process in each employee's development. Safety policy updates are addressed at monthly meetings. Employees are also encouraged to further their education by attending independent courses.

RLC personnel are trained in the specific tasks that are required to maintain a safe working environment and fulfill their job responsibilities and duties. In addition, designated personnel are trained in load checking procedures, including identifying, handling, and managing special wastes. Training is documented in the employee manuals and personnel files and complies with applicable federal and state OSHA requirements.

The following is a list of training topics required for each employee:

- Bloodborne Pathogens
- Confined Space Entry
- Emergency Action and Fire Prevention Plan
- Hazard Communication
- Lockout / Tag out
- Personnel Protective Equipment
- Site Orientation

3.3. Emergency Response

An Emergency Action Plan is in place and located at the Riverbend Landfill. Detailed emergency information is contained in **Section 9, Contingency Plan**.

3.4. Health and Safety

Stringent health and safety procedures are a priority at Riverbend Landfill. Corporate health and safety procedures provide the necessary information to employees. It is the Operations Manager's responsibility to ensure that personnel receive health and safety training relative to the specific hazards of the landfill.

Additional training may be required for some site personnel. The Operations Manager may designate the following training:

- First Aid and CPR;
- Fire Fighting; and,
- Specific landfill equipment operations.

Meetings are held at least monthly to discuss issues pertinent to the safety of employees and the general public. However, any safety concerns must be reported to site management as soon as possible.

In addition to training, each new employee is familiarized with the following but not limited to:

- Landfill Rules for Employees and Customers;
- Corporate Health and Safety Policy;
- Emergency Action Plan;
- Operations Plan; and,
- Site Health and Safety Plan.

3.5. Posted Information

The following information is available at the landfill facility:

- Copy of all operating permits;
- Emergency procedures and telephone numbers;
- Location of fire extinguishers;
- Location of first aid kits;
- Right to know information;
- OSHA 300 Log

4. General Facility Operations

4.1. Security

Various means of security at RLC help to monitor and restrict access to the site. During operating hours, the Scale Attendant and Operators monitor access to the site and notify the management of unauthorized entry.

A combination of natural and engineered features restricts access when the landfill is closed. Natural features including surrounding woodland, streams and rivers restrict vehicle access to a single entrance road from Hwy 18. Engineered features include fencing and steel gates. Gates are closed and locked when the landfill is not operating. Security cameras are located at the scale house and used as needed.

RLC current operating hours are:

- Monday through Friday 6:00 AM to 4:30 PM
- Saturday 7:00 AM to 3:00 PM
- Closed Sunday. With exception of limited operations

4.2. Waste Acceptance Procedures

All customer vehicles enter RLC via the main entrance on Hwy 18 to ensure that traffic and waste receiving is controlled. The Scale Attendant performs an initial screening to ensure the waste is acceptable and to determine the materials origin. Based on inbound material type, the driver is directed to the appropriate area for unloading. RLC operators and personnel visually inspect loads to ensure appropriate disposal and for any prohibited waste.

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RLC accepts solid waste, and special waste under Solid Waste Disposal Permit #345. Acceptable waste for Riverbend is found under OAR 340-093-030 (91) and OAR 340-093-190.

"Solid Waste" means all useless or discarded putrescible and non-putrescible materials, including but not limited to garbage, rubbish, refuse, ashes, paper and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, useless or discarded commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid materials, dead animals and infectious waste. The term does not include:

- (a) Hazardous waste as defined in ORS 466.005;
- (b) Materials used for fertilizer, soil conditioning, humus restoration, or for other productive purposes or which are salvageable for these purposes and are used on land in agricultural operations and the growing or harvesting of crops and the raising of fowls or animals, provided the materials are used at or below agronomic application rates; or
- (c) Woody biomass that is combusted as a fuel by a facility that has obtained a permit described in ORS 468A.040.

4.3. Management of Special Wastes

Because RLC is permitted to accept certain DEQ approved Special Wastes, the site is required to maintain a Special Waste Management Plan (SWMP). Special Waste, due to its unique characteristics, requires special handling. Such wastes may present personnel safety hazards, create odor and vector problems, generate excessive leachate, lead to excessive settlement, puncture or tear the landfill liner, pose a fire hazard, or increase the toxicity of landfill leachate. The SWMP describes the acceptance, waste characterization, handling, storage and disposal procedures of these materials. Common examples of special waste accepted at RLC include tires, vehicle batteries, motor oil, petroleum contaminated soil, appliances, and electronic wastes.

Upon arrival at the facility, loads of special waste are inspected for conformity with the approved "Profile" beginning at the scale house, and again visually during unloading. Loads of special waste are screened for the presence of unacceptable waste via visual inspection and/or questioning the driver about the load. Special waste loads that do not conform to the approved Profile may be rejected. Unacceptable wastes of any kind are rejected (See Section 4.4 Prohibitions).

Certain special wastes such as contaminated soil require a completed waste profile and special waste permit for acceptance at RLC. Special wastes typically have additional Waste Management restrictions that must be met prior to disposal. In order to prevent unacceptable waste from entering the facility, the facility requires that all qualifying special waste streams must be profiled using a Generator's Waste Profile form. All relevant information must be accurately and completely filled out, and the generator must sign a certification statement prior to review and processing. The completed Profile is reviewed

to determine whether the special waste may be accepted at the facility and to provide any specific handling conditions that may be required.

The Profile is used to describe special and industrial waste streams including those containing contaminated soils and asbestos waste. Additional waste or industry specific profile forms, or modifications to the Generator's Waste Profile form, may be developed and utilized upon Waste Management and regulatory approval.

4.3.1. Pesticide Containers

Empty rigid pesticide containers will be accepted for disposal or recycling only if they have been properly decontaminated in accordance with OAR 340-109-020. Empty non-rigid pesticide containers (bags) need not be decontaminated before acceptance and disposal.

4.3.2. General Recycling

4.3.3. Waste Tire Recycling

Whole waste tires that may be received in the inbound wastes at RLC are stored on-site for later removal by a waste tire carrier for recycling purposes. A maximum of 2,000 whole tires can be stored in a designated tire storage areas because a continuous contract is maintained with the waste tire carrier. Should the occasion arise in which RLC did not have a contract with a waste tire carrier, then a maximum of 100 whole tires may be stored on-site.

4.4. Prohibitions

The following activities are prohibited by the RLC Solid Waste Disposal Permit#345:

- Hazardous waste disposal--RLC must not accept hazardous waste including hazardous waste from conditionally-exempt small quantity generators. Hazardous wastes are defined in ORS 466.005 and OAR 340-101.
- Liquid waste disposal--RLC must not knowingly accept liquid wastes that do not pass the paint filter test performed in accordance with EPA Method 9095.
- Vehicle disposal--RLC must not accept discarded or abandoned vehicles for disposal.
- Used oil disposal--RLC must not knowingly accept used oil for disposal.
- Battery disposal--RLC must not knowingly accept lead-acid batteries for disposal.
- Tire disposal--RLC must not accept waste tires for disposal.
- Large appliance disposal--RLC must not knowingly accept for disposal large metal jacketed residential, commercial and industrial appliances such as refrigerators, washers, stoves and water heaters.
- Open burning--RLC must not conduct any open burning at the site.

Prohibited wastes discovered at the facility prior to being landfilled are isolated and removed immediately. Prohibited wastes discovered in the landfill are handled appropriately given the nature of the wastes and the safety issues surrounding potential recovery. Non-hazardous prohibited waste are transported to an authorized disposal or recycling facility within ninety (90) days unless otherwise approved by the Department.

In the event that a waste is discovered, or suspected to be hazardous, the waste will be isolated, identified (if possible) and removed by a third party within ninety (90) days, unless otherwise approved by the Department. Storage and transportation will be carried out in accordance with the rules of the Department. Unacceptable waste tracking is available upon request.

4.5. Random Load Inspections

The frequency of random inspections may be based on the type and quantity of wastes received daily and accuracy and confidence desired in conclusions drawn from inspection observations. Subtitle D does not provide statistical parameters therefore; a reasoned, knowledge-based approach may be taken.

Riverbend Landfill has a program to detect and prevent the disposal of prohibited wastes. The program includes inspections of incoming loads and other screening methods, appropriate record keeping and prohibited waste training of personnel.

Random inspections are performed on a regular basis using the following procedures;

- Perform a random load inspection at the active landfill area;
- Inspect the waste from prohibited or special wastes and other items of concern;
- Report any discovered, prohibited wastes to the Operations Supervisor/Manager;
- Manage prohibited wastes as described in Section 4.4; and if no prohibited waste is identified, dispose of the waste at the active working face.

4.6. Salvaging and Scavenging

Salvaging and scavenging are not permitted at RLC. These practices are controlled through site security. During operating hours, landfill personnel visually police the landfill to prevent scavenging. When the landfill is closed the access gates to the landfill are locked to prevent unauthorized entry.

4.7. Litter Control

To contain litter on site, temporary and permanent litter fences are used around the perimeter of the landfill and downwind in the predominant wind direction. Additionally, portable litter fences may be used in the active fill area. Maintaining a small working face, sufficiently compacting the waste, and applying proper daily cover minimizes litter problems. Litter is periodically hand picked on the landfill, the entrance road, and if needed, from Hwy 18 near the site entrance.

4.8. Vector and Bird Control

On-site populations of disease-carrying organisms (vectors) must be controlled for the protection of public health and the environment. Minimizing the area of the exposed waste as required by daily operations is important for vector control.

The predominant bird species at RLC include seagulls, starlings, and crows. Birds are controlled by the use of noisemakers, whistles and falconry or other approved measures as necessary to prevent them from becoming a nuisance.

4.9. Inclement Weather Operation

Inclement weather includes unusually high precipitation, wind, and drought. These conditions may require special operation procedures to accommodate incoming wastes.

Access roads and the tipping area are sensitive to inclement weather and must be maintained to minimize potential impacts. Haul roads, ditches, culverts, and drains are maintained free of obstructions, and grades to promote drainage to accommodate stormwater flows.

During the typically dry summer months, grading, watering, and applying a dust suppressant on the access roads when necessary to control dust. Application water may be required to control dust during earthwork activities in soil cover work areas.

4.10. Truck Washing Facility

Currently RLC does not have a truck washing facility or designated area. An air gun is used to remove dirt and debris from equipment and a pressure washer is used to clean heavy equipment on the landfill. Any process water generated from the washing process is minimal and drains into the lined area of the landfill.

An onsite wheel wash is available and may be used by vehicles exiting the landfill, which reduces track-out issues on Hwy 18.

4.11. Facility Operation Equipment

Equipment is required to place, compact and cover the waste and to maintain the roads and ditches. Each piece of equipment is maintained to perform its intended function and support uninterrupted landfill operations. Emergency and backup equipment is maintained and is accessible. Table 4-1 provides a general equipment inventory. This inventory contains redundancies, as not all the equipment is required for site operations.

Preventative maintenance, routine servicing, and frequent equipment inspections are conducted to minimize equipment downtime and costly repairs. This program contributes to safe and efficient equipment operation.

Equipment in use is inspected daily by operators. Any problems encountered are immediately corrected or reported to the operations Supervisor/Manager and the maintenance department. The maintenance department routinely services equipment to maintain safe and efficient operations. Any equipment that cannot be maintained to operate in a safe and efficient manner is placed out of service until it is deemed acceptable for use.

**Table 4-1
Major Operations Equipment and Function**

Equipment	Function
Compactors	Daily compaction of waste in landfill and pushing and grading waste

Dozer(s)	General earthwork, road construction, pushing and grading of waste and cover materials
Wheel Loader	General earth work, moving soil cover and utility purposes
Excavator	Construction, cover and utility use
Off-road truck(s)	Moving cover material and utility purposes
Water Truck	Dust control and fire fighting assistance
Fuel Truck	On-site fuel and oil for equipment
Tipper	Material loading and landfill disposal

4.12. Water Supply

Riverbend Landfill maintains water tanks for storage, water trucks and well water for landfill operations. Sufficient water is provided for the following purposes:

- Fire Protection: A water supply is maintained for fire control on the landfill.
- Dust Suppression: Adequate water is provided for dust suppression. Typically, the site water truck is used for spraying access and haul roads to minimize dust.
- Vegetative Requirements: Seeded areas are watered as needed to ensure germination. Watering requirements are dependent on time of planting, seasonal moisture variation and other factors.

4.13. Public View

Public view of the active landfill operations is screened by trees, berms and the surrounding landscape. Occasionally, the active operations area will be visible from the highway and local roadways, however efforts will be made to minimize tipping in these locations. The screening berms and trees are intended to reduce the visibility of current and future landfill activities.

4.14. Management of Transfer Containers

Transfer containers at RLC generally consist of intermodal containers and transfer trailers. Transfer trailers are typically managed by private trucking companies.

RLC transfer containers are located and staged in areas for safe and efficient operations. Containers are maintained as needed to ensure a safe environment and to prevent malodors, unsightliness, and attraction of vectors. Any container requiring cleaning or repair is removed from service and repaired.

5. Active Operations

5.1. *Module features Relevant to Operation*

Modules 4 to 9 are available for landfill disposal operations. These modules were all designed and constructed to Subtitle D standards and incorporate the following base liner components, from top to bottom:

- Operations layer;
- Primary leachate collection and removal system (includes separator and cushion geotextiles);
- Primary geomembrane liner;
- Primary low-permeability (1×10^{-7} cm/sec) soil liner;
- Secondary leachate collection system;
- Secondary geomembrane liner; and
- Subgrade soil.

As noted in Section 2, Modules 6 and 7 were constructed with side slopes of 2 (H) to 1 (V) against the flood control berm. For stability reasons, the operations layer was not placed over the entire side slopes when these Modules were constructed. In general, the layer was placed to a vertical height of approximately 10-feet above the toe of the slope. The geotextile component of the primary LCRS is exposed over the remainder of the slope.

Additional operations layer material will be placed on the side slope only after waste has been placed against the existing operations layer. Until then, the exposed geotextile will be covered with a temporary covering (e.g. 10-mil thick reinforced plastic, or equivalent, liner) to protect the geotextile from ultra-violet degradation.

Additional operations layers must be placed by relatively light equipment (e.g. bulldozer) operating in an up-slope down-slope manner (the equipment must not operate in a cross slope direction). In addition, the equipment should not operate entirely on the side slope. The rear end of the equipment should remain supported on the waste at all times. These operational constraints are designed to prevent the side slope components (geotextile, geomembrane, GCL) from either being over-stressed or being pulled out of the anchor trench.

After waste has been placed to the top of the flood control berm, stormwater ditches will be constructed on the landfill side of the berm to control stormwater run-off from the exterior waste slopes.

5.2. *Waste unloading*

Commercial vehicles are directed by the scale attendant and by signs along the haul roads to the active working face. Unloading takes place as close as possible to the working face to minimize landfill equipment efforts, litter control needs and daily cover requirements. A RLC employee will be responsible for directing vehicles to the public and commercial unloading area. Heavy equipment will be used to move the waste from the tipping location to the working face.

5.3. Initial Landfilling

The first lift over newly constructed areas consists of municipal solid waste and special waste that is generally devoid of materials (such as demolition material, lumber, re-bar, or other rigid or bulky materials) that could penetrate or puncture the leachate collection system and/or liner. Operating equipment is restricted to travel on the waste layer only, extending the lift out over the prepared liner/collection system at minimum height of five (5) feet (loose state). Moderate compaction is applied to only the top portion of the first lift (i.e., compaction should not occur on the sloped face of daily cells constituting the first lift).

If a traffic path on the operations layer will be used more heavily, the operations layer shall be built up to between 2 and 3 feet thick along the traveled way. Heavy point-load equipment (such as compactors or wheel loaders) will have a minimum of five (5) feet of uncompacted disposal material above the operations layer before operating on the landfill.

5.4. General Landfilling

Standard waste placement methods will be practiced when waste is placed in any module including the MSE berm area(s). After the initial lift has been placed, lifts will be placed in thin layers and compacted as described below.

5.5. Waste Compaction

Waste is compacted continuously during the placement process. This is accomplished using the following procedure:

- Place a thin layer of waste as evenly as possible;
- Place and compact waste in flat areas to minimize the compactive effort of the equipment;
- Make three to five passes over the waste with a compactor;
- Separate large or bulky wastes to prevent bridging of the surrounding waste; and,
- Place large and bulky wastes in the lower portion of the advancing lift, and compact to the maximum extent possible by compacting equipment

5.6. Active Working Face

The size of the working face is minimized to the extent possible to reduce potential problems associated with vectors, odors, litter, and stormwater infiltration. The outer face of placed waste will be no steeper than 3.5 (H) to 1 (V) to ensure the stability of the waste and liner system.

5.7. Cover Soil Placement

5.7.1 Daily Cover

Daily cover will be placed on in-active working faces that will not receive fresh waste for more than 6 hours. Daily cover will be applied using:

- A minimum of six (6) inches of clean soil; or

- ADC materials in compliance with minimum thicknesses identified in 5.7.2.1 and 5.7.2.3

5.7.2 Alternative Daily Cover (ADC)

Approved ADC materials are generally used at RLC in lieu of virgin soils for cover or base layers within the landfill. There are two classifications of ADC materials with respect to DEQ per-ton solid waste disposal fees defined in OAR 340-097-120 (8);

Per-Ton Solid Waste Disposal Fee (Exempt)

ADC Qualified Materials used in compliance with OAR 340-097-120 (8) (C) (f) in lieu of virgin soil as alternative daily cover or daily cover soil repairs.

Per-Ton Solid Waste Disposal Fee (Non-Exempt)

ADC Qualified Materials used in lieu of virgin soil as base for interim covers, top decks and stormwater management structures.

5.7.2.1 Approved Soil Like ADC (Per-Ton Solid Waste Disposal Fee Exempt)

Wherever practical, the following approved ADC material are used to cover the top deck and/or the sloped portion of the active face using the following compacted minimum thicknesses:

Petroleum contaminated soil (PCS)	6-8 inches thickness
Sludge	6-8 inches thickness

5.7.2.2 Approved Soil Like ADC (Per-Ton Solid Waste Disposal Fee Non-Exempt)

Approved ADC Soil Like materials will also be used in other non-daily cover uses. These uses include but are not limited to;

- Interim Cover Base Layer;
- Top Deck Base Layer; and
- Stormwater management structures

5.7.2.3 Approved Synthetic ADC Materials (Per-Ton Solid Waste Disposal Fee Non-Exempt)

- Geosynthetic tarps/panels

Geosynthetic panels (such as black non-woven geotextile) may be used to cover the sloped portion of the working face towards the end of the day's operation (providing that there are no strong winds present).

5.7.2.4 Approved Other Type ADC Materials (Per-Ton Solid Waste Disposal Fee Exempt)

Boiler Ash may be used on the interior slopes of the active face applied in 6 inch thick. Boiler Ash from specific facilities is only utilized as ADC following approval from the Department. When boiler ash is used as daily cover, a fire barrier 6 inches thick or more is constructed from compacted soil, PCS, or a similar non-combustible mineral material at least once every three (3) weeks in the active disposal area.

Boiler Ash from the following facilities is approved for use as ADC:

- SP Newsprint, Newberg, OR

5.7.3 RLC Fee Handling and Measurement for Alternative Daily Cover Uses

As volumes of ADC eligible materials are accepted at the facility, RLC will account for and pay all applicable DEQ fees and Taxes. In the quarterly disposal report to the agency, RLC will report a credit for all OAR 340-097-120 (8) (C) (f) exempted volumes of ADC materials used and documented in the field on the daily ADC usage log forms.

ADC Area Covered Measurement;

Exempt ADC usage will be documented on the Daily log form using the following method;

Following placement of the ADC materials on the working face area, the dimensions (length and width) of the area(s) on the top deck and slope for each type of ADC material will be measured by landfill personnel by stepping off the distances using 3-feet as a basis for each step, or by using a measurement wheel. The dimensions for each type of material will be recorded onto an “ADC Usage Tracking Form” (Form). A copy of the Form is provided as Attachment A to this operations plan.

ADC Volume Calculation;

The volume of the ADC soil like materials will be calculated by assuming an average thickness as indicated in 4.5.2.1 and 4.5.3 plus 1 inch. This volume will be converted to cubic yards and will be recorded on the Form.

Soil Like ADC tonnage Calculation;

The tonnage of the ADC soil material is also calculated on the Form by assuming a conversion factor of 1.4 tons per c.y. for Soil Like Materials.

“Other” ADC Tonnage Calculation;

Because of the limited quantities of “Other” ADC materials like Auto Shredder Residue, actual tonnages will be calculated using an average density of 0.47 tons per c.y.

5.7.4 Intermediate Cover (Per-Ton Solid Waste Disposal Fee Non-Exempt)

Intermediate soil cover is placed on the top surface of each advancing lift and also on the “daylight” face along the outside perimeter of each advancing lift whenever a daily cover surface will remain exposed for an extended period of time.

5.7.4.1 Top Deck Intermediate Cover

The intermediate cover layer on the top deck of the advancing lift shall be a minimum of twelve (12) inches (including 6 inches daily cover layer) of compacted soil or approved ADC.

5.7.4.2 Side Slope Intermediate Cover

The intermediate cover layer, on exterior and interior side slopes shall be a minimum of 18 inches.

The exterior side slope intermediate cover is made up of 6 inches of daily cover, up to 6 inches of ADC, and 6 inches of clean soil for a total of 18 inches of compacted cover.

The interior side slope intermediate cover is made up of 6 inches of daily cover, and up to 12 inches of ADC and/or clean soil” for a total compacted thickness of 18 inches.

The intermediate cover on top decks shall generally be sloped at a minimum of 1-2% to prevent the significant ponding of stormwater. Areas covered with intermediate cover that is exposed for twelve (12) months or more shall be seeded and conditioned to develop appropriate vegetation or have 8 mil sewn poly cover applied.

Refuse side slopes under the intermediate cover shall be constructed no steeper than the grades shown on the plans which were generated from recommendations outlined fill sequencing plan. The report recommended maximum temporary refuse slopes of 4H:1V

Automotive shredder residue may be utilized as a foundation layer for the intermediate cover provided that it is covered by at least six (6) inches of soil within 48 hours.

5.7.5 Final Cover

Upon approval from the DEQ, final cover activities shall commence within sixty (60) days (during the construction season) after final fill grades are reached in any contiguous thirty (30)-acre area (weather permitting). In the event of inclement weather, final cover shall be applied as soon as possible. Construction of the final cover shall conform to the DEQ requirements specified in the solid waste permit or as agreed upon with the DEQ. The final landfill cover will consist of a minimum total cover thickness of thirty-six inches broken down from top to bottom:

Vegetation - a mixture of native and other acceptable species that establish themselves quickly, require a minimum of maintenance, are erosion resistant, and have root depths less than the thickness of the topsoil layer.

Vegetative Soil – a minimum of eighteen inches of vegetative soil composed of local or imported soils and amendments (such as fertilizers or composted yard waste) capable of supporting vegetation and meeting the requirements of the ET Cover plan (Alternative Final Cover Report, August, 2006).

Underlying Soil – a minimum of eighteen inches of existing intermediate cover soil.

Cover soils are acquired from on and off-site clean excavated soils containing no waste material.

5.8 Interim Cover

A uniform and compacted interim cover, at least 18 inches thick, will be placed in areas not intended to receive additional waste for greater than 120 days, and when an area reaches final grade. The interim cover will be placed to minimize surface water infiltration and interim covers using strictly soil will be vegetated if exposed for two years. For all interim cover compositions, the cover will be maintained either until the final cover system is constructed, or additional waste is placed in the area. Adequate interim covers include, but are not limited to the following:

- Clean soil;
- Peat;
- Compost; and
- A combination of the above used in conjunction with tarps

5.9 Fire Prevention

No open burning of any material is allowed at RLC. The landfill operating procedures are designed to minimize the potential for fire. If a hot load were inadvertently unloaded at the working face, the burning materials would be excavated, removed from the active fill area, and extinguished. Landfill personnel will extinguish fires that occur on the landfill site promptly.

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Fire protection procedures for landfill equipment include frequently removing debris from undercarriages and engine compartments, repairing oil and fuel leaks, and providing portable fire extinguishers in the cab of each vehicle. All facility buildings, including the scale house and recycling buildings are also equipped with fire extinguishers for extinguishing small fires. The site maintains a water truck that may be used to extinguish small fires.

6 Environmental Management and Monitoring

The environmental monitoring plan (EMP) contains detailed monitoring procedures for Riverbend Landfill. The purpose of the environmental monitoring is to protect the public, landfill personnel, the environment, and WM assets. The EMP includes inspection, maintenance and monitoring requirements for groundwater, soil vadose zone, leachate, secondary containment systems, stormwater, landfill gas, and air quality. The following is a brief synopsis of each element

6.1 Groundwater Monitoring

A site-wide groundwater monitoring network is in place at RLC. The monitoring network is designed to evaluate water quality and groundwater flow patterns within the uppermost water-bearing geologic units. The monitoring networks' primary function is to detect potential landfill impacts.

Groundwater monitoring well pairs (a shallow and deep well) are used to monitor the uppermost silt-clay unit and the lower sand-gravel unit.

6.2 Soil Vadose Zone Monitoring

The soil vadose zone is monitored in the poplar tree reuse area as part of the management plan of the area. The monitoring system ensures that the poplar trees take up all the applied leachate and the zone of saturation does not impact groundwater.

6.3 Leachate Collection and Removal System

6.3.1 LCRS Overview

Leachate is generated when water percolates through or purges out of disposed material. This percolation can occur when precipitation infiltrates directly into the waste and/or when moisture in the material (whether present before or after landfilling) filters or leaches out.

Leachate generation is minimized by using best management practices (BMP's) at RLC these include, but are not limited to:

- Maintaining positive drainage on top of the landfill to minimize infiltration. Runoff from covered areas of the landfill should be directed to pipes/swales that will convey the runoff away from the landfill. Precipitation that falls on the active face is managed as leachate and not directed off the landfill;
- Maintaining surface water drainage around the landfill to prevent surface water run-on into the active disposal area. Inspect and if needed re-grade any areas surrounding the landfill that are suspected to drain into the landfill.

The LCRS sumps remove leachate from landfill modules and route the leachate to a double-lined collection pond for treatment and disposal. The LSCSs are used to detect and contain potential leaks in the landfill.

Leachate in Modules 1 to 5, which encompasses 39 acres, drains to a primary leachate sump (Sump 1/5 P) on the south side of Module 4. This sump was constructed with dual sideslope risers and is equipped with a dedicated submersible pump that discharges to a

leachate header leading to the south side of the leachate pond. Leachate in Modules 6 and 7, which is 15.2 acres in size drains to a primary leachate sump (Sump 6/7 P) on the south side of the modules. Sump 6/7 P is equipped with a dedicated submersible pump that discharges to a separate leachate header leading to the south side of the leachate pond. Leachate in Module 8, which covers 30.9 acres, drains to a primary leachate sump (Sump 8P) located in the northeast corner of this module. Sump 8P is equipped with a dedicated submersible pump that discharges into a header shared with Module 7, which discharges into the east side of the leachate pond. Leachate in Module 9, which covers 2.4 acres, drains to a primary leachate sump (Sump 9P) located in the northeast corner of this module. Sump 9P is equipped with a dedicated submersible pump that discharges into a leachate header, which discharges into the east side of the leachate pond. Each LCRS sump is equipped with a flow-monitoring device and connected to the SCADA system.

Modules 4 and 5 are constructed with a LSCS that drains to a secondary collection sump (Sump 4/5 S). This sump is located below the primary leachate sump in Module 4 (Sump 1/5 P).

Modules 6 and 7 are constructed with an LSCS that drains to a secondary collection sump (Sump 6/7 S) located below the primary leachate sump in Module 6 (Sump 6/7 P).

Module 8 is constructed with an LSCS that drains to a secondary collection sump (Sump 8S) located below the primary leachate sump in Module 8 (Sump 8P). The LSCS sumps are constructed with sideslope risers and are equipped with dedicated submersible pumps that discharge to the corresponding primary leachate sumps.

Module 9 is constructed with an LSCS that drains to a secondary collection sump (Sump 9S) located below the primary leachate sump in Module 9 (Sump 9P). The LSCS sumps are constructed with sideslope risers and are equipped with dedicated submersible pumps that discharge to the corresponding primary leachate sump.

Compliance with the liquid head on liner requirements is monitored by the site SCADA system and visual observations by landfill personnel.

Leachate Storage Pond

The Riverbend Landfill leachate storage pond is located near the southwestern corner of the site and has a surface area ranging from roughly 3.13 acres at elevation 135.0+/- (Pond Bottom) to 4.58 acres at elevation 153.0. At the designed maximum liquid depth of approximately 18 feet, the leachate pond has a storage capacity of approximately 19,961,958 million gallons. The pond liner is comprised of a primary 60 mil HDPE liner as well as a composite secondary leak detection liner system.

The composite secondary leak detection liner system consists of a 60 mil HDPE liner located on top of 2 feet of low hydraulic conductivity soil.

The secondary leak detection system drains any potential leakage from the primary liner to a secondary leak detection sump that is approximately 12 inches deep and 18 feet square per the as-built drawings by Emcon in 2001. Within this secondary sump is a 12-inch diameter riser pipe which lies under the eastern slope of the pond. The secondary sump pump is accessed from a portion of the riser pipe sticking out above ground on the

eastern berm of the leachate pond. See Figure 1 below for an approximate location of the sump and riser.

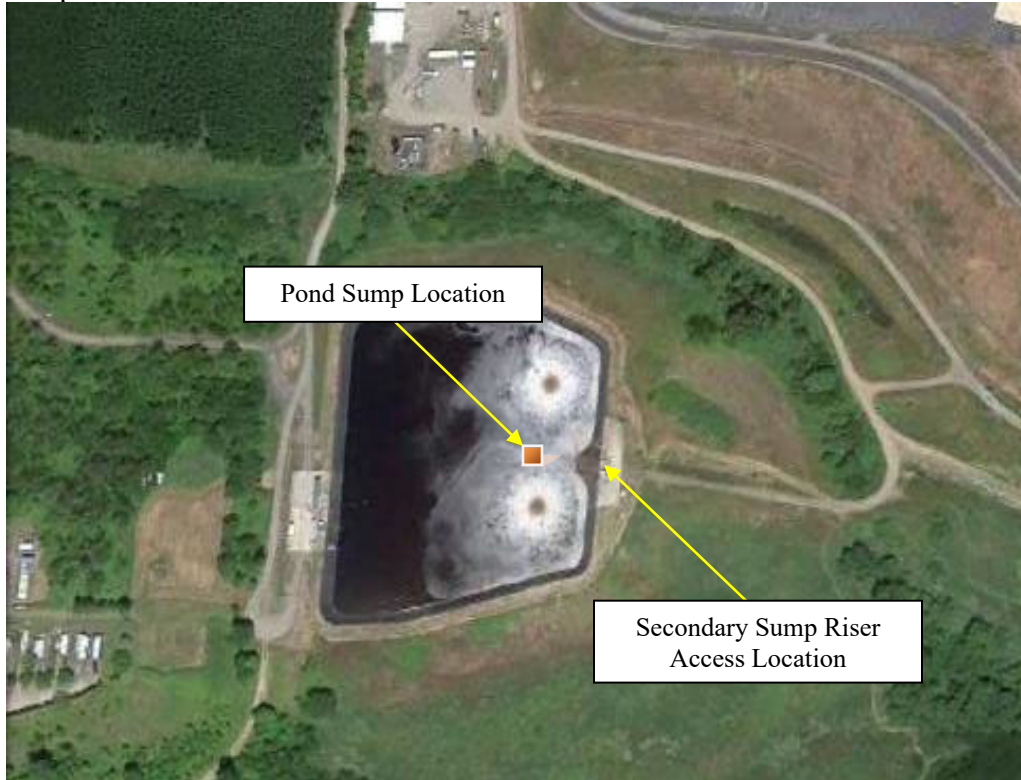


Figure 1-Leachate Pond Configuration

Existing Leachate Pond Equipment

The secondary leak detection sump riser is constructed of 12-inch HDPE pipe. The end of the pipe is relatively flat and located within the secondary sump. The sump is filled with approximately 12 inches of drainage aggregate which covers the pipe and allows for leachate storage. Located within the 12-inch secondary riser is a sump pump as well as a pressure transducer. Liquid from the secondary leak detection sump is discharged through a flow meter located at surface level and is directed back into the leachate pond via an air break.

Leachate generated onsite may be disposed and managed in the following ways:

- In-place pan evaporation;
- Drip line evaporation located along the leachate pond liner;
- Off-site trucking; and,
- Leachate recirculation upon approval from DEQ.

6.3.2 Leachate Operations

A Supervisory Control and Data Acquisition (SCADA) system is in use at RLC to monitor and log leachate sump levels and the generated leachate volumes. This system is designed to send notifications to key personnel in the case of pump failures and/or compliance level exceedances. The site currently collects leachate data both manually and via the SCADA system.

During daily operations, all primary and secondary leachate sump pumps are designed to run in an “automatic” mode to handle generated leachate. Each sump pump has a pressure transducer that reads the level of leachate in each sump. That reading is sent to the leachate sump panel where each sump has its specific setting for: High leachate level pump-on, Low leachate level pump-off; and leachate alarm level (triggers emergency beacon light). Sump pumps run automatically turning on and off at pre-programmed set points to properly move leachate off the liner and into the force main system. The control panel has lit buttons to indicate when the pump is activated.

6.3.3 Leachate Inspections

The SCADA system is the primary method of monitoring leachate at RLC. However, site personnel visually monitor the LCRS daily during normal daily operations.

At each primary & secondary leachate sump, the site technician inspects the following:

1. Observe all exterior plumbing connections of leachate sump for leachate leaks. Verify that sump has no electrical or high leachate alarms; Check control panels for proper function and display; and correct valve positions at each sump riser.
2. After examination of each station, review the SCADA information from each primary & secondary sump.
 - a. Level reading at sump.
 - b. Hour meter reading at sump.
 - c. Totalizer reading for gallons pumped.
3. Initially evaluate level data to confirm compliance at each sump. Provide immediate notification to the OM and/or EP Specialist if the liquid levels are near, or exceed, compliance levels.
4. After completing the data evaluation, evaluate if there are any maintenance or repairs needed to any sump location.

The SCADA system logs and stores leachate volumes and compliance levels for review and reporting purposes.

6.3.4 LCRS Maintenance and Repairs

RLC personnel will typically perform any repairs or maintenance that are needed on the leachate pump systems or associated equipment. Should there be a major electrical or pump issue at one of the leachate sumps that cannot be fixed by RLC personnel, a third party electrical/pump contractor will be utilized to repair the identified issue.

Routine maintenance includes testing and review of all panel electricity and alarm settings for proper system function/operation and detection of any failures. All observation work activity is documented and outlines in detail findings and recommendations for repair or maintenance. Based on reported findings, the DM and OM determine best plan/schedule for repairs/activities to address noted issues.

6.3.5 Leachate Sampling and Monitoring

Leachate samples from the LCRSs are monitored to (1) comply with the requirements of the SWDP, and leachate disposal permits (2) provide comparative data for interpreting

monitoring data collected from the secondary collection systems, and (3) provide a basis for the selection of groundwater monitoring parameters.

Liquid samples from the LSCSs are monitored to (1) detect and if present, characterize the liquid in the LSCS and (2) determine whether the detected liquid consists of leachate from the primary liner or liquid from other sources.

RLC groundwater and primary and secondary leachate sump sampling activities are performed pursuant to the RLC Environmental Monitoring Plan, which describes the RLC leachate monitoring system, including, but not limited to: leachate monitoring locations, monitoring parameters, data evaluation methods, and sampling and analytical procedures. This information is reported to the DEQ in the Annual Environmental Monitoring Report (AEMR).

In addition to the leachate sampling and monitoring activities discussed above, leachate sampling requirements may vary depending on the discharge location and permit revisions.

The LCRS and LSCS is currently sampled at the following nine locations:

- Leachate pond
- Leachate pond secondary collection system.
- Sump 1/5P sideslope riser.
- Sump 6/7P sideslope riser.
- Sump 8P sideslope riser.
- Sump 9P sideslope riser
- Sump 4/5S sideslope riser.
- Sump 6/7S sideslope riser.
- Sump 8S sideslope riser.
- Sump 9S sideslope riser.

6.3.6 Routine Reporting

Routine reporting is regularly scheduled reporting RLC performs in conjunction with the LCRS operation. Routine reporting includes but is not limited to, the following:

- Leachate monitoring activities performed pursuant to the *RLC Environmental Monitoring Plan* (SCS, 2013). This information is reported to the DEQ in the Annual Environmental Monitoring Report (AEMR);
- Wastewater discharge constituents of the landfill leachate, required by various Wastewater Discharge permits.

6.3.7 Non-Routine Reporting

Non-routine reporting is generally associated with emergency conditions/situations that violate, or have the potential to violate permit requirements, in which provided advanced notification is warranted to apprise agencies of the situation. In these cases, RLC will provide verbal notification as soon as possible if/when non-routine reporting is necessary. RLC Non-routine reporting includes, but is not limited to, the following:

- a. Leachate spills;
- b. Confirmed Sump Leachate Compliance Level exceedances
- c. Violation of a permit condition

6.3.8 Safety

Landfill operations involving landfill gas (LFG), present specific safety and health hazards. Normal landfill activities where an excessive concentration of LFG in the atmosphere may reasonably be expected include (but are not limited to) the installation, construction, operation, monitoring, or maintenance of:

- Excavations or trenches;
- Active or passive landfill gas collection and control systems (GCCS);
- GCCS condensate management systems;
- Leachate management systems;
- Leachate pump houses or structures;
- Manholes, sumps, and vaults;
- Geomembranes over waste;
- Partially enclosed areas; and
- Culverts and other drainage structures.

All WM full time employees and third party contractors will complete the necessary safety training to perform maintenance to the leachate system. WM full time employees and third party contractors will wear a gas detection monitor while performing maintenance.

Personnel at RLC performing tasks involving the construction, installation, operation, monitoring, or maintenance of: active or passive gas GCCS; GCCS condensate management systems; leachate management systems; or any other system or area where an excessive concentration of LFG in the atmosphere may reasonably be expected will wear a portable continuous direct reading multi-gas monitor (portable gas monitor) for combustible gas (methane), oxygen, and hydrogen sulfide.

- Each portable gas monitor will have audible, visual, and vibrating alarms that actuate when air contaminant concentrations exceed alarm levels
- When two or more individuals are working in the same immediate area, only one portable gas monitor is required.
- This requirement does not apply within structures equipped with a continuous monitor/alarm to detect an excessive concentration of LFG within the structure as long as all equipment containing LFG remains sealed (i.e., equipment is not opened and there is no leaking or venting of LFG into the structure).

All third party contractors will sign in upon arrival and sign out prior to leaving the site. The sign-in and sign-out sheet is located at the main administration office.

6.4 Stormwater

6.4.1 Stormwater Overview

Stormwater is managed at RLC by engineered collection ditches, culverts, site sedimentation/detention basins, ground cover, temporary plastic covers and pumping systems. Procedures for stormwater management are contained in the following documents:

The Stormwater Pollution Control Plan (SWPCP) contains a detailed description of the site stormwater systems and monitoring requirements, best management practices, and the site NPDES 1200-Z Permit. The intent of this plan is to minimize impacts to surface water.

Stormwater drainage at RLC is divided into five drainage areas designated as Drainage Areas 1 through 5. The RLC Drainage Areas 1 through 5 and their corresponding outfall locations are summarized as follows:

- **Drainage Area 1.** Drainage Area 1 is located in the northwest portion of the site and is approximately 448,801 square feet. Drainage Area 1 and consists of several facility buildings (office, landfill gas-to-energy, and three storage warehouses), the asphalt paved entrance to the facility and site access road, the office asphalt paved parking lot, and gravel covered areas. Stormwater in the eastern portion of Drainage Area 1 infiltrates into the ground as this area has no conveyance system that discharges off-site. The western portion of Drainage Area 1 includes two catch basins in the office asphalt paved parking lot that are conveyed to the drainage ditch along SW Highway 18. Additionally, the western portion of Drainage Area 1 includes stormwater sheet flow from the asphalt paved facility entrance and site access road which enters the site drainage ditch and is conveyed into the drainage ditch along SW Highway 18. The Drainage Area 1 outfall location (Outfall 1) is located within the drainage ditch along SW Highway 18 northeast of the catch basin discharge pipe.
- **Drainage Area 2.** Drainage Area 2 is located in the south-southwest portion of the site and is approximately 1,559,980 square feet. Drainage Area 2 consists of the maintenance area (including maintenance buildings, equipment, and significant material), vehicle and equipment wash area, public recycling area, abandoned landfill gas flare station, compacted gravel site access roads, portions of inactive landfill Modules 1, 2, 3, 4, and 5, and portions of active landfill Module 8. Drainage Area 2 contains approximately 10.96 acres (approximately 477,418 square feet) of landfill Modules 1, 2 and 3 constructed to final grade with final vegetated cover in place. Within the Drainage Area 2, a series of conveyance ditches and piping direct stormwater to Detention Pond 1. Additionally, stormwater that is directed to and accumulates in Stormwater Detention Pond 2 gravity drains through a pipe that is directed to the south and is conveyed by a drainage ditch to Detention Pond 1. Stormwater discharge is observed in Drainage Area 2 when the water level within Detention Pond 1 reaches the outlet pipe and is conveyed to Outfall 2. Outfall 2 discharges into the Unnamed Drainage located in the south portion of the site.

- **Drainage Area 3:** Drainage Area 3 is located in the south-central portion of the site and is approximately 325,203 square feet. Drainage Area 3 only consists of portions of inactive landfill Modules 3 and 4 and no other industrial activities are located on this area. Drainage Area 3 consists entirely of landfill Modules 3 and 4 that are constructed to final grade with final vegetated cover in place. Stormwater either permeates the final cover or sheet flows over the vegetative cover to a drainage ditch which conveys stormwater to a drainage pipe in the southwest section of Drainage Area 3. This drainage pipe is Outfall 3 and discharges to the ground within the southern portion of the property.
- **Drainage Area 4:** Drainage Area 4 is located in the north-central and northeast portions of the site and is approximately 1,723,748 square feet. Drainage Area 4 consists of sections of inactive landfill Modules 5, 6, and 7 and active landfill Module 8. No other industrial activities are located in this area. Drainage Area 4 contains approximately 6.4 acres (approximately 278,874 square feet) of landfill Modules 6 and 7 constructed to final grade with final vegetated cover in place. Other areas of inactive landfill Modules 5, 6, and 7 have impervious intermediate cover that includes an established vegetative layer. Stormwater either permeates the final and intermediate covers or sheet flows over the vegetative cover to a series drainage ditches and piping which convey stormwater to a perimeter drainage ditch. Additionally, stormwater that is directed to and accumulates in Stormwater Detention Pond 3 is pumped to the drainage ditch north of the landfill footprint. Much of the active landfill Module 8A has temporary plastic (impervious) cover and stormwater sheet flows over the impervious cover to conveyance ditches and piping that connect to the north drainage ditch. The north perimeter drainage ditch conveys stormwater to the east and discharges to the Unnamed Creek at Outfall 4.
- **Drainage Area 5:** Drainage Area 5 is located in the southeastern section of the site and is approximately 649,377 square feet. Drainage Area 5 only consists of portions of inactive landfill Modules 4, 5, 6, and 7 and no other industrial activities are located on this area. Drainage Area 5 contains approximately 3.6 acres (approximately 156,816 square feet) of landfill Modules 4, 6, and 7 constructed to final grade with final vegetated cover in place. Stormwater either permeates the final and intermediate covers or sheet flows over these covers to a series of drainage ditches and piping which convey stormwater to ground within the southeastern portion of the property.

Site topography and surface drainage patterns in portions of RLC may change as site operations and development continues in the future.

6.4.2 Minimizing Operations to Stormwater

RLC limits the amount of industrial operations exposed to stormwater by placing potential pollutants under cover in a building, shed, or storage container, or under a plastic tarp, awning or a similar structure. Current site conditions are such that storage of materials, loading and unloading of materials, and equipment and vehicle maintenance activities at RLC are performed inside the maintenance building and the landfill gas-to-energy building and are not exposed to stormwater. The industrial activities on the active landfill area (e.g., waste disposal and fueling) are exposed to stormwater however, any

potential pollutants generated from these industrial operations and that potentially come in contact with stormwater would be contained within the landfill's leachate collection system.

Additionally, RLC diverts stormwater away from stored material and areas that generate potential pollutants. Currently, stormwater diversion from the RLC industrial activities is accomplished primarily by proper grading of the landfill areas, drainage ditches and piping, pumping systems, and temporary plastic covering.

Stormwater that infiltrates into the landfill cell areas is managed and disposed as leachate and does not enter the stormwater conveyance system. If needed, additional stormwater diversion methods may include the use of berms and curbs.

6.5 Surface Water

Surface water monitoring is not required by RLC's SWDP and is performed for informational purposes. Surface water monitoring is performed to assess general South Yamhill River water quality upstream and downstream of RLC and to monitoring South Yamhill River levels. Surface water is sampled from the South Yamhill River at the following locations:

- SYR SW-1 located upstream of the RLC operations.
- SYR SW-2 located downstream of the RLC operations.

6.6 Landfill Gas

To comply with the federal municipal solid waste landfill New Source Performance Standards (NSPS), an active landfill gas (LFG) collection and control system (GCCS) has been installed to manage emissions while efficiently collecting methane for electrical energy generation by the Landfill Gas to Energy Facility (LFGTEF).

The GCCS includes a combination of horizontal and vertical gas wells well collectors, the LFGTEF, and LFG flare(s). The enclosed flare has a 4,500-cubic-feet-per-minute rated capacity and is used to destroy excess LFG that is not able to be combusted by the LFGTEF. The flare system works in conjunction with the LFGTEF and is designed to manage the landfill gas in the event the LFGTEF is not in service.

The GCCS is designed to limit LFG migration, fugitive emissions and to reduce odors. The following are general components that comprise RLC's GCCS:

- Vertical gas wells;
- Horizontal gas wells;
- Condensate sumps;
- Six 3516 Caterpillar Engines located in the LFGTEF;
- Utility LFG Flare;
- Enclosed LFG Flare.

6.6.1 Landfill Gas Monitoring

To ensure no off-site migration of landfill gas, landfill gas is monitored in probes located around the perimeter of the landfill. In addition, on-site buildings are equipped with combustible gas detection and alarm systems. The LFG well system and flare are monitored and adjusted on a monthly basis. For detailed monitoring information and requirements, refer to the RLC Title V Permit #36-0011-TV-01.

7 Facility Operating Record

The facility operating record includes the following items as required by Subtitle D

- Demonstration that the site meets all location prohibitions;
- Inspection records and training records;
- Gas monitoring results;
- Documentation of leachate production;
- Groundwater monitoring data
- Closure and post closure plans; and,
- Cost estimates and financial assurance documentation.

The Site Manager or designated assignee is responsible for maintaining and updating the Operating Record. The Operating Record is maintained with online data and hard copy documents.

8 Contingency Plan

8.0 General

This section guides personnel in the event of an emergency situation at RLC. See the *Emergency Action Plan* and/or the *Spill Prevention Containment and Countermeasure Plan* for more detail. Procedures have been outlined for emergency response to fires, explosions, contaminant releases, medical accidents, and natural disasters such as earthquakes and landslides. Emergency notification procedures, including telephone numbers for emergency response personnel, regulatory agencies and other key contacts are also provided.

The provisions of this section and the RLC *Emergency Action Plan* are carried out immediately whenever there is a fire, explosion, or release of waste or material that could threaten human health or the environment.

8.1 Notification Procedures

A list of appropriate emergency phone numbers is posted in the operations building and scale house (see Table 9-1). A first aid kit, telephone and site Material Safety Data Sheet (MSDS) information is stored in the online database at 3E – online and the phone number is readily available for site staff. 3E is used for all chemical materials used on-site, and additional personnel safety equipment is located in the maintenance building.

Upon discovery of a reportable spill or other incident requiring notification, the District Manager, Operations Manager, or EP Specialist will make the necessary contacts. Proper notification information of reportable spills and other incidents is listed on the following page.

Table 9-1
Key Personnel Phone Numbers

WM Personnel	Contact Information
District Manager: Nicholas Godfrey	503-435-9248 - mobile
Director of Disposal: David Lowe	509-244-0151 - office
Facility Engineer: David Rettell	503-493-7870 - office
Environmental Specialist: William Hickey	503-964-4429 - mobile

Emergency Response	Contact Information
Ambulance: City of McMinnville	911
Fire Department: City of McMinnville	911
Police: City of McMinnville	911 or 503-434-7307
Sheriff: Yamhill County	911 or 503-434-7506
Hospital: McMinnville Community	503-472-6131
Doctor: Dr. F. Kenyon or Personal Physician	503-472-4197

Other	Contact Information
Claims Adjuster: Gallager Basset	800-WMJ-1032
National Response Center-Spills	800-424-8802
Oregon Emergency Response System (OERS)-Spills	800-452-0311
Oregon DEQ	503-378-8240 X252
US Coast Guard-Spills	503-538-2768
Yamhill County Health Department	503-472-9371

8.2 Emergency Access

Emergency vehicles accessing RLC will use the sites main entrance unless other arrangements have been made with facility management. Vehicles assisting in an emergency situation will use the established roadways whenever possible and will abide by applicable traffic laws and standards of typical driver safety unless specifically directed to do otherwise by appropriate law enforcement or emergency personnel.

8.3 Personal Protective Equipment

The following personal protective equipment is available on-site and is to be used by personnel as designated by the Site Safety Team.

Head Protection: Hard hats must be worn when walking on landfill property.

Eye Protection: Safety glasses, chemical splash goggles, full face shields, or full-face masks are worn by all personnel performing activities where potential for eye or face exposure exists from chemical splash, dust, or vapor, etc. Eyewash stations are located in areas readily accessible to all on-site personnel.

Skin Protection: All personnel engaged in field task activities involving chemical materials wear chemically resistant clothing and gloves.

Foot Wear: Field personnel and subcontractors are to wear leather or rubber boots with steel shanks when engaged in field activities, unless directed otherwise.

High Visibility Vest/Clothing: All employees/visitors must wear high visibility vests, shirts or jackets when walking around the landfill property.

8.4 On-Site Emergency Equipment

First Aid Kits: The scale house, administration office and maintenance building have first aid kits. First aid kits are maintained monthly by a third-party service provider. Located at the scale house building is an automated external defibrillator (AED) for emergency use.

Fire Extinguishers. Multipurpose fire extinguishers are located at the following locations:

- Each piece of equipment
- Each vehicle
- Maintenance building
- Scale house
- Administration office
- Landfill gas to energy building
- Fueling area

RLC personnel inspect each fire extinguisher monthly. An independent contractor services the fire extinguishers annually.

Water Truck: A water truck will be available for fire emergencies and dust control.

Communication: The scale house, admin building and employees are equipped with two-way radios capable of communicating with each other. In addition, all landfill structures have telephones, and most personnel have mobile telephones.

Heavy Equipment: In an emergency the following equipment can be used for fire suppression, transporting accident victims, constructing spill containment berms or trenches, or other required activities.

- Front end loader
- Bulldozers
- Water truck
- Waste compactor
- Pickup Trucks

Off-Site Transportation: In almost all cases, accident victims should be immobilized until emergency help arrives on the scene, but in extreme cases, victims can be transported off site in company or personal vehicles.

8.5 Emergency Response

This section provides contingency plans for accidents and emergency situations, which could occur at RLC. Specifically, the following situations are addressed:

- General response to accidents and emergencies;
- Injury and or Illness;
- Leachate leaks;
- Spills, surface and or groundwater contamination;
- Landfill gas migration;
- Fires and hot loads;
- Explosions;
- Earthquakes;
- Volcanic eruptions;
- Floods;
- Vandalism and trespassing; and
- Liner failure.

8.5.1 General response to Accidents and Emergencies

In general, when alerted to an accident of an emergency situation, the following actions should be taken:

- Assess the situation and its impact on human lives, public health and safety, and operation of the facility;
- Determine the required response with particular attention to protecting human lives and public health and safety;

- Make appropriate notifications to site personnel, emergency medical personnel, utilities, and regulatory agencies as soon as possible (refer to Table 9-1 for key phone numbers); and
- Take corrective action to restore the facility to normal operations:

8.5.2 Injury Illness

In the event of an injury or illness, take the following actions, as appropriate:

- Assess hazards;
- Administer first-aid;
- Determine if additional medical attention is necessary; and
- Notify Site Manager and Supervisor.

8.5.3 Leachate Leaks

If a leachate leak is detected at the landfill, a thorough investigation will be conducted to determine the cause, extent, and location of the leak. At that time, remedial measures will be developed and implemented to fit the specific situation. Proper measures must be taken to assure that a leachate leak or spill will not reach surface water or cause other threats to human health or the environment. In the event of a leachate leak, RLC will take the following actions:

- Notify District Manager, Site Manager and Environmental Protection Specialist Immediately;
- Refer to Emergency Action Plan and SPCC Plan;
- Dig temporary ditches to intercept the leachate;
- Construct temporary sumps to collect leachate;
- Construct temporary berms to divert leachate;
- Monitor the performance of the temporary ditches and berms;
- Sample surface waters at existing monitoring stations; and
- Obtain laboratory analysis of the surface water samples.
- Contact DEQ and OERS listed in Table 9-1 of the Operations Plan

8.5.4 Spills, Surface Water and Groundwater Contamination

Although few materials are present at the site that could result in serious human health or environmental threats, the following procedures must be followed if such events occur (See the SPCCP and Emergency Action Plan for more detail):

- Determine the potential risk to human health, the environment, or property.
 - If the material is not hazardous, proceed with clean-up procedures.
 - If the material is unknown or hazardous, call the appropriate emergency response contractor.
- Determine the magnitude of the spill. If the spill was minor and there is no imminent danger, simply clean up the residue and dispose of it appropriately. If the spill is ongoing, such as a ruptured drum or tank, or if there is imminent danger of a more serious condition, such as overtopping secondary containment, then the following procedures should be implemented:

- If the spill cannot be controlled immediately, call 911 for emergency assistance. Be prepared to provide the following information:
 - Type of emergency – spill
 - Location of spill
 - Extent and makeup of the spill
 - Injuries
 - Actions taken
 - Extension calling from and the caller's name
- Personnel responding to the spill are to wear appropriate personal protective equipment, such as protective clothing, boots, gloves, goggles, etc. Removes contaminated clothing immediately, if appropriate, to minimize contact with the skin.
- Continue to control the spill by closing valves, plugging holes, if necessary, up-righting the container, or building a dike around its perimeter until the Fire Department arrives. If these actions cannot be done safely, then evacuate the immediate area of the spill.
- Assure that the entrance to RLC is clear for emergency vehicles to get to the source of the spill. Meet the first responding vehicle and direct it to the location of the spill.
- Clean the spill area by removing and properly disposing of the absorbing agents, waste materials, and any contaminated soils.
- Review the SPCCP and training program, assess their effectiveness, and make amendments as necessary.
- Access the cause of the spill. Repair or replace equipment as necessary to reduce the potential for recurrent spills.

8.5.5 Landfill Gas Migration

A site-wide landfill gas monitoring program has been developed. In the event that lateral gas migration is detected, DEQ will be notified and a thorough investigation will be initiated to determine the extent. Once the extent has been determined, appropriate remedial measures will be developed and implemented upon DEQ approval.

8.5.6 Fires and Hot loads

Minor fires may be suppressed using portable fire extinguishers. Fires caused by hot loads where landfill waste is burning will be extinguished by landfill personnel and the McMinnville Fire Department, as addressed in the Emergency Action Plan.

8.5.7 Explosions

Should an explosion occur, take the following actions as appropriate:

- Evacuate all people from the area of the explosion;
- Assess the situation and request assistance as outlined in Section 8.5.1, General Response to Accidents and Emergencies, including notifying Site Manager and Supervisors;
- Prevent the potential for additional explosions by isolating the source of the explosion from possible ignition sources;

- Determine if anyone was injured (remove injured people from the immediate area and administer first-aid); and
- If the explosion has caused a fire, refer to Emergency Action Plan, Section 4.2

8.5.8 Earthquakes

In the event of an earthquake, take the following actions as appropriate:

- Evacuate all people from the refuse disposal area;
- Assess the situation and request assistance as outlined in Section 8.5.1, General Response to Accidents and Emergencies, including notifying Site Managers and Supervisors;
- Once immediate actions have been taken to protect human lives and public health, all equipment will be shut down depending on the magnitude of the earthquake; and,
- Assess the damage resulting from the earthquake and determine the need for further action.

8.5.9 Volcanic Eruptions

In the event of a volcanic eruption, take the following actions as appropriate:

- Assess the situation and request assistance as outlined in Section 8.5.1, General Response to Accidents and Emergencies, including notifying Site Managers and Supervisor, and place liners over areas to prevent infiltration into waste.
- Assess the damage resulting from the eruption and determine the need for further actions.

8.5.10 Floods

As flooding of surrounding areas occurs, monitor water levels and potentially hazardous conditions. Flooding may potentially impact landfill operations, access actions that may be implemented to mitigate potential impacts. These may include:

- Temporary earthen berms;
- Sandbagging area for flood control; and,
- Placing temporary plastic liners over areas to prevent infiltration into waste.

If flood levels reach dangerous levels and conditions, evacuate all people from the impacted area as outlined in Section 8.5.1 General Response to Accidents and Emergencies, including notifying the Site Manager and Supervisor. Assess the damage resulting from the flood and determine the need for further action.

8.5.11 Vandalism and Trespassing

Trespassing is not permitted at RLC. If trespassers are discovered, take the following actions as appropriate:

- If vandalism has occurred or is in progress, call the police immediately;
- Inform individuals they are unlawfully trespassing and must leave the site immediately;

- If property damage has occurred, notify the Site Manager who may contact the police and/or claims adjuster.

8.5.12 Liner Failure

Liner failure would be indicated by the geomembrane being pulled from its anchor trench or other signs. If this should occur, take the following actions as appropriate:

- Notify the District Manager and site Engineer;
- Notify the Area Engineer; and,
- Determine the cause of the failure and repair damage, as directed by the site Engineer and management.

8.6 Closure and Post Closure

8.6.1 Final Closure

A detailed closure plan was submitted to the Department. The Closure and Post-Closure Plan identifies procedures and time schedules for closure, post-closure monitoring and maintenance, as well as a cost estimate for the purposes of establishing financial assurance. Section 4.5.4, (Final Cover) describes the final cover soils and capping procedures. The Closure/Post-Closure Plan included in Appendix I, has been determined for a conceptual “worst-case” scenario.

Detailed engineering plans, specifications, and a schedule for closure will be submitted to the Department at least six (6) months prior to final closure of any portion of the landfill.

At least five (5) years prior to the anticipated final closure of the landfill, RLC will apply for a closure permit. Maps and statement of fact concerning the location will be recorded as part of the deed with appropriate County agency within thirty (30) days after final closure.

8.6.2 Post Closure

Upon the completion of site closure activities, post-closure monitoring/long term care activities will commence and continue for a period of thirty (30) years after the closure of the site. During that time, RLC will maintain the integrity and effectiveness of the final cover, and continue groundwater monitoring, gas monitoring, and leachate management. Records of all post-closure site inspections and monitoring will be kept on file by RLC. Records of inspections will address problems found and corrective actions taken. Post-closure activities are outlined in detail in the Closure and Post-Closure Plan.

8.6.3 Financial Assurance

Financial assurance for closure and post-closure activities has been developed based on the Department approved cost estimate and financing mechanism. The financial assurance plan is also included with the Closure and Post-Closure Plan. The financial assurance and mechanism will be updated annually and submitted to the Department by April, 8 while the landfill is in operation and during the post-closure care period. A certification will accompany the updated financial assurance plan stating that the plan and financial assurance mechanism(s) have been reviewed, updated, and found adequate, and that the update documents have been placed in the operating record.