

Operations and Maintenance Plan

Hood River County Closed Landfill



Hillcrest Road

Hood River County, Oregon

June 21, 2023

Author – Hood River County Public Works; Engineering Division



Oregon

Tina Kotek, Governor

Department of Environmental Quality

Eastern Region The Dalles Office

400 East Scenic Drive, Suite 307

The Dalles, OR 97058

(541) 298-7255

FAX (541) 298-7330

TTY 711

July 6, 2023

Mikel Diwan
Public Works Director
Hood River County
918 18th St.
Hood River, OR 97031

RE: Approval Operations and Maintenance Plan June 2023
Hood River Landfill, SW Permit No. 168
Hood River County

Dear Mr. Diwan:

DEQ has reviewed the Operations Plan dated June 2023 for the closed Hood River Landfill.

The Operations Plan describes the general and management practices for the Hood River Landfill. The purpose of the Operations Plan is to provide a guide to the landfill personnel with information and instructions. This includes conducting site operations, maintenance, and emergency procedures to comply with solid waste regulations.

DEQ approves the June 2023 Operations Plan for the Hood River Landfill. DEQ used the following criteria to approve the Plan: DEQ's Solid Waste Guidance for Municipal Landfills, RCRA Subtitle D, and OAR Divisions 93-94.

Thank you for your efforts to remain in compliance with Hood River County Landfill's solid waste permit. If you have any questions regarding this review and approval, please contact me at todd.hesse@deq.oregon.gov or (541) 261-4167.

Sincerely,

Todd Hesse
DEQ Materials Management

cc: Chris Harrell, Hood River County
Roger North, P.E., Vista
Sharon Stephens, DEQ
Ron Doughten, DEQ

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1. GENERAL

This Operations and Maintenance Plan (O&M Plan) for the Hood River County Closed Landfill (HRCL) describes the operations to be conducted during the post-closure care period and provides a plan to maintain the integrity of the various containment systems through periodic landfill inspection, maintenance, repair, monitoring, and reporting procedures. It has been prepared to address the post-closure care requirements for municipal solid waste landfills set forth in the State of Oregon Department of Environmental Quality (DEQ) Solid Waste Program Landfill Guidance, and maintenance requirements set forth in Solid Waste Disposal Site Closure Permit No. 168 issued by DEQ on May 29, 2013.

This Post Closure O&M Plan provides inspection and maintenance programs for the following:

- the final cover system,
- surface water management,
- leachate collection and disposal,
- landfill gas monitoring systems,
- environmental and water quality monitoring points,
- site security.

The procedures described herein require timely and accurate reporting of inspections, general maintenance, and repair actions. Post-closure maintenance activities will be documented and made available to local, state, and federal regulatory agencies upon request. Hood River County (HRC) shall take any immediate, corrective action necessary in response to violations of the permit conditions and/or DEQ rules, and will notify DEQ of any such incidents and responses via email to erpermitcoordin@deq.state.or.us. Additional notification may be made by telephone to (541) 298-7255.

This O&M Plan does not provide procedures for monitoring groundwater, surface water, leachate, or landfill gas levels. Procedures for environmental monitoring are described in the Environmental Monitoring Plan prepared by Vista GeoEnvironmental Services (VISTA, 2023).

2. FINAL COVER INSPECTION AND MAINTENANCE

The purpose of the post-closure maintenance procedures described herein is to maintain the long-term integrity of the completed final cover while accommodating the potential for ground subsidence. This section provides scheduling and documentation procedures for maintenance activities to ensure the practices, and any materials used, are consistent with industry standards. Deviations from the identified procedures or any other industry standards should be made under the direction of a licensed professional engineer so that any effects to the performance of the final cover may be properly evaluated. Any permanent deviations approved by the engineer should be documented and the O&M Plan modified accordingly.

2.1 Final Cover

This section provides a description of the final cover as a reference for post-closure inspection and maintenance activities. Subsequent sections present final cover inspection schedules, maintenance and repair procedures, and equipment, labor, and material requirements.

The HRCL occupies approximately 8.5 acres of land at the head of a small drainage area at the westerly end of Hillcrest Road (Figure 1). The HRCL is unlined and was closed between 1982 and 1983. The landfill was capped with between 12" and 48" of low permeability native soil and seeded with a Hard Fescue and New Zealand Clover seed mixture.

2.2 Operations

As the final cover consists of only passive components, there are no active operations associated with it other than periodic inspections.

2.3 Inspection Schedule and Procedures

Routine inspections of the final cover will be conducted at (the more frequent of) either the frequency required by the permit, or, in accordance with the schedules identified below, to identify areas requiring additional maintenance and minimize the effect of any of the following conditions:

- Sparse or distressed vegetation,
- The presence or evidence of ponding of water on the final cover surface,
- Settlement depressions or evidence of interruptions to surface water drainage,
- Surface erosion resulting from high runoff velocities associated with intense rainfall,
- Vertical and cracking of the vegetative layer resulting from differential settlement,
- Localized slumping of slopes resulting from intense seasonal rainfall or seismic loading,
- Other unusual surface conditions.

Final cover inspections shall be performed in accordance with the following schedules:

- The vegetative layer will be visually inspected on a quarterly basis and any changes to the cover or

maintenance needs should be documented,

- The vegetative layer will be visually inspected following unusual events, such as significant earthquakes, major rainstorms or flooding, vehicular accidents or environmental spills, and any changes to the cover or maintenance needs should be documented,
- Any surface cracking, ponding or drainage interruptions, or other unusual surface conditions should be documented at the time they are observed.

Any observable deficiencies in the cover, their source cause, and any mitigation or maintenance repairs will be documented and summarized in the Annual Environmental Monitoring Report (AEMR) submitted to DEQ.

2.3.1 Discovery of Prohibited Waste

Although extremely unlikely, if prohibited waste is discovered, DEQ shall be notified within 24 hours and HRC will begin to isolate or remove the waste. Additionally, HRC will take digital photos of the prohibited waste, pre-removal, in an effort to document its quantity, nature, identity, and source. For prohibited waste that is hazardous, or suspected to be hazardous waste, explosive, radioactive, or infectious in nature, HRC will facilitate the transport of the waste to an approved disposal or recycling facility authorized to accept such waste; unless directed and/or approved otherwise by DEQ. The transport of the waste shall be completed within ninety (90) days of the discovery of the waste, subject to any delays or additional time needed due to the nature of the waste. HRC's temporary storage and transportation practices for the waste will comply with all applicable DEQ rules.

2.4 Maintenance and Repair Procedures

It is anticipated that the 12"- 48" thick vegetated cover will require periodic maintenance throughout the post-closure period. Proper maintenance of the cover is necessary to promote long-term erosion control and to ensure final cover integrity. Conditions which may contribute to the need for maintenance of the cover include, but may not be limited to, those identified in Section 2.3 and may require either scheduled routine maintenance or event/condition-based maintenance.

Routine maintenance of the vegetated cover will consist of the following:

- Periodic mowing or brushing (as needed) to prevent excessive vegetative buildup and to minimize the growth of woody vegetation,
- Periodic weed abatement to minimize the growth of scotch broom and other invasive or woody plants.

The buildup of dry grasses, plants and shrubs can lead to potential fire hazards and excessive vegetation that remains dry should be mowed or reduced to minimize this potential. Periodic mowing may also assist in keeping unwanted vegetation (e.g., woody species or noxious weeds) from becoming established. In the event periodic mowing does not minimize the presence of noxious weeds and other

undesirable vegetation, such plants may either be removed by hand with the appropriate tools or be controlled through use of an appropriate herbicide.

Event or condition-based maintenance will be performed either as needed, in response to the observation of detrimental cover conditions identified during routine inspections, or in response to elective intrusion through the vegetated cover. Similar maintenance may also be performed if impacts to the leachate collection system or the surface water management systems result in detrimental cover conditions.

Repairs to the vegetated cover will be conducted as required by the permit and in a manner consistent with the original construction procedures. When applicable, clean fill should be placed in loose lifts 6" – 8" deep and compacted to re-establish appropriate grade elevations. The placement of soil lifts may be performed using a front-end loader, bulldozer, motor grader, compactor, or other appropriate heavy equipment depending on the size and depth of the area to be repaired. Reseeding of the cover will be performed as needed and may include reseeding adjacent areas to reinforce proper vegetative establishment, or in the event weed abatement results in sparseness of the native vegetation. Reseeding efforts should generally be consistent with the seed application rates described in the August 1984 Landfill Closure Final Grades and Drainage Plan criteria but may be adjusted if needed to ensure a consistent level of vegetative cover.

If physical evidence exists that indicate rodents are threatening the integrity of the vegetated cover, appropriate eradication procedures should commence as soon as practical. All eradication procedures will comply with any applicable local, state, or federal laws and, when necessary, a licensed pest control professional should be consulted and potentially contracted to provide the necessary services.

Additional maintenance activities may be necessary as a result of one of the following potential conditions:

- Settlement depressions or interruptions to surface water drainage interferes with the control of surface water runoff from the vegetated cover,
- Surface erosion resulting from high runoff velocities associated with intense rainfall,
- Vertical cracking of vegetative layer resulting from differential settlement,
- Localized slumping of slopes resulting from intense seasonal rainfall or seismic loading.

Final cover maintenance, repair, and reconstruction activities will be conducted in a manner that maintains the integrity of the cover system and ensures that final drainage patterns coincide with the regimes established with the original construction. Repair materials will also be placed in a manner consistent with the original construction procedures, and any soil material used will be of similar saturated hydraulic conductivity and size distribution as the existing cover soils. Repair procedures for the final cover should be monitored, documented, and discussed in the AEMR submitted to DEQ.

Two of the most common conditions likely to require maintenance or repair of the final cover are:

- i. Elective intrusion of the final cover,
- ii. Sags, ponds, drainage interruptions, or evidence of surface erosion.

Maintenance procedures for these two common conditions are described below.

2.4.1 Elective Intrusion

Elective intrusion into the final cover will be avoided whenever possible. When required or necessary, excavation will be conducted in accordance with any applicable regulations and in a manner that allows for repairs to be as consistent with the original design plans as practical.

If intrusion through the cover is necessary, the cover will be restored to match the existing construction to the maximum extent possible. Specifically, low permeability soil will be placed over the excavated areas and compacted to best match the existing soil layers, in accordance with the appropriate construction standards at the time. Lastly, the vegetative topsoil layer will be replaced and reseeded with native grasses as previously described.

2.4.2 Sags, Ponds, Drainage Interruptions, and Surface Erosion

Settlement depressions (sags) and areas of ponding within the deck or any slope areas of the final cover due to non-uniform soil displacement will be repaired as soon as practical. Repair activities may include removal of the affected vegetative soil layer, and reestablishment of the foundation and vegetative soil layers in order to reestablish positive drainage and the desired drainage patterns established during the original construction. All repairs should be documented and discussed in the AEMR submitted to DEQ. In areas impacted by interruptions to surface water drainage or erosion, all repairs will be consistent with regards to the materials and practices utilized during original construction.

2.4.3 Maintenance Equipment, Materials and Spills

When final cover maintenance and repair work is conducted, the type and quantity of equipment used will depend on the scope of the activity and the size of the maintenance and repair area. It is anticipated that standard maintenance activities, such as field mowing or string trimming of grasses and woody material, will utilize a small tractor-mounted flail mower or handheld gas operated tools. Maintenance of the access roads will be dependent upon seasonal weather and may require the use of a motor-grader for regular leveling and winter snow removal, and a dump truck and hydrostatic roller may be used for rebuilding and compacting the road surface. When necessary, a small excavator with a grading blade will be used to repair the cover or to reshape earthen drainage structures. It is anticipated that herbicides will be applied along portions of the access roads, pond fence perimeters, and surrounding the pump houses during the spring months to control vegetation. In the event of a spill involving oil, gas, or other hazardous material, HRC shall immediately clean up the contaminant or take other corrective action as required by OAR 340-142-0060. If the spill is of a

reportable quantity, HRC shall report the spill to the Oregon Emergency Response System at 1-800-452-0311 and the DEQ Dalles office at (541) 298-7255. Reportable quantities that may be applicable to the HRCL may include:

- 200 pounds (25 gallons) or more of pesticide residue,
- Spills of hazardous materials that are equal to or greater than the quantity listed in the Code of Federal Regulations , 40 CFR Part 302 and amendments adopted before July 1, 2002.

3. SURFACE WATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE

Stormwater runoff from the landfill is controlled by site grading, ditches, outfalls, detention ponds, a pump-conveyance system, and a pump-irrigation leachate distribution system, all of which are located within the landfill property boundary. Two onsite detention ponds (lower collection pond and upper evaporation pond) are utilized for collecting and recirculating leachate, and subsequently stormwater runoff (collectively referred to as “runoff”), within the site. Surface waters and leachate generated from the landfill seep are captured in the lower collection pond and routinely pumped to the upper evaporation pond. At preset elevations, the runoff is then pumped through an onsite sprinkler distribution system and dispersed into a forested area located near the southerly portion of the property.

3.1 Operations

The surface water management system consists of active components, including one electric dual-pump system installed at each of the pond locations, and the leachate irrigation sprinkler system which consists of various valves and pressure-activated sprinkler risers.

3.2 Inspection Schedule and Procedures

The HRCL surface water management system consists of multiple structures and features. The following sections describe the various structures and features, discuss their purpose, and identify general parameters for routine maintenance and inspections.

3.2.1 Bench Drains and Channels

The final cover was constructed to include terraces, benches, and berms to direct and capture stormwater runoff, and to provide direct physical access to the cover surface. The runoff accumulates in drainage channels located on the uphill side of the terraces and benches and is subsequently routed off the landfill surface through a series of graded bench channels. Inspection of the bench channels should occur periodically during the rainy season and following major storm events (i.e., rainfall exceeding 2” in a 24-hour period) to assess the system’s integrity, and any observed damage should be promptly repaired. The benches should also be inspected annually during the summer months and any necessary repairs made prior to the rainy season. Bench inspections should include checking for erosional ruts, rodent damage, settlement cracks, and evidence of proper drainage patterns.

3.2.2 Culverts and Downchutes

Various culverts and downchutes are used to convey collected surface water down slope from the bench channels to the lower collection pond. The onsite culvert pipes are typically made of either HDPE or CMP material, while additional culverts crossing underneath the site access road are comprised of CMP pipe. The onsite culverts are partially exposed, which provides a limited opportunity for visual inspections. Culvert inspections should include looking for evidence of pipe separation, perforations, and leakage. The primary functions of the culverts are to (1) collect stormwater runoff from the top deck, side slopes, and bench channels, and (2) convey the runoff in a controlled manner to the lower collection pond. The frequency of

culvert and downchute inspections should occur as follows:

- Inspect annually for debris, sediment build-up, and general pipe condition,
- After major storm events and significant earthquakes to ensure proper pipe performance.

After significant earthquakes, visual inspections of the culverts and downchutes should be conducted to identify any of the following deficiencies:

- joint separation,
- invert failure,
- structural failure,
- perforations,
- Presence of sediment, slit build-up, or debris.

Inspection points for the culvert under the access road are located at the inlet and outlet inverts. A video camera inspection can be conducted, and may be necessary, if visual observations suggest the subsurface portion of any culvert is clogged or damaged. Any pipe inlet fittings may be removed as needed to perform inspections or when cleaning is necessary.

All inspections, noteworthy observations, cleaning activities and repairs should be documented and discussed in the AEMR submitted to DEQ. The discussion should also include an approximate location of where any deficiencies are found and a detailed description of the repairs or corrective actions taken.

3.2.3 Conveyance Channels and Lower Collection Pond

The two primary drainage structure improvements within the HRCL are the conveyance channels and the lower collection pond. The conveyance channels are located along the landfill perimeter and are generally constructed in a V-profile manner. The channels are vegetated with native grass to reduce erosion and direct collected storm water runoff towards the lower collection pond.

The majority of site runoff is conveyed to the lower collection pond. The pond is excavated into native materials and is lined with a bentonite material. The inlet to the pond consists of a 15" CMP spillway (downchute) which connects the upstream side of the pond with the lower elevation of a leachate seep. The leachate seep is an excavated area approximately fifteen feet in diameter and approximately five feet deep which serves as an intermediate settlement pond before stormwater runoff or leachate reach the collection pond. The outflow of the lower collection pond is performed by a pump control system, but also includes a concrete emergency spillway.

The frequency of inspections of the conveyance channels, leachate seep, and lower collection pond should occur as follows:

- Inspect annually for debris, sediment build-up, and general condition, and

- After major storm events and significant earthquakes to ensure proper performance.

Visual inspections of the conveyance channels, leachate seep, and lower collection pond should be conducted to identify any of the following deficiencies:

- surface cracking,
- settlement,
- erosion,
- sediment build-up,
- flow-line inversion,
- rip-rap displacement (if applicable),
- soil and/or concrete spalling,
- vegetative condition,
- Structural failure.

All inspections, noteworthy observations, cleaning activities and repairs should be documented and discussed in the AEMR submitted to DEQ.

3.3 Maintenance Procedures

The following sections describe the anticipated maintenance needs and recommended scheduling for the various drainage structures and features.

3.3.1 Bench Maintenance

Bench maintenance may consist of regrading or revegetating the drains and channels along the toe of the slopes where flow velocities may be more accelerated and increase the potential for erosion. Regrading should be performed to remediate any observed ponding and to ensure positive drainage towards collection points adjacent to the bench. Grading work may be performed using a bulldozer, motor grader, compactor, or other heavy equipment capable of properly regrading the bench slopes or deck, repairing erosion ruts, and maintaining the integrity and compaction of the final cover. In areas where settlement adversely affects the bench grades, additional material will be placed, appropriately shaped and compacted, and revegetated to reestablish erosion control.

3.3.2 Culvert and Downchute Maintenance

This section describes general practices for repairing culvert and downchute deficiencies. Other methods may be used as needed:

Joint separation

- use band couplers with mastic or pumped grout to fill voids, or
- attach patches with self-drilling/self-tapping screws or welds.

Invert failure

- replace piping, or
- rotate pipe 180 degrees and patch as required.

Structural failure

- reinstall pipe anchor supports, and
- replace section of culvert or downchute.

Clogging by silt/debris

- use vacuum pump to clear clogged culverts or downchutes, or
- use waterjet spray to force debris out of the culvert or downchute, or
- use a bucket-line for small amounts of debris, or
- remove obstruction using site-specific methods.

Perforations

- patch perforated section as needed, or
- replace damaged section of pipe.

Small amounts of silt and debris may be removed by buckets or flushing with water. Extensive clogging may require either vacuum pump or waterjet spray. A vehicle-mounted vacuum pump may also be used to remove sediment from culverts or downchutes. Generally speaking, a vehicle with a 200 to 300 gallon holding tank may be needed, used in conjunction with a 4" (typical) diameter flexible hose with a serrated metal end. A serrated metal end may assist with breaking up compacted sediment or debris and reduce the effort needed for remediation, and can have the capacity to remove stones, leaves, litter, and sediment deposits. Normal working depth of typical system range up to twenty feet.

As an alternative, a waterjet spray may be used to clear debris from culverts and downchutes. Waterjet equipment is usually mounted on self-contained vehicles with high-pressure pumps and a minimum water supply of 200 to 300 gallons. A flexible hose assembly, similar to that described for use with a vacuum pump, can be used to loosen debris and flush it from culverts and downchutes. Certain waterjets may also have attachment options that can reverse the flow, thereby allowing debris to be flushed out from the inlet side as the line is reeled in. Typical hose lengths for waterjets may reach up to 200 feet. The type of equipment or attachments used to clean culverts and downchutes may be determined on a case-by-case basis and should always be performed by properly trained personnel using the appropriate protective equipment (PPE).

3.3.3 Conveyance Channel and Lower Collection Pond Maintenance

For open conveyance channels and the lower collection pond, the following corrective measures can be taken for deficiencies identified during the inspection:

Surface cracking of concrete structures

- installation of expansion or control joints, and
- application of sealants such as epoxy resins, thermoplastics, or silicones.

Settlement of concrete structures

- grout injection, or
- replacement of structure with subgrade work.

Erosion ruts

- regrading and revegetating eroded, and/or
- lining with riprap, and/or
- installing modular concrete blocks.

Settlement of channels

- regrading channel, or
- removal of excess sediment.

Soil spalling

- removal of loose soils and refill voids with compacted materials.

Turf reinforcement mat damage

- remove damaged matting and reestablish channel subgrade soils as necessary, or
- replace damaged matting and reestablish channel vegetation.

Flow-line inversion

- remove debris and sediment build-up from channels, or
- regrade channel either to original grade or to ensure positive drainage.

Riprap displacement

- relocate riprap to original location as necessary, or
- replenish original riprap structure if displaced riprap cannot be relocated.

Structural failure

- replace structure in conjunction with appropriate subgrade work.

4. LEACHATE COLLECTION SYSTEM INSPECTION AND MAINTENANCE

The leachate collection system includes the lower collection pond, the lower collection pond pump station, the leachate pressurized pipeline, the upper evaporation pond, the upper evaporation pond pump station, and the leachate irrigation sprinkler system. Leachate is collected from a seep located at the landfill toe of slope directly above the lower collection pond (i.e., leachate seep discussed in Section 3.2.3) and conveyed into the collection pond. From the lower collection pond, the leachate is then pumped to the upper evaporation pond through a pressurized 6" PVC pipe. From the upper evaporation pond, once the leachate reaches a pre-determined depth it is distributed through an onsite irrigation sprinkler system and dispersed into a forested area near the southerly portion of the HRCL property.

4.1 Leachate Collection System

The lower collection pond consists of an approximate 20-foot x 20-foot pond that has a rubberized, bentonite-lined bottom, with a cinderblock spillway which contains the leachate until it is pumped to the upper evaporation pond. Generally, subsurface leachate drains by gravity to the northwest portion of the landfill, where it then collects above-surface in an excavated area (leachate seep). From the seep, the leachate flows through a corrugated metal downchute to the lower collection pond. A screened float-and-riser system inside the lower collection pond is connected to a pump station (lower pump system) and regulates the depth of the leachate collected. When the leachate accumulates to a preset depth, the float-and-riser system triggers activation of the pump cycle and conveys the leachate through the pressurized pipe to the upper evaporation pond. The lower pump system is not equipped with flow meters, so the amount of leachate conveyed to the upper evaporation pond is not documented. The configuration of the leachate collection system is depicted in the Landfill Closure Plan, Final Grades & Drainage diagram (Figure 2).

The pressurized pipe conveying leachate to the upper evaporation pond is a subgrade, 6" PVC force main. The interior of the pipe can be accessed at the cleanout fittings, which are installed at varying locations.

The upper evaporation pond is lined with a geotextile cushion and equipped with a screened float-and-riser system connected to a pump station. The leachate is removed from the pond through the use of the pump station and conveyed through a series of pipes to the irrigation sprinklers. The upper evaporation pond is not constructed with an overflow, so in the event either the float-and-riser or pump systems fail the level of leachate will rise and overtop the pond (escaped leachate). Any escaped leachate will be captured downstream by bench channels on the northerly end of the property and directed towards the lower collection pond, similar to surface water runoff.

4.2 Operations

The leachate management system entails the following active operations:

- Pumping of leachate from the lower collection pond to the upper evaporation pond and to the leachate irrigation sprinkler system.

The pump stations for the lower collection pond and upper evaporation pond are operated automatically by each float-and-riser system. Remote camera systems located at each pond regularly monitor the leachate

surface levels so personnel can be notified in the event of a power loss or other type of failure.

The need for leachate transfer is a function of 1) the level of leachate in the pond, 2) the available freeboard in the pond, and 3) the anticipated rate of leachate generation. Typically, leachate generation begins annually during the winter months and continues into the summer. Little to no leachate is generated during the late summer and fall months and the lower collection pond will typically dry out for a short duration. Although no leachate is conveyed to the upper evaporation pond during this period, the evaporation pond rarely dries out and subsequently contains a varying amount of leachate throughout the year.

4.3 Inspection and Maintenance

Regular inspection and maintenance of the leachate collection system components will be necessary to ensure potentially contaminated surface waters do not escape the site. The following sections describe the basic functions and maintenance needs for the leachate collection system.

4.3.1 Float-and-Risers, Pumps and Force Main

The float-and-riser assemblies, pumps, pump houses, and pressurized force main should all be inspected regularly for accessibility and to assess their condition and integrity. Access to submersed sections of the float-and-risers or subgrade sections of the force main may need to be delayed until leachate is not being generated. All floats, risers, and screening material should be replaced as needed based on their assessed condition and ability to perform properly.

All pumps, pump assemblies, and ancillary components should be removed, inspected, cleaned, and reinstalled annually. All electric wiring, discharge pipes, valves and hoses should also be inspected, cleaned, or replaced if needed. As leachate generation volumes decrease in the future, the frequency of inspections and maintenance work may also be reduced.

The pressurized force main should regularly be monitored for the volume of leachate being dispersed into the upper evaporation pond. If a substantial decrease in volume is noted, the main could be restricted or plugged. To ensure the main continues to perform as necessary, the interior of the main should be inspected and cleaned at least every five years.

4.3.2 Leachate Ponds

The lower collection pond and upper evaporation pond (leachate ponds) should be inspected regularly for structural integrity, soil settlement or displacement, potential points of failure due to burrowing animals, points of leakage, and excessive vegetation. Structural damage to the ponds should be repaired in accordance with the original construction specifications. Excessive vegetation in the bottom or side slopes of the ponds should be removed to ensure continued root growth does not result in structural damage.

4.3.3 Leachate Pond Liners

All pond liners should be inspected annually and repaired or replaced as needed. The frequency of repairs or replacements needed may vary and be subject to the amount of leachate generated or impounded. All

materials should be placed and installed in accordance with the manufacturer's recommendations and may require the consultation of a professional engineer. At a minimum, the pond liners should be subjected to a more thorough inspection every five years.

4.3.4 Irrigation Sprinkler Risers

The irrigation sprinkler system and all sprinkler heads should be inspected regularly before and during the leachate collection season. Damaged or broken sprinkler heads should be replaced as needed and any noted leaks in the system repaired. Excess vegetation surrounding the sprinkler heads should be kept to a minimum or removed to ensure safe access is maintained.

5. SECURITY MONITORING AND MAINTENANCE

Security fencing, berms, signage, and access gates should be inspected regularly to prevent unauthorized access to the extent possible. Any damage or failures such as loose fencing, broken locks, or unauthorized points of entry should be repaired or addressed as soon as practical.

6. ENVIRONMENTAL MONITORING SYSTEMS INSPECTION AND MAINTENANCE

The environmental monitoring systems at the HRCL include collection points for surface water, groundwater and methane gas systems. The Solid Waste Disposal Site Closure Permit (No. 168) issued by DEQ specifies the monitoring requirements for surface water, groundwater, and gas migration. Details and procedures for the monitoring program are described within the Hood River County Landfill Environmental Monitoring Plan.

6.1 Groundwater Monitoring Network

A network of three groundwater monitoring wells is installed at the landfill, which are generally denoted as MW#1, MW#2, and MW#3. All three wells are constructed with steel outer casings and are accessed by removing locked steel caps capped mounted on top of each well casing.

Inspection

The condition of the monitoring wells is inspected in conjunction with each groundwater monitoring event, typically annually in the spring, and includes inspection of any road or trail needed to access the wells, inspection of the well's outer steel casing, locking mechanisms and locks, and the condition of the surface seal and well pad. Any conditions that may warrant action, such as overgrowth of vegetation, missing or broken locks, damage to the steel casing, cracks in the surface seal or well pad, or damage to the inner well casing should be documented in the AEMR submitted to DEQ.

Maintenance Procedures

Reductions in groundwater depth notwithstanding, repairs to the groundwater monitoring network may be necessary to maintain proper functioning of the wells. In the event that any individual well deteriorates beyond use or repair, consultation with DEQ should occur to evaluate acceptable repair or monitoring options in compliance with the Environmental Monitoring Plan. Any well that has been abandoned or replaced should be decommissioned in accordance with State or other applicable requirements.

Equipment Requirements

The following list includes typical equipment that may be necessary to maintain or repair a groundwater monitoring well:

- auger or bucket drilling rig,
- driller's maintenance truck,
- backhoe or skip loader,
- gravel or bentonite grout,
- welder.

6.2 Landfill Gas Monitoring System

Eight gas monitoring probes are installed at appropriate locations within the HRCL property, typically denoted as VP-1 thru VP-8. The purpose of the probes is to provide a means to monitor the landfill for subsurface horizontal gas migration.

Inspection

The condition of the landfill gas monitoring probes is inspected in conjunction with each gas monitoring event, typically semi-annually, and includes inspection of any road or trail needed to access the probes, inspection of the probe's outer steel casing, locking mechanisms and locks, and the condition of the surface seal and well pad. Any conditions that may warrant action, such as overgrowth of vegetation, missing or broken locks, damage to the steel casing, or damage to the PVC probes themselves should be documented in the AEMR submitted to DEQ.

Maintenance Procedures

Repairs to the landfill gas monitoring network may be necessary to maintain proper functioning of the gas probes. In the event that any individual probe deteriorates beyond use or repair, consultation with DEQ should occur to evaluate acceptable repair or monitoring options in compliance with the Environmental Monitoring Plan. Any gas probe that has been abandoned or replaced should be decommissioned in accordance with State or other applicable requirements.

Equipment and Material Requirements

The following list includes typical equipment and materials that may be necessary to maintain or repair a landfill gas monitoring probe:

- auger or bucket drilling rig,
- driller's maintenance truck,
- backhoe or skip loader,
- gravel or bentonite grout,
- PVC piping and fittings,
- rubber stoppers, silicone tubing or sealant,
- non-permeable plumber tape.

7. RESPONSIBLE ORGANIZATION AND CONTACT PERSON

This Operations and Maintenance Plan is applicable only to the Hood River County Landfill located in Hood River County, Oregon. It is intended to be implemented by the appropriate persons delegated by the Hood River County Board of Commissioners, which may include employed personnel or contracted consultants. This plan may be modified as necessary to achieve the desired results and ensure the proper operation and maintenance of the landfill as authorized under the DEQ permit. Persons or appointed positions currently delegated to implement this plan are included in the table below. Any additions, deletions, or changes of significant importance to the list of persons delegated to implement the plan should be communicated to the DEQ as soon as practical.

Delegates for: Hood River County Landfill Operations and Maintenance Plan		
TITLE	RESPONSIBILITY	CONTACT#
Public Works Director	Permit administration	(541) 387-7100
Engineering Manager	Permit administration support	(541) 387-7100
Maintenance Foreman	Regular maintenance and inspections	(541) 387-7103

7.1 Recordkeeping, Reporting and Inspection Frequency Summary

The following is a summary of the recordkeeping, reporting and inspection frequencies for the HRCL as required and further detailed in the Solid Waste Disposal Site Closure Permit (No. 168) sections as listed below:

Section 6.2 Non-Compliance Reporting – The permittee (HRC) must take immediate corrective action for any violations of permit conditions or DEQ Rules and notify DEQ by sending an e-mail to ERPermitCoordin@deq.state.or.us. Additional notification may be made by telephone at 541-298-7255.

Section 7.3 Inspection – The permittee (HRC) must physically inspect the entire facility at least monthly to determine compliance with this permit and DEQ rules. The permittee must document any repairs performed. Inspection records must be made available to DEQ upon request.

Section 7.5 Discovery of Prohibited Waste - If the permittee discovers prohibited wastes, the permittee must notify DEQ within 24 hours and begin to isolate or remove the waste. In addition, the permittee must take digital photos of the prohibited waste to document its quantity, nature, identity, and source.

For prohibited waste that is hazardous, suspected to be hazardous waste, explosive, radioactive, or infectious, the permittee must, within 90 days following discovery, transport the waste to a disposal or recycling facility authorized to accept such waste, unless DEQ approves otherwise. The permittee's temporary storage and transportation practices for this type of waste must comply with DEQ rules.

Section 7.6 Oil and Hazardous Material Spill Response and Reporting – The permittee must immediately clean up any spill of oil or hazardous material as required by OAR 340-142-0060. If the spill is of a reportable quantity the permittee must immediately report the spill to the Oregon Emergency Response System at 1-800-452-0311 and the DEQ The Dalles office at (541) 298-7255.

Reportable quantities include:

- Any amount of oil spilled to waters of the state
- Oil spills on land in excess of 42 gallons
- 200 pounds, 25 gallons or more of spilled pesticide residue
- Spills of hazardous materials that are equal to, or greater than, the quantity listed in the Code of Federal Regulations, 40 CFR Part 302 (List of Hazardous Substances and Reportable Quantities) and amendments adopted before July 1, 2002

For a complete list of hazardous materials required to be reported, please refer to OAR 340-142-0050.

Section 7.7 Leachate Prevention, Management Systems, Inspections, Notification (Paragraph 8) – The permittee must physically inspect all leachate containment, pumping, storage, and irrigation systems at the disposal site at least weekly from October 15 and June 15 if the cameras on the lower leachate collection pond and upper leachate storage pond are functional and sending photos of the ponds allowing for remote viewing of pond leachate levels. If the cameras on either or both leachate ponds are out of operation, inspections must be conducted a minimum of twice weekly once as early and once as late in the work week as possible. Upon request, DEQ may authorize in writing a less frequent inspection schedule if it determines the leachate collection system is designed and sized to require less frequent attention.

In the event a discharge of leachate, breakdown of equipment, fire, sliding, or other occurrence causes a violation of any conditions of this permit or of DEQ rules, the permittee must:

- Immediately take action to correct the unauthorized condition or operation.
- Immediately notify DEQ so that an investigation can be made to evaluate the impact and the corrective actions taken and determine additional action that must be taken.

Section 7.8 Drainage – The permittee must report to DEQ within 24 hours any significant malfunctions or damage and complete repairs within 60 days of discovery of the problem.

Section 7.13 Cover System – The permittee must monitor and maintain the cover system, including thickness and physically inspect the cover at least once every three months.

Section 14.2 Reporting Equipment Damages – Within 14 Days of discovering damaged monitoring equipment or station, the permittee must submit to DEQ a report describing the damage, the proposed repair or replacement measures, and the schedule to complete this work.

Section 14.4 Reporting Well Construction and Repairs - The permittee must document all monitoring well or dedicated gas monitoring probe repair and construction activities, including geologic logs, well location information, and construction information in a report prepared and stamped by a Geologist or Certified Engineering Geologist, with current Oregon registration. The permittee must submit to DEQ, within 30 days of the action, copies of the driller’s well reports sent to the Oregon Water Resources Department, and a final report in accordance with the approved workplan.

(End Section 7.1)

Figures and Attachments

OPERATION AND MAINTENANCE SITE INSPECTION REPORT

SITENAME: _____
INSPECTION DATE: _____
TECHNICIAN: _____

COVER & VEGETATION	YES	NO	COMMENTS
Settling of cap			
Distinct areas of distressed vegetation			
Erosion on cap system			
Erosion on side slopes			
Ponding of water on cap			
Surface cracking			
Exposed waste			

REPAIR AREAS:				
GPS Coordinates		Location Description	Date of Repair	COMMENTS
Northing	Easting			