

HOOD RIVER COUNTY PUBLIC WORKS



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ANNUAL LEACHATE IRRIGATION SYSTEM REPORT HOOD RIVER LANDFILL, PERMIT #168 2020-2021 SEASON

This report describes the 2020-2021 leachate spray irrigation season for the Hood River Landfill. The 2020-2021 season encompasses the period between July 1, 2020 and June 30, 2021. The report is required in accordance with Section 15.3 of Solid Waste Disposal Site Closure Permit No. 168, issued by the State of Oregon Department of Environmental Quality (DEQ) on May 29, 2013. The specific reporting period has been selected in order to coincide with the reporting period of the Annual Environmental Monitoring Report (AEMR), also required by the DEQ in accordance with Section 15.4 of the Permit.

Site Conditions

Grassy vegetation continued to be generally well established on the landfill cover and no standing water was observed. No re-grading of the landfill cover appears to be necessary. Surface runoff entering the leachate collection system continued to be minimal and no failures were noted in the surface water diversion structures.

Signage and gated access to the area continued to minimize trespassing and vandalism, however, evidence suggests occasional access by ATV or other off-road vehicles has been occurring. Measures have repeatedly been taken to negate ATV access to the area but have not eliminated the occurrences. No substantial damage or negative impacts to the site have resulted from the occurrences. Prior vandalism in the form of graffiti still exists near the upper-pump house. All signs previously marked with graffiti were replaced in 2020 and several signs that were damaged with bullet holes were replaced in 2021. No vandalism to the spray irrigation system has been observed.

Site inspections were performed periodically throughout the summer and fall months since runoff was minimal or non-existent, and more frequent inspections occurred during the winter and spring months when runoff was regular. Summer and fall inspections included observing the area for signs of trespassing, vandalism, evaluation of fire fuels (i.e., dry grass, dead trees, etc.), and water levels in the upper pond. Winter and spring inspections included the same general observations but also included inspections of the lower pond and sprinkler system for signs of activity levels, debris, repair needs, and to regularly record the volume of leachate pumped.

Leachate Spray Irrigation

While leachate pumping has historically begun in either November or December, this season it did not begin until January 2020 and continued thru June 2021. Both the landfill site and the leachate spray irrigation system were inspected regularly during normal work hours and

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the system was maintained and kept in working order. A flow meter installed in the upper-pump house in December 2019 was modified in December 2020 to display flow volumes more easily in Gallons rather than in Acre-Feet. Meter readings indicate that during the 2020-2021 reporting season, a total of 9,035,525 gallons of leachate was collected and dispersed thru the sprinkler system. Rainfall totals during the same period measured 21.51 inches.¹ As shown in the chart below, annual rainfall for the season was similar to that of the previous two years, however the volume of leachate pumped has been inconsistent and varies by up to 40 percent. While the discrepancy may be attributed to a variety of factors, similar discrepancies acknowledged in the 2018-2019 and 2019-2020 reports lead to the installation of the analog flow meter in December 2019 and further modification in December 2020. These changes, when coupled with the redefining of the irrigation reporting season, are expected to result in a more accurate account of the volume of leachate distributed in the future, as well as better consistency regarding the reporting parameters in general.

Irrigation Season July 1 – June 30 ²	Month Pumping Began	Month Pumping Ended	Rainfall (in.) July 1 – June 30 ²	Total Gallons Pumped
2010-2011	N/A	N/A	37.0	14,200,000
2011-2012	N/A	N/A	30.6	12,000,000
2012-2013	November 2012	June 2013	24.3	5,600,000
2013-2014	November 2013	July 2014	29.5	12,700,000
2014-2015	December 2014	June 2015	23.4	12,600,000
2015-2016	November 2015	July 2016	32.5	25,700,000
2016-2017	November 2016	August 2017	33.2	20,100,000
2017-2018	November 2017	August 2018	30.2	22,700,000
2018-2019	December 2018	June 2019	21.7	6,300,000
2019-2020	December 2019	June 2020	22.7	5,900,000
2020-2021	January 2021	June 2021	21.51	9,035,525

Maintenance and Repairs

Dual pumps are in place for both the lower pond pump-house, and the upper pond pump-house which distributes to the sprinkling system. The pumps are configured so that one acts as an emergency backup in the event the other fails. During normal use, the pumps alternate cycles in order to minimize wear and further extend pump life. In 2017, a pump-replacement program was implemented in which one lower pump is replaced every year so that neither pump is more than two seasons old. This practice continued through 2021 and is recommended to continue in

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the future. Additionally, a spare pump is kept at the County Public Works shop in the event of a pump failure and is part of the scheduled pump rotation program. Pumps are typically rotated at the end of the leachate collection season (i.e., summer-fall) and part of the annual, routine maintenance work. Annual maintenance work generally includes rotating one lower pump and cleaning pump components, the lower-pump house piping, and the pond screenings; plus any deferred repair work.

During a regular inspection in February 2021, it was observed that a hose connected to a lower pump had ruptured. The hose conveyed leachate from the pump assembly, thru the pump-house wall and to a 6" conveyance pipe leading to the upper pond. Due to the rupture, leachate had accumulated in and around the lower-pump house to a depth of approximately 8" until topping an emergency spillway. The hose was repaired and the system was back online within 24-hours and the DEQ was notified of the spill. Although the escape of leachate was comparatively minimal and the incident self-reported, the DEQ issued a warning letter regarding the incident but did take any formal enforcement action.

Other than the aforementioned hose rupture and minor sprinkler-head replacements, no other system repair work was necessary during the 2020-2021 season and all pumps and piping functioned as intended.

Potential Health Risks

Attempts were made to collect groundwater samples from all three monitoring wells in March 2021, however, like previous years well No.1 (MW-1) and well No.2 (MW-2) were dry. Subsequently, samples were only collected from well No.3 (MW-3).

The analysis results from MW-3 samples were generally consistent with prior years with respect to Group 1a, 1b and 2a indicators. No Group 1a or Group 1b indicators were outside Maximum Containment Level (MCL) values, however, both the total iron and manganese concentrations (Group 2a) exceeded their MCL's at 9.03 mg/L and 0.31 mg/L respectively. Additionally, the cobalt concentration (Group 2b) of 7.02 ug/L was the highest historical value. No Group 2b MCL's were exceeded and no VOC's were detected. Overall, the data collected does not indicate an overall change in groundwater quality nor does it indicate an immediate or anticipated health risk.

Analysis results from the surface water samples are the first results obtained since 2017 and therefore difficult to compare with previous years, however, they do not indicate an overall change in surface water quality from previously obtained results. Group 1a, 1b, and 2a indicators were generally consistent with pre-2017 analysis results. Most Group 2b indicators were also within pre-2017 concentration ranges, except for the cobalt concentration, which was also the highest historical value at 7.02 ug/L. No Group 2b MCL's were exceeded but two VOC's, Carbon tetrachloride and chloroform, were detected. These were the first surface water samples to indicate the presence of these VOC's.

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Analysis results from the leachate samples were similar in that they do not indicate a change in leachate quality. Group 1a and 1b indicators were generally consistent with prior results, except for the hardness concentration, which was the highest historical concentration at 197.5 mg/L. Most Group 2a indicators were consistent with previous years, including a high concentration of iron (11.45 mg/L) and manganese (6.47 mg/L), which both exceeded the MCL's. The concentrations of Magnesium and silica were also detected at their highest historical concentrations of 17.2 mg/L and 14.55 mg/L respectively. All Group 2b indicators were either at their lowest concentrations or within prior concentration ranges. Three VOC's (benzene, chlorobenzene, and dichlorobenzene) were detected at levels above their reporting limit and two VOC's (sec-butylbenzene and isopropyl benzene) were detected at estimated concentrations. With the exception of sec-butylbenzene, all detected VOC's have been detected in previous samples since 2009.

Methane gas monitoring was performed in November 2020 and again in March 2021. Detection levels were consistent with previous sample years, in that methane was detected in the probes located within the waste boundary but not in the probes located outside the boundary. The data indicates that offsite methane migration is not occurring and that concentrations are not exceeding the lower explosive limit at the property boundary.

Please refer to the 2021 Annual Environmental Monitoring Report for specific groundwater, surface water, leachate, and methane test results and analysis.

The risk of exposure to leachate continues to be minimized by security measures installed around the site. These measures include: a locked gate at the landfill entrance, the display of "Unauthorized Entry Prohibited" signage around the irrigation system, and the installation of fencing around both the upper-pond and across the top of the lower-pond dam. Fencing at the upper-pond also includes a locked gate in order to limit access to authorized personnel only, and measures are taken when appropriate to mitigate trespassing by ATV or other off-road vehicles.

Landfill Closure

Access to the site continues to be monitored and kept to a minimum. No dumping or open burning was observed at the site and onsite roads have been maintained to provide reasonable, all-weather vehicle access to monitoring and maintenance locations. Evidence of trespassing by ATV and other off-road vehicles has significantly decreased from prior years but still occurs.

Landfill Budget

The County expended a total of approximately \$28,212 on landfill monitoring and testing during its 2021 fiscal year (July 1, 2020 – June 30, 2021). This period coincides with the irrigation season and includes all funding expended on leachate evaluation, consultant services,

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maintenance and repair needs, general operations, and staff services. The County does not have a reserve fund for landfill monitoring, maintenance, or any other solid waste permit activities. All funding for landfill activities is appropriated on an annual basis from the County General Fund and subject to Budget Committee and County Board of Commissioner approval. While expenditures from a reserve fund would also be subject to the same Committee and Commission approvals, the lack of a dedicated reserve for landfill activities means that unanticipated costs, such as additional testing, re-testing, or high-dollar repair costs, may need to be deferred until the following fiscal year when additional funding can be appropriated. There are no staff employees dedicated for landfill activities. All staff time is either provided by the County Parks & Buildings Supervisor or contracted thru the County Public Works Department Administration Division.

Acknowledgements

1. Source records for annual rainfall prior to the 2020-2021 season are unavailable. Rainfall data for the 2020-2021 season were provided by www.hoodriverweather.org.
2. The Irrigation and Rainfall reporting seasons have varied prior to 2020 and have typically coincided with the calendar year. The reporting season was changed in 2020 to coincide with the AEMR reporting season and to comply with the Closure Permit. However, the acknowledged dates have been added at the request of the DEQ and represent current reporting practices.