Date: 2/24/2025

To: Senate Committee on Energy and Environment

From: Lisa Arkin, Beyond Toxics

Subject: Testimony in support of SB 726, Landfill Methane Monitoring

Chair Sollman, Vice-Chair Smith, and the Members of the Senate Committee on Energy and Environment,

Beyond Toxics, an environmental justice organization based in Eugene, offers its strong support for SB 726. If passed, this law would strengthen Oregon's fight against climate change by closing loopholes in landfill methane monitoring requirements. By mandating advanced GIS-based technology to monitor all landfill areas, including previously exempt zones, and improving methods of emissions reporting to the Department of Environmental Quality, Oregon can better support landfill operators proactively identify and mitigate methane leak violations. This bill would advance Oregon's own environmental justice initiatives by prioritizing cleaner air and reducing greenhouse gas emissions in communities that experience disproportionately higher levels of pollution simply because they live nearby.

The passage of SB 726 would close critical gaps in the law that allows for the unchecked emissions of undetected methane at landfills. Methane emissions have significant negative impacts on climate change and human health, and landfills are among the largest sources of methane emissions in Oregon. As landfills continue to exceed their regulatory limits, some as high as nearly 200 times over the regulatory limit, the impacts on our environment and public health will only continue to suffer.

An example of this regulatory exceedance can be seen at Benton County's Coffin Butte landfill. This site has been emitting dangerously high levels of methane for years, with the United States EPA concluding after two recent compliance inspections that the landfill has "wide spread shortcomings" in the site's monitoring practices. The EPA measured and reported excessive, uncontrolled methane plumes far over the regulatory limit. The EPA also "observed during recent inspections that areas that are not dangerous are improperly excluded from monitoring."

My testimony includes a summary of the 2024 EPA Clean Air Inspection and the full reports written by the EPA in both 2022 and 2024.

Shortcomings in monitoring inevitably leads to shortcomings in capturing emissions, which is a result of the shortcomings of our current regulations. Through this bill, landfills like Coffin Butte would be able to utilize advanced monitoring practices such as satellite, drones, airflight monitoring, or remote direct monitoring technology that would be able to pinpoint emission rates and the locations of the point sources of emissions. This not only protects our communities and environment from excessive pollutants and slows the contribution to climate change, it also

provides an efficient mechanism for landfills to quickly identify and repair their malfunctioning gas collection systems.

This Committee has the opportunity to pass a common sense approach to regulating methane emissions from landfills. By passing this bill, this Legislature will meaningfully take steps towards combating climate change, reducing toxic air pollutants in our communities, and enhancing Oregon's own leadership by bringing modern technology to a sector that needs it. Thank you for your time and consideration on this important matter.

Sincerely,

Lisa Arkin

Executive Director, Beyond Toxics

Appendix 1

Summary of the 2024 EPA Clean Air Act Inspection at Coffin Butte Landfill

EPA Coffin Butte Inspection Report 6/2024 Summary prepared by Beyond Toxics

EPA conducted a follow up methane compliance inspection of Coffin Butte Landfill on June 21, 2024, two years after their inspection in 2022. EPA stated this was a "Clean Air Act Compliance" inspection. The EPA focused on a small portion of the landfill's surface area as a follow-up to their inspection in 2022. The 2022 inspection identified over 70 excessive methane leaks. They also examined the landfill gas flare to the south across Coffin Butte Road.

Oregon and Federal rules stipulate that **any detection of methane over 500 ppm is a violation of the Clean Air Act and Oregon State Rules**. Landfill operators are required to take remediative action and bring emissions below 500 ppm within 10 days.

During the 2024 inspection, EPA found a total of **41 exceedances of 500 ppm. The vast majority of the exceedances were magnitudes over the legal maximum of 500 ppm, ranging from 1000 to 118,000 ppm.**

- Many of those exceedances occurred at locations with openings in the tarp cover caused by fabric separation, failed patch repairs, rocks and vegetation puncturing the tarp.
- Other exceedances occurred where gas extraction wells were installed and the surrounding landfill tarp cover had not been adequately sealed around those wells.
- EPA found a gas extraction well without a lid, where methane was belching out resulting in a reading of 118,000ppm (10% of air content), which is an explosive concentration of methane and 200 times over the regulatory limit.
- Some exceedances were so high that the monitoring equipment "flamed out", meaning that the inspectors had to turn off the equipment before it was damaged.
- EPA received records of odor complaints filed by community members from landfill gas for 6 months leading up to the inspection. There were complaints about landfill gas in each of those months (Dec 2023-June 2024).
- EPA inspectors reported smelling landfill gas while onsite conducting SEM measurements.
- EPA found that one of the landfill flares had a leak at a juncture in the pipe, which also resulted in exceedances above 500 ppm.

After two follow-up inspections, re-monitored areas showed that not all methane leaks returned to below 500 ppm. It is important to note that the 2024 EPA inspection monitored the same areas as the 2022 inspection and found these areas continued to leak and emit methane above 500 ppm. In two years time, Republic Services had not repaired the gas system correctly. The landfill operator appears to be managing methane reactively after inspections by regulatory agencies. This demonstrates a need for legislative intervention to improve monitoring technology, reporting and operator accountability.

==========

EPA inspectors photographed examples of where methane emissions exceeded state and federal law at Coffin Butte landfill.

Example 1 - ***4,000 ppm Methane Exceedance at gas collection piping/equipment***

Example 2 - ***20,000 ppm Methane Exceedance from small tear in the tarp***

Example 3 - ***800 ppm Methane Exceedance measured where a weed punctured the tarp***

Additional Note:
DEQ has paused their Title V Air Permit process for Coffin Butte, citing a need for additional information from Republic Services. The permit hearing originally scheduled for January 14th was cancelled indefinitely.

Other Landfill Inspections:
The EPA also inspected the Wasco Landfill and found problems with methane exceedances. Beyond Toxics has not yet written up a summary of the EPA's findings.

Appendix 2

2024 EPA Clean Air Act Inspection at Coffin Butte Landfill

Filed 8/29/2024

REGION 10
SEATTLE, WA 98101

Clean Air Act Partial Compliance Evaluation Inspection Report

Valley Landfills Inc. Coffin Butte Landfill

2917 Coffin Butte Rd
Corvallis, Oregon

Inspection Date: June 21, 2024

SARA CONLEY Digitally signed by SARA CONLEY
Date: 2024.08.29 10:24:54 -07'00'

Report Author Signature

Sara Conley
Clean Air Act Inspector
EPA Region 10
Enforcement and Compliance Assurance Division
Air Enforcement Section

Steven Rapp Digitally signed by Steven Rapp
Date: 2024.08.29 14:26:19 -04'00'

Peer Review Signature

Steve Rapp
Environmental Engineer
EPA Office of Enforcement and Compliance Assurance

ELIZABETH WALTERS Digitally signed by ELIZABETH WALTERS
Date: 2024.08.29 14:34:09 -07'00'

Air Enforcement Section (AES) Manager Signature

Elizabeth Walters
Air Enforcement Section Manager
EPA Region 10

Table of Contents

Attachments

I. Basic Facility and Inspection Information

Facility:	Valley Landfills Inc. 2917 Coffin Butte Rd Corvallis, Oregon 97330
Mailing Address:	2917 Coffin Butte Rd Corvallis, OR 97330
AFS/FRS Number:	110004808423
SIC:	4953 Refuse Systems
NAICS:	562212 Solid Waste Landfill
Permit Number:	02-5902-TV-01
Facility Contacts:	Ian Macnab Environmental Manager, Oregon Valley Landfills Inc. ianmacnab@republicservices.com Broc Kienholz Operations Manager Coffin Butte Landfill Republic Services bkienholz@republicservices.com Phil Caruso Environmental Specialist Republic Services pcaruso@republicservices.com
U.S. EPA Inspectors:	Sara Conley Air Enforcement Section (AES) Enforcement and Compliance Assurance Division (ECAD) U.S. EPA Region 10 1200 Sixth Ave. Seattle, WA 98101-3188

	(206) 553-6914 Conley.Sara@epa.gov
	Alyson Skeens Air Enforcement Section (AES) Enforcement and Compliance Assurance Division (ECAD) U.S. EPA Region 10 950 West Bannock Street, Suite #100 Boise, Idaho 83702-5999(208) 378-5748 Skeens.Alyson@epa.gov
	Steve Rapp Air Enforcement Division (AED) Office of Civil Enforcement (OECA) U.S. EPA 1200 Pennsylvania Avenue Washington, DC 20460 (202) 250-8961 Rapp.Steve@epa.gov
ODEQ Representatives:	Becka Puscas Interim Manager, Office of Compliance and Enforcement Oregon Department of Environmental Quality (503) 229-5058 Katie Eagleson – Air Toxics Permitting Engineer Heather Kuoppamaki - Senior Air Quality Engineer Alex Haulman – Air Quality Inspector, Eastern Region Laura McWhorter – Natural Resource Specialist
Date of Inspection:	June 21, 2024
Inspection Start/End Times:	9:45 – 16:30
Inspection Notice:	This was an unannounced inspection. At approximately 9:00am on June 21, 2024 I called Ian Macnab to let him know that we would be arriving at the facility in about 45 minutes.

II. Purpose of Inspection

This was a multi-media Clean Air Act (CAA) compliance inspection by the Environmental Protection Agency (EPA). Inspector Conley, EPA Region 10, led the inspection and was assisted by EPA inspectors Alyson Skeens, EPA Region 10, and Steve Rapp, EPA AED/OECA, (collectively, "the inspectors"). The regulatory state air agency, the Oregon Department of Environmental Quality, was made aware of the inspection beforehand and participated in the inspection.

This was a partial compliance evaluation by the U.S. Environmental Protection Agency Region 10. The purpose was to identify potential compliance concerns with CAA regulations, specifically the National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills, 40 CFR Part 63 Subpart AAAA and 40 CFR Part 61 Subpart M—National Emission Standard for Asbestos. The facility operates under a Title V Air Operating Permit (302-9502-TV-01. The facility is also subject to the federally enforceable Oregon State Plan for existing municipal solid waste landfills. The facility is regulated under the Oregon Administrative Rules at Chapter 340, Division 236 (OAR 340-236-0500) entitled "Solid Waste Landfills: Emission Standards for Municipal Solid Waste Landfills."

Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection and from a subsequent records review. The information provided does not constitute a final decision on compliance with CAA regulations or applicable permits, nor is it meant to be a comprehensive summary of all activities and processes conducted at the facility.

III. Compliance History

EPA's Enforcement and Compliance History Online, ECHO[1], lists four on-site CAA inspections since 2022.

CAA	*PCE On-Site*	*EPA*	*06/21/2024*
CAA	FCE On-Site	State	07/11/2022
CAA	*PCE On-Site*	*State*	*07/07/2022*
CAA	*PCE On-Site Monitoring/Sampling*	*EPA*	*06/23/2022*

[1] See https://echo.epa.gov/

The ECHO database does not list formal or informal enforcement actions in the last three years for the CAA or other statutes.

IV. Pre-Inspection Observations

We went directly to the facility. No observations were made prior to the scheduled inspection.

V. Facility and Process Description

The following facility description is based on information provided by a facility representative in the opening conference as well as documents submitted by the facility to ODEQ.

The Valley Landfills Inc. facility ("the landfill," "the facility," or "Coffin Butte") is located in Benton County Oregon. The landfill began accepting waste in 1978 and has a design capacity of approximately 39.7 tons. In 2021 there were 312 active vertical wells and a landfill gas control capacity equal to 5000 standard cubic feet per minute (scfm). Approximately 110 acres of the landfill have been constructed. The landfill directs landfill gas to an electrical generation plan owned and operated by the Pacific Northwest Generating Cooperative (PNGC). PNGC has a total of five engines capable of combusting 1915 standard cubic feet per minute (scfm). The PNGC facility has two backup flares with a combined capacity of 3,000 scfm.

The landfill uses interim cover consisting of temporary plastic covers. Temporary plastic cover is 12-mil lightweight plastic or 45-mil ethylene propylene diene monomer (EPDM) rubber. The cover material is anchored to the surface of the landfill. Sheet seams are sewn together, taped, or made to overlap with sandbags. Interim soil cover is typically 12 inches thick. Interim soil and plastic cover are placed to control landfill gas prior to final cover placement.

According to the facility, final cover will be installed once areas have settled. The final cover will consist of an under-drainage layer, 24" of soil, geomembrane and a drainage layer.

VI. Entry and Opening Conference

Inspectors Rapp, Skeens and I arrived at 9:40am along with representatives from ODEQ. The opening conference began at 9:45am.

Opening conference attendees included:

ODEQ:

- Becka Puscas
- Katie Eagelston
- Heather Kuoppamaki
- Alex Haulman
- Laura McWhorter

Valley Landfills Inc.

- Ian Macnab
- Broc Kienholz
- Phil Caruso

Inspectors Rapp, Skeens and I presented our credentials to Mr. Macnab. I explained the purpose of the inspection was to evaluate compliance with the Clean Air Act and that we would be primarily focused on conducting surface emission monitoring (SEM). I explained that we had three instruments with us, the two TVA 2020s[2] and an Inficon IRwin SX[3], which can be used to measure surface concentrations of methane. I explained that we would calibrate each instrument following the opening conference. We also notified the facility that we planned to take photos with a digital camera[4] and that we brought a Forward Looking Infrared (FLIR) Camera[5] capable of visually monitoring methane. I explained that all measurements, photos, video, and other information collected during the inspection would be included in the inspection report. I also described the timeline of the inspection and set expectations that we would be asking questions of the facility staff as we conducted the inspection.

I asked about the age of the landfill and about the cells in the landfill that are subject to the gas collection and control and surface emission monitoring (SEM) requirements under the federal CAA regulations for Municipal Solid Waste (MSW) Landfills. The facility representatives explained that the landfill first accepted waste in the 1970s. There is waste older than 5 years in every cell of the landfill. Inspector Rapp asked if there are any areas of the landfill that are currently excluded from gas collection and control. The facility representatives said that long ago there were areas but not now. At this landfill there is a cell of asbestos monofil as well as a small area that has asbestos buried in-place. Most asbestos is in the designated asbestos cell.

Mr. Kienholz explained how waste shipments are accepted at the facility. Trucks with municipal solid waste are weighed at the scale house. Mr. Kienholz stated that the commercial trucks have an account with Republic Services and if they bring in special wastes that information is recorded at the scale house. New waste is placed in active fill areas onsite. There is a new cell under construction at the landfill which will be located near the asbestos cell.

Inspector Skeens asked what the approximate volume of asbestos containing waste (ACW) Coffin Butte received and the customer breakdown between public and commercial. Mr. Macnab stated that Coffin Butte receives approximately 5,000 to 10,000 tons of ACW per year.

---

[2] Thermo Fisher Scientific Model TVA 2020, Serial Number 202023127089 and Thermo Fisher Scientific Model TVA 2020, Serial Number 202017092713

[3] Inficon IRwin SX device, using the Elkins Earthworks software, held by EPA OECA/AED, Serial #: 580-01092006439

[4] Olympus Tough TG-6, Serial Number BJ5B27623

[5] FLIR Gx620 1060080

Macnab stated that Coffin Butte does not typically receive ACW from the public and most shipments are from commercial contractors. Mr. Macnab stated that Coffin Butte will see loads coming from Coast from Portland to Eugne up to Willamette. Coffin Butte rarely receives waste from out of state but if they do it would most likely be from Washington.

Inspector Skeens asked if Coffin Butte has turned ACW loads away for discrepancies. Mr. Macnab stated that they have turned loads away before. The load is inspected when dropped off and workers will require bags to be taped if there are rips or tears. Inspector Skeens ask if they could see the asbestos cell during the inspection. Mr. Macnab states that the asbestos cell was downhill from the construction site and advised against going there for safety concerns. Inspector Skeens asked if Coffin Butte had plans to layer over the asbestos cell with MSW. Mr. Macnab stated that there are plans but he was not sure when that would take place.

Inspectors Rapp and I asked about how the facility monitors surface emissions and the landfill gas collection system. The facility representatives explained that their consultant, SCS, provides a SEM route map and performs the SEM monitoring on foot. The facility representatives stated that the most recent surface emissions monitoring was performed a few months ago. The facility representatives do not observe the surface emission monitoring conducted by SCS. According to the facility representatives, if SCS identifies surface emission exceedances, SCS reports the exceedances to Republic Services and Republic Services will make the repairs. Inspector Rapp asked if there are any areas of the landfill that are not monitored for surface emissions. The facility representatives said that they do not monitor dangerous areas such as where there active filling is occurring.

I asked who conducts the well parameter monitoring and the facility told me that PNGC Power monitors the wells. PNGC Power operates the landfill gas to energy facility. I asked about interior well installations and the facility representatives told me that wells will be installed beginning in July. The facility has a combination of vertical and horizontal interior wells installed and the facility representatives explained that the active fill area is managed with horizontal wells. The facility reported that cover integrity monitoring is conducted by in-house staff.

Inspector Rapp asked if the flares were operating that day. The facility representatives indicated that the landfill was producing approximately 1800 scfm of which approximately 1000 scfm was being routed to the engines and the remainder to flares. The inspectors indicated that they would like to visit the flare station later during the facility walkthrough.

I asked the facility for a printed map of the landfill and we discussed where we planned to conduct the monitoring with Mr. Macnab. I explained that we would not be conducting a full surface emission monitoring survey over the entire landfill and that our inspection would be limited to an area before lunch and one after lunch. I decided to start with the area closest to the facility's office for the morning and then to visit the flare station and northeastern area in the afternoon. The opening conference concluded at approximately 10:50. Immediately following the opening conference we calibrated the two TVA 2020s and the Irwin.

VII. Facility Walk-Through

The table of surface emissions exceedances and digital image log is included as Attachment 1 to this report. A map of the Surface Emissions Monitoring (SEM) path walked by Inspector Rapp with the EPA IRwin is included in Attachment 2.

A. Morning SEM on Southwest Face of The Landfill

The walkthrough began at about 11:00. The inspection team was escorted by Mr. Macnab and Mr. Caruso. We began the monitoring with one TVA 2020 operated by inspector Skeens, another TVA 2020 operated by Mr. Haulman of ODEQ, and the EPA IRwin operated by Inspector Rapp.

Mr. Macnab estimated that we were over Cell 3 of the landfill. The lower side of the slope was vegetated, and Mr. Macnab stated that they were in the process of getting the vegetated surface of the landfill mowed. We did not measure any exceedances on the lower-vegetated section of the landfill slope. As we moved up the slope of the landfill we began to walk on the 45-mil ethylene propylene diene monomer (EPDM) rubber covered area. The 45-mil EPDM cover is considered interim cover. Mr. Macnab explained that this area would remain covered with 45-mil EPDM until there was either more waste placed in this cell or the area is placed under final cover. The EPDM material is weighed down with sandbags and straps it is also bolted to the surface in places.

We traversed a section of the southwest side of the landfill moving from one penetration to another and monitoring surface emissions along the way. I noticed that when the wind was blowing from the west there was an odor that smelled like landfill gas. There were a number of exceedances, readings of 500 ppm methane or larger, coming from holes or tears in the cover material. I noted that there were a number of plants growing out of the cover material at the top of the western side of the landfill in the area along the edge of Cell 3 and Cell 5. Some of the plants were between 1.5 to 3 feet tall. We did not monitor at the plant locations because of filling activity immediately uphill from that location. We made our way down the landfill slope and continued to take surface emission measurements with the TVAs and the Irwin. We took a break for lunch at approximately 13:00. The Irwin, operated by Inspector Rapp, detected 31 locations where methane emissions were 500 ppm or greater in this section of the landfill. See Attachment 1.

B. Afternoon SEM at Flare Station

We returned to the facility at 14:30 and performed a calibration bump check on the TVAs and the Irwin which both units passed. See Attachment 3. Mr. Macnab informed us that SCS would be coming the week of June 24th to conduct penetration monitoring. We followed Mr. Macnab in our vehicle to the flare station, the ODEQ representatives joined us for this portion of the afternoon. At the time of our visit, a new enclosed flare was onsite but construction of the flare was not complete and the flare was not operational. I operated the FLIR camera and recorded a

video, FLIR0093, of a leaking flange/blank plate at the flare station. The Irwin measured emissions above 500 ppm at the flange (photo 1734). See Attachment 1. The ODEQ team departed the flare station at approximately 15:00.

C. Afternoon SEM at Eastern Face of The Landfill

We followed Mr. Macnab in our vehicle to a pull-off at the northeastern face of the landfill. There was a noticeable landfill gas odor at the base of the slope. The Irwin measured methane greater than 500ppm at a liquid separation pipe for a horizontal collector. Inspectors Rapp and Skeens monitored surface emissions while we walked up the eastern slope of the landfill. We made our way up the slope walking from one wells or other penetrations to another and monitored surface emissions along the way. We also stopped at areas where visual inspection indicated possible surface emissions such as holes in the cover material. We identified 9 locations with emissions over 500ppm methane along our path. See Attachment 1. The walkthrough ended at approximately 16:00.

D. Asbestos

The inspectors did not observe the asbestos cell due to safety concerns Mr. Macnab expressed during the opening conference.

VIII. Closing Conference

At 16:00, our group returned to the facility conference room to discuss the inspection and conduct the closing conference. I led the closing conference and summarized the parts of the facility we had visited during the inspection and our observations related to CAA. I went through my inspection notes and described potential compliance concerns from the inspection. The following were identified as potential compliance concerns during the closing conference:

1. EPA monitored only a portion of the landfill surface and found numerous methane emissions at 500 ppm and higher, including at holes in the cover material. We identified many of the approximately 40 exceedances at locations where the cover material was damaged. Inspectors had noticed some plants growing out of the cover material near the areas where we monitored for emissions.
2. EPA monitored a flange at the flare station had methane emissions over 500ppm. The facility indicated that they were repairing this flange while we were in the opening conference.
3. One of the wellheads EPA monitored to was open to the atmosphere and the IRwin measured emissions over 500ppm.

Inspector Rapp and I discussed EPA's follow-up from the surface emission monitoring EPA conducted during the inspection. We explained that we would send the locations of the

exceedances and the readings within a week. We explained the 10-day re-monitoring would be due within 10 days following the facility's receipt of the list of exceedances.

I listed the records I needed to further evaluate the facility to Mr. Macnab. I explained that the inspection would not be complete until I have reviewed all the records that the facility submitted, reviewed my notes, and written an inspection report. Inspector Rapp, Skeens, and I thanked the facility representatives for their time and assistance and departed the facility at 16:30.

IX. Post Inspection Activities

A. Records Review

The facility provided a response to our information request on August 16, 2023.

Table 1: Records Review

Records Requested

Electronic copy of a map or maps: • **Including the locations of all wells and an indication of the well type.** • **Indicating the cell outlines on the landfill.** • **Indicating the boundaries of each phase of the landfill.** • **Indicating the most recent planned path for surface emission monitoring, including areas excluded from monitoring.**
Response: The facility provided all of the requested maps in an electronic format.
The most recent two quarters of gas migration/perimeter probe readings.
Response: The facility provided monthly readings from January 2024 through July 2024. The permitter probe readings recorded for the last two quarters were all 0.0% methane.
Electronic copy of the most recent design plan.
Response: The facility provided the requested record.

10 most recent ASM-4 for commercial loads.
Response: The facility provided 10 ASN-4 forms.
Last 6 months of landfill cover monitoring records.
Response: The facility provided records for each month from January 2024 through June 2024.
Last three months of all well readings, including all parameters measured. Please provide in an excel readable file type.
Response: The facility provided the requested data.
Odor complaints received in the last 6 months.
Response: The facility provided records covering December 2023 through June 2024, all months had a complaint about odor.
Electronic copy of the two most recent semi-annual (or annual) reports.
Response: The facility provided the two most recent semi-annual reports. One dated February 13, 2024 covering the reporting period of July 1, 2023 through December 31, 2023 and one dated July 16, 2024 covering the reporting period of January 1, 2024 through June 30, 2024.
2 most recent quarterly surface emission monitoring surveys
Response: Facility provided both of the reports we requested.

B. <u>Surface Emission Monitoring Follow-up</u>

The facility submitted the following documents on August 23, 2024

SEM Repair tracking – listed repairs but not the date of the repair, see Attachment 5.

Second Quarter Emission Monitoring - June 11, 16, 18, 24, 26, and July 6, 16, and 26, 2024, OAR landfill surface emissions monitoring (SEM) performed by SCS Field Services (SCS) at the Coffin Butte Landfill.

EPA's surface emissions results, received by the facility on June 26, 2024, indicated that forty-one (41) locations exceeded the 500 ppmv maximum concentration. The required first and second 10-day (Oregon Administrative Rule) follow-up monitoring performed by SCS on July 6, and 16, 2024, indicated that not all locations returned below compliance limits as required, following system adjustments and remediation by site personnel. Based on these monitoring results, and in accordance with the Oregon State Regulations, the site is required to perform a system expansion within 120 days of the third detected exceedance or November 13, 2024.

Attachment 1: EPA Inspection Photo, Video and SEM Log

Attachment 1 – EPA Inspection Photo, Video and SEM Log
Valley Landfills Inc CAA Inspection 06/21/2024

PENETRATION ID	TIMESTAMP (EST)	Corrected time (Pacific time)	LAT WGS84	LON WGS84	MAX DETECTOR CONCENTRATION CH4 (ppmv)	CONFIRMATION TVA 2020 (EPA)CH4 (ppmv)	PHOTO OR VIDEO NUMBER	DESCRIPTION
A1	6/21/2024 14:11	6/21/2024 11:11	44.69752	-123.233986	4900	1000	P6210151, P6210152	Exceedance at well
--							P6210153	Photo showing the side of the landfill looking east.
--							P6210154	Photo of a well with cover gathered around the base
A2	6/21/2024 14:21	6/21/2024 11:21	44.697938	-123.234216	10011	3%	n/a	
A3	6/21/2024 14:23	6/21/2024 11:23	44.698045	-123.234395	1271	3700	n/a	
A4	6/21/2024 14:29	6/21/2024 11:29	44.698033	-123.234661	1622	1000	P6210155, P6210156	Exceedance measured at base of well
A5	6/21/2024 14:30	6/21/2024 11:30	44.697969	-123.234744	1459	1600	P6210157	Exceedance at opening in cover
							P6210158	Penetration in cover
A6	6/21/2024 14:33	6/21/2024 11:33	44.698005	-123.235072	14097	>1000	P6210159, P6210160, P6210161	Exceedance located at support on left
A7	6/21/2024 14:35	6/21/2024 11:35	44.698088	-123.235163	16501	20000	P6210163	Exceedance at tear in cover
A8	6/21/2024 14:37	6/21/2024 11:37	44.698123	-123.235294	1118	800	P6210164	Exceedance at vegetation growing out of cover
A9	6/21/2024 14:40	6/21/2024 11:40	44.698127	-123.235513	2719	1.30%	P6210165	Exceedance at tear in cover
A10	6/21/2024 14:41	6/21/2024 11:41	44.698197	-123.23546	4762	1.00%	P6210166, P6210167	Exceedance at tear in cover, at worn patch
A11	6/21/2024 14:42	6/21/2024 11:42	44.698206	-123.23543	8350	20000	P6210167	Exceedance at tear in cover at a rock in background of 167

Attachment 1 – EPA Inspection Photo, Video and SEM Log
Valley Landfills Inc CAA Inspection 06/21/2024

PENETRATION ID	TIMESTAMP (EST)	Corrected time (Pacific time)	LAT WGS84	LON WGS84	MAX DETECTOR CONCENTRATION CH4 (ppmv)	CONFIRMATION TVA 2020 (EPA)CH4 (ppmv)	PHOTO OR VIDEO NUMBER	DESCRIPTION
A12	6/21/2024 14:45:00	6/21/2024 11:45	44.69817	-123.235601	1597	2300	camera battery died	
A13	6/21/2024 14:48	6/21/2024 11:48	44.698197	-123.235671	1839	1000		Exceedance at tear in cover
A14	6/21/2024 14:49	6/21/2024 11:49	44.698184	-123.235675	1182	2000		Exceedance at tear in cover
A15	6/21/2024 14:51	6/21/2024 11:51	44.698257	-123.235666	4253	4255		Exceedance at patched area with new hole in cover
A16	6/21/2024 14:52	6/21/2024 11:52	44.6983	-123.235524	9694	TVA flame out		flame out is generally when > 20000
A17	6/21/2024 14:57	6/21/2024 11:57	44.698489	-123.235238	2967	not taken		Exceedance at tarp hole
A18	6/21/2024 15:00	6/21/2024 12:00	44.698836	-123.235078	2900	2200		Exceedance at wellhead cluster
A19	6/21/2024 15:02	6/21/2024 12:02	44.698871	-123.23504	4436	1300		Exceedance at flange
A20	6/21/2024 15:06	6/21/2024 12:06	44.699096	-123.234886	118265	TVA flame out		The cap is off of this well, exceedance at the top.
A21	6/21/2024 15:09	6/21/2024 12:09	44.699247	-123.235311	51151	13000		
A22	6/21/2024 15:11	6/21/2024 12:11	44.699114	-123.23529	1412	1200		
A23	6/21/2024 15:13	6/21/2024 12:13	44.698985	-123.235414	8110	1100		
A24	6/21/2024 15:18	6/21/2024 12:18	44.698458	-123.234777	7443	1200		Exceedance at penetration
A25	6/21/2024 15:21	6/21/2024 12:21	44.698393	-123.234706	8054	12000		Exceedance at BV92
A26	6/21/2024 15:23	6/21/2024 12:23	44.698392	-123.234575	4502	4600		Exceedance at hole in tarp
A27	6/21/2024 15:25	6/21/2024 12:25	44.698351	-123.234173	12969	1.30%		Exceedance at3V93
A28	6/21/2024 15:28	6/21/2024 12:28	44.698182	-123.23397	4339	2400		Exceedance at hole in tarp, 3V83
A29	6/21/2024 15:31	6/21/2024 12:31	44.698236	-123.233457	55729	>2%		Exceedance at tear at boot where horizontal pipe is coming out of the cover
A30	6/21/2024 15:33	6/21/2024 12:33	44.698186	-123.233425	2368	1800		Exceedance at liquid separation
A31	6/21/2024 15:48	6/21/2024 12:48	44.696522	-123.233878	16740	1.50%		Exceedance at Cell 1 sump, outside of the landfill footprint.
--							FLIR0091	Accidental video
--							FLIR0092	Accidental video

Attachment 1 – EPA Inspection Photo, Video and SEM Log
Valley Landfills Inc CAA Inspection 06/21/2024

PENETRATION ID	TIMESTAMP (EST)	Corrected time (Pacific time)	LAT WGS84	LON WGS84	MAX DETECTOR CONCENTRATION CH4 (ppmv)	CONFIRMATION TVA 2020 (EPA)CH4 (ppmv)	PHOTO OR VIDEO NUMBER	DESCRIPTION
A32	6/21/2024 17:49	6/21/2024 14:49	44.6974	-123.224024	7700	not taken	FLIR0093	Exceedance at Flare Station flange, in video the flange on the right side
--							FLIR0094	Accidental video
--							FLIR0095	Accidental video
A33	6/21/2024 18:14	6/21/2024 15:14	44.701817	-123.22582	6393	2000+	DSCN1734	Exceedance at liquid separation for horizontal
A34	6/21/2024 18:21	6/21/2024 15:21	44.701431	-123.226183	7110	1200	DSCN1735	Exceedance at tear in the material at the base of 5V22
A35	6/21/2024 18:24	6/21/2024 15:24	44.701263	-123.226236	12247	1.30%		
A36	6/21/2024 18:31	6/21/2024 15:31	44.700978	-123.227052	654	10000	DSCN1736	
A37	6/21/2024 18:35	6/21/2024 15:35	44.700853	-123.227144	24738	1.30%		Exceedance at hole in cover
A38	6/21/2024 18:42	6/21/2024 15:42	44.701694	-123.227427	1707	1%		Exceedance at hole in cover
A39	6/21/2024 18:44	6/21/2024 15:44	44.701818	-123.227413	14956	1.15%		Exceedance at 5H26
A40	6/21/2024 18:47	6/21/2024 15:47	44.701819	-123.2274	2675	1.15%	DSCN1737	Exceedance at hole in cover
A41	6/21/2024 18:51	6/21/2024 15:51	44.702381	-123.227485	1057	4000	DSCN1738	Exceedance at tag FD12

Attachment 2: EPA Surface Emission Monitoring Map

June 21, 2024

Clean Air Act inspection
Valley Landfills Inc

Legend

- EPA Readings >500ppm Methane
- Surface Emission Monitoring Path

A41
A39
A38
A33
A34
A36
A37
A35
A21
A22
A19
A20
A18
A27
A25
A29
A30
A15
A7
A4
A2
A28
A1
A31
A32

Republic Services Coffin Butte Landfill
Knife River - Coffin Butte Quarry
Valley Landfills
Wiles Rd
Coffin Butte Rd
Coffin Butte Rd
Coffin Butte Rd
Creek Rd
99W
99W

Google Earth
Image © 2024 Airbus

N

1000 ft

Attachment 3: IRwin Calibration

AED IRWin SX 580-010 92006439

Date:	6/20/2024
Calibration Performed By:	Steve Rapp
Warm-Up Time:	Approx. 15 mins.
Detector Calibrated:	AED IRWin SX 580-010 92006439

Calibration Gas: Methane (CH4)				
Calibration Gas	**Calibration Gas Supplier**	**Calibration Gas Expiration**	**Lot #**	**Cylinder #:**
Zero gas (0 ppmv CH4)	Pine Environmental Services	6/29/2027	304-402786171-1	UN10021121719481
500 ppmv CH4	Pine Environmental Services	6/29/2027	304-402785850-1	UN19561121719481

Time	**Location of Calibration**		**Notes:**	
Approx. 10:45:00 AM	Coffin Butte landfill office building, Carvallis, OR.			
Initial Accuracy Test				
Expected Reading (ppmv CH4)	**Zero**	**500**	**Notes:**	Used demand regulators.
Span Reading	0	500	Accepted/pass	
Calibration/Concentration Check				
Expected Reading (ppmv CH4)	**Zero**	**500**		
Instrument Reading	0	500	Accepted/pass	
Bump Check Date: 6/21/2024 Time: 14:28				
Expected Reading (ppmv CH4)		**500**		
Instrument Reading		470	Accepted/pass	
Bump Check Date: 6/21/2024 Time: 16:10				
Expected Reading (ppmv CH4)		**500**		
Instrument Reading		460	Accepted/pass	

Background concentrations (ppmv CH4):			**Location:**	**Time:**
Upwind:	0		Measured on road by portable toilets in northeast corner of LF	16:00
Downwind:	0		Measured in parking lot of office building	11:00

Comments/Notes:

The instrument was calibrated and checked for response time and precision on 6/20/24 at approx. 7:30 am using the 0 air and 500 ppm CH4 from the same cylinders identified above.
All readings are within 10% of the known calibration value. Response times are approximately 7.1 seconds, under the maximum of 30 seconds.
The gas cylinders identified above were used for the daily calibration and bump checks.

Precision and Response Time Checks:

Date:	Time:		Location:
6/20/2024	7:25 AM		Residence Inn, Portland, OR

AED IRWin SX 580-010 92006439

	Cal Gas (zero) 0 ppmv		Notes:
	Reading	Time	Demand regulator used.
Trial 1	0		
Trial 2	0		
Trial 3	0		
Average	0		

AED IRWin SX 580-010 92006439

	Cal Gas (mid): 500 ppmv CH4		Notes:
	Reading	Time	Demand regulator used.
Trial 1	500	6.78	
Trial 2	500	6.92	
Trial 3	500	7.59	
Average	500	7.1	All readings within 10%.All times within 30 seconds.

Calibration gas information:

Gas Concentration (ppmv CH4)	Calibration Gas	Lot #	Cylinder #	Expiration Date	Notes:
0	Pine Environmental Services	304-402786171-1	UN10021121719481	6/29/2027	Pressure = 300 psi. THC < 0.1 ppm, O2 = 20-22%
500	Pine Environmental Services	304-402785850-1	UN19561121719481	6/29/2027	Pressure = 400 psi. 500 ppmv CH4. Air 20.9% O2 in N2.

Attachment 4: TVA 2020 Calibration

EPA Method 21 Quarterly Precision/Daily Calibration Form

US EPA, Region 10	**Monitor:** Alyson Skeen + Sara Conley	**Date:** 6/21/24
Mfg: Thermo Fisher Scientific	**Model No:** TVA 2020	**Instrument SN:** 2020231270089
Facility: Coffin	City/State:	**ICIS No.**

Calibration Gas Information					
	Gas Type	**ppm**	**+ / - %***	**Lot No:**	**Expiration Date: (M-D-Y)**
Calibration Gas 1	0-Air	0	2		
Calibration Gas 2	CH4	500	2		
Calibration Gas 3	CH4	10,000	2		

* % that gas is certified to be w/in of the std concentration. (Method-21, Cylinder gas to be certified within ± 2% of std.)

Calibration Standard Test No. 1: 0 **PPM** Zero Air Gas							
Test	Test reading	Drift	Total	Avg.	------		Comments
1	0.1	0.1	0.2	0.1	NA		
2	0.0	0					
3	-0.1	+0.1					
Calibration Standard Test No. 2 500 **PPM** 500 Gas							
Test	Test reading	Drift	Total	Avg.	*Avg diff w/in ± 10% std = Pass		Comments
1	499	1					
2	497	3	7	2.3	0.5 %	Pass / Fail (circle one)	
3	497	3					
Calibration Standard Test No. 3 10,000 **PPM** 10,000 Gas							
Test	Reading	Drift	Total	Avg.	*Avg diff w/in ± 10% std = Pass		Comments
1	1.82	200					
2	1.03	300	900	300	3 %	Pass / Fail (circle one)	
3	1.04	400					

* Avg difference ÷ cal gas std x 100 = _____%, Unit warm up time ≥ 30 min: ☐ Yes, ☐ No

Subpart VVa Drift – Mid Day Reading				**Subpart VVa Drift – End of Day Reading**			
Cal Gas	Concentration	Reading	*Pass /Fail	Cal Gas	Concentration	Reading	*Pass / Fail
1	0	-0.6	P	1	0	-2.5	
2	500	513	P	2	500	504	
3	10,000	10,800	P	3	10,000	10400	

*Negative drift > 10% = Fail per 40 CFR 60, Subpart VVa. Fail = monitored data is void. Pass = ≤ 10% drift.

Response Time W/ extension ◯ W/O extension ◯										
Test No.	Cal Std	Response Time	Total Time	Avg. Time	pass/fail ≤30 sec	Cal Std.	Response Time	Total Time	Avg. Time	pass/fail ≤30 sec
1										
2			____sec	____sec	Pass / Fail			____ sec.	____ sec.	Pass / Fail
3										

Notes: _____

Monitor's Signature _____ Date: 6/21/24

Attachment 5: SEM Repair tracking

PENETRATION ID	TIMESTAMP	LAT WGS84	LON WGS84	Action
A1	6/21/2024 12:11	44.69752	-123.233986	Damaged well repaired; new kanaflex, added dirt.
A2	6/21/2024 12:21	44.697938	-123.234216	EPDM patch
A3	6/21/2024 12:23	44.698045	-123.234395	EPDM patch
A4	6/21/2024 12:29	44.698033	-123.234661	EPDM patch
A5	6/21/2024 12:30	44.697969	-123.234744	EPDM patch
A6	6/21/2024 12:33	44.698005	-123.235072	EPDM patch
A7	6/21/2024 12:35	44.698088	-123.235163	EPDM patch
A8	6/21/2024 12:37	44.698123	-123.235294	Tarp removed for waste placement
A9	6/21/2024 12:40	44.698127	-123.235513	Tarp removed for waste placement
A10	6/21/2024 12:41	44.698197	-123.23546	Tarp removed for waste placement
A11	6/21/2024 12:42	44.698206	-123.23543	Tarp removed for waste placement
A12	6/21/2024 12:45	44.69817	-123.235601	Tarp removed for waste placement
A13	6/21/2024 12:48	44.698197	-123.235671	Tarp removed for waste placement
A14	6/21/2024 12:49	44.698184	-123.235675	Tarp removed for waste placement
A15	6/21/2024 12:51	44.698257	-123.235666	Tarp removed for waste placement
A16	6/21/2024 12:52	44.6983	-123.235524	Tarp removed for waste placement
A17	6/21/2024 12:57	44.698489	-123.235238	Tarp removed for waste placement
A18	6/21/2024 13:00	44.698836	-123.235078	Tarp removed for waste placement
A19	6/21/2024 13:02	44.698871	-123.23504	Tarp removed for waste placement
A20	6/21/2024 13:06	44.699096	-123.234886	Tarp removed for waste placement
A21	6/21/2024 13:09	44.699247	-123.235311	Tarp removed for waste placement
A22	6/21/2024 13:11	44.699114	-123.23529	Tarp removed for waste placement
A23	6/21/2024 13:13	44.698985	-123.235414	Tarp removed for waste placement
A24	6/21/2024 13:18	44.698458	-123.234777	Tarp removed for waste placement
A25	6/21/2024 13:21	44.698393	-123.234706	EPDM sheet added around and booted
A26	6/21/2024 13:23	44.698392	-123.234575	EPDM boot repaired.
A27	6/21/2024 13:25	44.698351	-123.234173	EPDM patch
A28	6/21/2024 13:28	44.698182	-123.23397	EPDM patch
A29	6/21/2024 13:31	44.698236	-123.233457	EPDM patch
A30	6/21/2024 13:33	44.698186	-123.233425	EPDM patch
A31	6/21/2024 13:48	44.696522	-123.233878	Bolts added/tightened lid on Cell 1 sump
A32	6/21/2024 15:49	44.6974	-123.224024	Blind flange bolts added and tightened
A33	6/21/2024 16:14	44.701817	-123.22582	Soil added
A34	6/21/2024 16:21	44.701431	-123.226183	EPDM patch
A35	6/21/2024 16:24	44.701263	-123.226236	EPDM patch
A36	6/21/2024 16:31	44.700978	-123.227052	EPDM patch
A37	6/21/2024 16:35	44.700853	-123.227144	EPDM patch
A38	6/21/2024 16:42	44.701694	-123.227427	EPDM patch
A39	6/21/2024 16:44	44.701818	-123.227413	EPDM patch
A40	6/21/2024 16:47	44.701819	-123.2274	EPDM patch
A41	6/21/2024 16:51	44.702381	-123.227485	EPDM patch
Please see 2nd Quarter SEM report for remonitoring				

Appendix 3

2022 EPA Clean Air Act Inspection at Coffin Butte Landfill

Filed 9/19/2022

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 6TH AVENUE
SEATTLE, WASHINGTON 98101

DATE:	See date of Section Chief signature
SUBJECT:	CLEAN AIR ACT INSPECTION REPORT Republic Services Coffin Butte Landfill, Corvallis, OR
FROM:	Daniel Heins, Environmental Scientist Air Toxics Enforcement Section, EPA Region 10
THRU:	Derrick Terada, Acting Section Chief Air Toxics Enforcement Section, EPA Region 10
TO:	File

BASIC INFORMATION

Facility Name: Republic Services Coffin Butte Landfill

Facility Location: 28972 Coffin Butte Road, Corvallis, OR 97330

Date of Inspection: On Site Inspection: June 23, 2022
Virtual Conference: July 11, 2022

EPA Inspector(s):

1. Daniel Heins, Environmental Scientist [a,b]

Other Attendees:

1. Ian MacNab, Environmental Manager – Republic Services [a,c]
2. Phil Caruso, Environmental Specialist – Republic Services [a,b]
3. Brock Kienholz, Operations Manager – Republic Services [c]
4. Nikki Wuestenberg, Operations Support (Nationwide) – Republic Services [a]
5. Melissa Green, Environmental Consultant – Weaver Consultants [a]
6. Yuki Puram, Air Inspector & Permit Engineer – Oregon Department of Environmental Quality [a,b]

[a] Attended virtual conference
[b] Present for all of on-site, including SEM
[c] Present during on site conferences but not during SEM

Contact Email Address: imacnab@republicservices.com

Facility Type: Muncipal solid waste (MSW) landfill

Purpose of Inspection: Surface emissions monitoring (SEM) and evaluating compliance with landfill air rules.

Regulations Central to Inspection: 40 C.F.R. Part 60, Subpart WWW; Oregon State Plan for 40 C.F.R. Part 60, Subpart Cf; 40 C.F.R. Part 63, Subpart AAAA

On Site (6/23) Arrival Time: 09:00
On Site (6/23) Departure Time: 17:50
Virtual Conference (7/11) Start Time: 13:00
Virtual Conference (7/11) End Time: 15:00

Inspection Type:
☐ Unannounced Inspection
☒ Announced Inspection

SITE OVERVIEW

The following information was obtained verbally from Republic Services representatives, including their consultants, during the virtual conference, unless otherwise stated.

Operations Overview:
The Coffin Butte Landfill (the "Landfill") is owned and operated by Republic Services ("Republic"). Republic acquired the Landfill in 2008. Republic representatives were uncertain of exactly how old the Landfill is, stating that they believed it began as a military dump site in the 1940s. Daniel Heins confirmed this via information online from DEQ, which stated that landfilling began in the 1940s in association with Camp Adair. The areas that predate the Resource Conservation and Recovery Act of 1976 (RCRA) have a clay foundation. Some historic waste that predates the 1970s has been re-located from these unlined sections to the post-RCRA lined areas to facilitate construction of future lined cells in those areas.

The Landfill is permitted for 178 acres and has a permitted capacity of 35,514,471 according to the Landfill's 2020 Part 98 Greenhouse Gas Report. The Facility receives approximately 3,500 to 4,500 tons per day of waste. Wastes received include MSW, petroleum contaminated soils, construction and demolition (C&D) waste, C&D material recovery facility (MRF) residuals, and other industrial wastes. Based on current waste acceptance rate, the Landfill has approximately 20 years left under its current permit. Republic has room to expand the site on its property beyond the current permitted footprint.

Final cover on the Landfill is compacted soils with a synthetic membrane, with penetrations booted and plastic welded. Interim cover is at least 24 inches of soils. Much of the interim cover area is covered in tarps or, in areas without work planned for a few years, a thicker layer of EPDM. In both cases, this is with the primarily goal of reducing water infiltration into the

Landfill. Daily cover is 6 inches of soil or approved alternative daily cover (ADC). Republic uses C&D MRF shaker fines, MSW incinerator ash, and tarps as ADC at the Landfill.

Leachate flows by gravity to sumps and is pumped to covered storage ponds. Leachate collected varies by year based on the weather but typically is around 25 to 30 million gallons. Condensate is routed to the leachate system. Leachate is trucked to local publicly owned treatment works (POTWs). No leachate is recirculated, and no liquid wastes are added to the Landfill.

The gas collection and control system (GCCS) contains over 300 landfill gas (LFG) collection points, including horizontal wells, vertical wells, and parts of the leachate system with gas collection. Collected landfill gas partially routed to a separately owned/operated gas to energy plant run by PNGC Power. The energy plant has five Caterpillar gas engines – three 3516s and two 3520s. Excess gas not routed to the energy plant is controlled via flares at the Landfill. The landfill has two open flares, with capacities of 1000 standard cubic feet per minute (scfm) and 2000 scfm. Recently the Landfill has been collecting 2600 scfm for the full site, with 1600 scfm going to the energy plant and 1000 scfm to the flares.

SITE TOUR — JUNE 23, 2022

☒ Presented Credentials
☒ Stated authority and purpose of inspection
☐ Provided Small Business Resource Information Sheet
☒ Small Business Resource Information Sheet not provided. Reason: Not a small business
☒ Provided CBI warning to facility

Data Collected and Observations:
Daniel Heins arrived on site and met with the site staff for introductions and a brief site orientation/safety briefing at the Landfill's office. During this meeting, Ian MacNab stated that while there was a Method 21 instrument available and that Phil Caruso is their monitoring technician, that he would not take the opportunity to check EPA readings / provide confirmation readings, as a matter of Republic Services corporate policy. Daniel Heins explained that facilities typically prefer to check and confirm EPA readings and he gave advance notice to provide Republic the opportunity to confirm his TVA readings. Ian MacNab re-iterated that as a corporate policy that they would not provide confirmation readings.

After that brief meeting, Daniel Heins began the SEM. Phil Caruso accompanied EPA for the Surface Emission Monitoring (SEM). EPA showed all readings to Phil Caruso for visual confirmation of the readings and instructed him to state if he had any concerns with EPA's monitoring methods at any point. EPA used a ThermoFisher Toxic Vapor Analyzer 2020 (TVA) to perform EPA Reference Method 21 for the SEM.

In the morning (9:50 - 12:45), Daniel Heins conducted the monitoring with the TVA, covering a loop on the western portion of the Landfill. In the afternoon (13:30 - 17:15), he continued monitoring with the TVA, covering a loop on the eastern portion of the Landfill. Over the course of the day, Daniel Heins identified 61 points in exceedance of 500 parts per million (ppm), exhausting his supply of marking flags. Of these, 21 flagged exceedances were above 10,000

ppm. Many flagged exceedances represented clusters of exceedances at multiple points or broad areas of exceedances. Of the flagged exceedances, 26 were at or partially at gas collection wells (including both active and abandoned or decommissioned). Eight exceedances were at leachate cleanouts. Daniel Heins focused monitoring on areas under intermediate cover, though the first six exceedances were in final cover areas. During the afternoon monitoring, Daniel Heins measured multiple exceedances that continued to be above 500 ppm multiple feet in the air, with multiple feet lateral distance from the emission source, indicating substantial landfill gas plumes (flag #26, 46, and 51).

Flag #51 was by a broad area where the tarp was visibly inflated with gas. The tarp was not moving in the wind, it looked to be being pushed out steadily over a wide area towards the top of the south slope on the central area of the landfill, being held down by straps, cover anchors, and sandbags. Neither Daniel Heins nor Phil Caruso could identify any place where the wind could be lifting under the tarps, as the tarp edges were sandbagged and staked down. Daniel Heins measured a concentration of 2% at flag #51 before pulling away to avoid maxing out his instrument. He measured the methane concentration to be 2000 ppm at 3' in the air at this location, indicating a plume of gas coming out from the inflated tarp area. Along the top of this section of tarp, from flag #52 to #54, every post or tarp hole Daniel Heins monitored exceeded the surface methane standard, with readings of up to 7% shown before the instrument maxed out.

Phil Caruso did not dispute any of the readings, though noted that he would not have checked many of the exceedance locations, that he would have spent less time monitoring, or that he would have considered a higher location to be "the ground" when placing his probe 5 to 10 centimeters (cm) above the ground per the SEM regulations.

At an exceedance (flag #1) with a hole in the ground from an animal burrow, Phil Caruso stated that he would have considered the "ground" to be where the ground would have been if an animal didn't dig a hole into it at that location, rather than the ground at the base of the hole, and thus measured from a significantly higher location than Daniel Heins. At an exceedance (flag #2) between overlapped tarp material, with one piece of tarp raised above the other with a gap of air in between, Phil Caruso stated that he would have monitored with his probe above the upper tarp, rather than measuring the 5 to 10 cm from the tarp against the ground.

When Daniel Heins was monitoring a cluster of decommissioned wells with a patch of distressed soil (flag #3), Phil Caruso stated that he would have moved on after not directly getting above 500 ppm within twice his instrument response time even if there was an increase in reading, rather than moving around the penetration points slowly to find maximum reading point and then waiting twice the response time at this maximum reading location.

When Daniel Heins was monitoring at leachate cleanouts, Phil Caruso stated that he does not monitor at these and that they are not fully penetrating the cover. Daniel Heins responded that it was likely that many of these ultimately did penetrate the cover, especially in areas of thinner intermediate cover, and that regardless he recommended checking these as they were proving to be repeated sources of extremely elevated emissions, many over an order of magnitude above the surface methane standard. Phil Caruso stated that he was not required to monitor these. Daniel Heins and Phil Caruso had a similar discussion at the valve box dug into the cover with a reading

of 4% methane (flag #37), with Phil Caruso stating that this was not a penetration and thus he did not have to monitor this.

When Daniel Heins was monitoring at a horizontal penetration of the cover associated with a well (flag #16), Phil Caruso stated that he would not have monitored this as a penetration.

Phil Caruso stated that he would not have monitored the Cell 5 leachate riser that Daniel Heins measured multiple exceedances at, as it was outside of the waste mass.

Photos and/or Videos: were taken during the inspection. See Appendix A.
Field Measurements: were taken during this inspection. See Appendix B.

INSPECTION CONFERENCE — JULY 11, 2022

☒ Provided U.S. EPA point of contact to the facility
☒ Provided CBI warning to facility

Staff Interview:
The Landfill is subject to the Oregon State Plan implementing the Part 60 Subpart Cf Emission Guidelines, having previously been subject to Part 60 Subpart WWW. The Landfill is also subject to Part 63, Subpart AAAA, and has opted-in to demonstrating compliance with the Oregon State Plan through the Subpart AAAA requirements where allowed.

Republic stated that they were unsure if they were excluding non-degradable waste from their maximum gas generation rate calculations in their Design Plan or any other gas modeling runs they have done to size their GCCS. Republic stated that as the operations personnel were not present, they were unable to speak to what types of industrial wastes are received in any further detail. The Landfill does not accept refrigerants. The Landfill receives asbestos. It packages asbestos waste and deposits it in a dedicated asbestos mono-fill that is the only area excluded from the GCCS.

Leachate system components are connected for LFG collection on a case-by-case basis per recommendations of the engineer(s) involved in designing the GCCS.

Republic is aware of a one-off test of the sulfur content of the LFG requested by DEQ and stated that it read at non-detectable levels.

The Landfill has an alternative monitoring plan (AMP) approved by DEQ dating to when the Landfill operated under Subpart WWW. The AMP has allowances for positive pressure, temperatures above 145 degrees Fahrenheit, and elevated oxygen readings. No wells currently are above 145 degrees Fahrenheit. Republic does make use of the positive pressure allowances for wells with high oxygen levels.

Republic stated that they do not consistently check water levels in wells but has done so in the past. All new (at least since 10 years ago) wells are constructed with dewatering pumps, as a best

practice for a landfill in a wet climate. Republic does not typically add pumps to old wells. As wells are typically constructed with steel casings at the Landfill, redrills are rarely needed.

The Landfill has gas migration probes placed outside the area without synthetic liner but has typically seen readings at gas non-detect levels.

For cover integrity monitoring, Republic stated that they look for holes and cracks in the soils and wind damage on the tarps, but that there was no set answer for what degree of tarp damage would necessitate repair.

For surface emissions monitoring, Republic only excludes active filling areas and other areas with active heavy equipment as "dangerous." When Daniel Heins noted that the drawn paths in the submitted SEM reports went straight through the drawn "dangerous areas," Republic stated that the paths on the maps are general and do not reflect the actual walked paths. Republic monitors penetration points during its serpentine path. Phil Caruso stated that in addition to penetrations, he would go off the serpentine path if he saw distressed vegetation or cracks in the cover, and that those were the only examples of places where visual observations indicate elevated concentrations of landfill gas that he considered. Republic was unable to speak to the what the historic SEM exceedance rate had been in past surveys.

Daniel Heins asked if the GCCS was operational on the day of the SEM inspection or if there was anything different from standard operations that could have impacted the results of the monitoring. Republic stated that nothing was operating differently than normal, with all wells in operation and collection running. Republic did note that construction above exceedance flags #48 through 58 would have impacted the cover in the construction area.

Daniel Heins asked if Republic viewed the inflated tarps as a concern or something to acted on. Republic disputed that the tarps were inflated with landfill gas, claiming that the wind has blown them up. Daniel Heins noted the extremely elevated methane concentrations detected by the inflated tarps and that the tarps appeared to be in a static inflated state without any steady wind or apparent way for the wind to lift the tarps.

Republic noted that construction of additional gas collection on the top of the Landfill is in progress and will be completed this summer.

Requested documents:
The following documents were requested and supplied ahead of the inspection:

- Two most recent semi-annual NSPS reports
- Results of any cover integrity reports and quarterly SEM monitoring events that have been occurred since the most recent semi-annual
- GCCS map
- Map of cover by type in place (final vs intermediate vs daily cover)

The following documents were requested during the conference and confirmed via subsequent email:

- Constructed acres and acreages by cover type
- Past 5 years of flare monitoring data
- Flare/blower design specs and any performance tests on file for it
- Past year of migration probe data and a map of the probe locations
- Current GCCS Design Plan, along with any versions that have been active in the past 5 years and them most recent LandGEM run used for GCCS sizing (if not in the Design Plan)
- A map of the GCCS showing extent of any horizontal collectors if these are utilized to demonstrate a sufficient density of gas collection
- Landfill cell map and year of first waste placement for each cell
- 2021 Part 98 Greenhouse Gas Report
- Annual waste deposited tonnages by type from 2016 to present
    - Include a list of the primary sources of industrial wastes and a description for any special wastes listed
    - Outline of what wastes (if any) are classified as non-degradable for LandGEM maximum expected gas generation (Design Plan) along with the basis for this classification
    - Outline of what wastes are classified as "inert" for Part 98 reporting along with the basis for this classification
- Rest of the past 5 years of Annual/Semi-Annual Reports
    - Include all NSPS/NESHAP/EG reports, SSM reports, and air permit reports as applicable
    - If the full SEM reports are not included in the above, please include those for the past 5 years
    - Include the most recent SEM reports, or at least as much of it as has been completed by the end of July, even if they are not a part of any final semi-annual
- Any versions of the SSM plan that have been in place in the past 5 years
- Past 5 years of wellhead parameter monitoring
- Past 5 years of gas flow to the energy plant
- Any H2S or sulfur gas testing results from the past 5 years, or most recent if not within the past 5 years
- Map of wells being added this summer since the inspection
- The Alternative Monitoring Plan and approval letter
- Identification of which wells have dewatering pumps
- General description of final cover construction

Concerns:
Daniel Heins expressed potential concerns with Republic's SEM/Method 21 procedures. Despite Republic having seen no more than 6 exceedances in the recent SEM reports supplied ahead of the inspection that included penetration monitoring, including reports with 0 exceedances, he identified 61 points in exceedance of 500 ppm, including 21 points above 10,000 ppm, with 26 exceedances at gas collection wells that Republic should have specifically been monitoring on a quarterly basis since the Oregon State Plan became effective in November 2020.

Daniel Heins expressed concerns with the areas of tarp that were inflated with and leaking out landfill gas, as detected during the SEM, noting that in additions to compliance concerns with the surface methane standard that such an accumulation of flammable gas creates a potential safety concern.

DIGITAL SIGNATURES

DANIEL HEINS
Digitally signed by DANIEL HEINS
Date: 2022.09.19 14:26:56 -07'00'

Daniel Heins, Report Author

DERRICK TERADA
Digitally signed by DERRICK TERADA
Date: 2022.09.19 14:51:00 -07'00'

Derrick Terada, Acting Section Chief

APPENDICES AND ATTACHMENTS

Appendix A: Digital Image Log
Appendix B: Field Measurement

APPENDIX A: DIGITAL IMAGE LOG

Inspector Name: Daniel Heins
Archival Record Location: US EPA SharePoint

2022-06-23 Images

Image #	File Name	Time (PDT)	Flag #	Description
1	20220623_100838.jpg	10:08:38	1	Animal burrow by cleanout
2	20220623_101327.jpg	10:13:27	2	Overlapping tarps
3	20220623_101816.jpg	10:18:16	3	Discolored soil/distressed vegetation by INE9, multiple decommissioned wells
4	20220623_102219.jpg	10:22:19	3	Discolored soil/distressed vegetation by INE9, multiple decommissioned wells
5	20220623_102231.jpg	10:22:31	3	Discolored soil/distressed vegetation by INE9, multiple decommissioned wells
6	20220623_102717.jpg	10:27:17	4	Cleanout
7	20220623_103235.jpg	10:32:35	5	Decommissioned well and surrounding wells by RE8 manifold
8	20220623_103515.jpg	10:35:15	5	Decommissioned well and surrounding wells by RE8 manifold
9	20220623_104050.jpg	10:40:50	6	Decommissioned PVC well (W9?)
10	20220623_105243.jpg	10:52:43	7	Hole in liner
11	20220623_110338.jpg	11:03:38	8	cleanout with gap in liner
12	20220623_111123.jpg	11:11:23	9	Unmarked well with gap in liner and gap between well and dirt, plus nearby holes
13	20220623_111129.jpg	11:11:29	9	Close up on gap on liner and in dirt
14	20220623_111216.jpg	11:12:16	9	Hole in liner near unmarked well
15	20220623_111452.jpg	11:14:52	10	Liner tear and adjacent hole
16	20220623_112408.jpg	11:24:08	11	3V91 Manifold, both at tarp edge and at multiple penetrations
17	20220623_113216.jpg	11:32:16	12	Hole in liner
18	20220623_113733.jpg	11:37:33	13	3V92 wells with tarp gap
19	20220623_114521.jpg	11:45:21	14	3B0V0351 bad liner seal at base
20	20220623_115250.jpg	11:52:50	15	Decommissioned well with tarp tear/gap
21	20220623_115912.jpg	11:59:12	16	3H94 where horizontal intersects tarp
22	20220623_120314.jpg	12:03:14	16	3H94 penetration cluster
23	20220623_120746.jpg	12:07:46	17	Cleanout by unknown well out of liner
24	20220623_121307.jpg	12:13:07	18	Liner that had been pulled back from unknown well by chopped off pipe segment on ground
25	20220623_122009.jpg	12:20:09	19	Unknown well at liner seam

2022-06-23 Images, continued

Image #	File Name	Time (PDT)	Flag #	Description
26	20220623_122332.jpg	12:23:32	20	Riser with bad liner seal
27	20220623_123220.jpg	12:32:20	21	Well 3COV3 with liner gap
28	20220623_140422.jpg	14:04:22	22	Cell 5 leachate riser complex
29	20220623_140538.jpg	14:05:38	22	Cell 5 leachate riser complex
30	20220623_140921.jpg	14:09:21	22	Cell 5 leachate riser complex - pipe connector
31	20220623_140924.jpg	14:09:24	22	Cell 5 leachate riser complex - pipe connector
32	20220623_140927.jpg	14:09:27	22	Cell 5 leachate riser complex
33	20220623_141045.jpg	14:10:45	22	Cell 5 leachate riser complex
34	20220623_142020.jpg	14:20:20	23	Well 5V40 in liner
35	20220623_143317.jpg	14:33:17	24	Tarp anchor
36	20220623_143735.jpg	14:37:35	25	Tarp anchor
37	20220623_144405.jpg	14:44:05	26	4B55 well cluster
38	20220623_144407.jpg	14:44:07	26	Mystery pipe with improvised cap with folded plastic wrap
39	20220623_144923.jpg	14:49:23	27	2V114 at base in dirt
40	20220623_145332.jpg	14:53:32	28	Hole near edge of liner, and in neighboring hole
41	20220623_145705.jpg	14:57:05	29	Tarp edge
42	20220623_150256.jpg	15:02:56	30	Tarp hole and neighboring holes
43	20220623_150616.jpg	15:06:16	31	Hole at tarp anchor
44	20220623_150954.jpg	15:09:54	32	Abandoned well
45	20220623_150957.jpg	15:09:57	32	Liner hole near abandoned well
46	20220623_151520.jpg	15:15:20	33	4V53 - well surrounded by sandbags in lined area
47	20220623_151822.jpg	15:18:22	34	Anchor and nearby liner hole
48	20220623_154015.jpg	15:40:15	35	Cleanout coming out of dirt
49	20220623_154916.jpg	15:49:16	36	Vertical cleanout in dirt
50	20220623_155053.jpg	15:50:53	37	Circular valve box
51	20220623_155522.jpg	15:55:22	38	Hole in liner
52	20220623_160008.jpg	16:00:08	39	Cleanout / hole in liner
53	20220623_160336.jpg	16:03:36	40	Tarp hole and neighboring holes
54	20220623_160711.jpg	16:07:11	41	PH2101, 2H101 - whole cluster of wells (some tarp gaps)
55	20220623_160900.jpg	16:09:00	41	PH2101, 2H101 - whole cluster of wells (some tarp gaps)
56	20220623_161111.jpg	16:11:11	42	3AV68 and nearby hole in liner
57	20220623_161551.jpg	16:15:51	43	2V100 well in tarp area
58	20220623_161847.jpg	16:18:47	44	3V73 well in tarp gap
59	20220623_162101.jpg	16:21:01	45	Tarp stake
60	20220623_162525.jpg	16:25:25	46	Hole in tarp
61	20220623_162743.jpg	16:27:43	47	Tarp edge
62	20220623_163203.jpg	16:32:03	49	tarp edge
63	20220623_163313.jpg	16:33:13	50	2H86 cluster in tarp
64	20220623_163646.jpg	16:36:45	51	Series of tarp tears near inflated tarp area
65	20220623_163710.jpg	16:37:10	-	Tarped slope showing buildup of gas inflating tarps over slope
66	20220623_163718.jpg	16:37:18	-	Tarped slope showing buildup of gas inflating tarps over slope

2022-06-23 Images, continued

Image #	File Name	Time (PDT)	Flag #	Description
67	20220623_163934.jpg	16:39:34	52	Tarp stake
68	20220623_164213.jpg	16:42:13	53	Tarp stake in area of continuously elevated readings
69	20220623_164217.jpg	16:42:17	-	Tarped slope showing buildup of gas inflating tarps over slope
70	20220623_164219.jpg	16:42:19	-	Tarped slope showing buildup of gas inflating tarps over slope
71	20220623_164221.jpg	16:42:21	-	Tarped slope showing buildup of gas inflating tarps over slope
72	20220623_164521.jpg	16:45:21	54	Tarp stake in area of continuously elevated readings
73	20220623_164718.jpg	16:47:18	55	Tarp edge, inflated tarps visible
74	20220623_164914.jpg	16:49:14	56	Broad area of dirt/waste uphill of tarp area
75	20220623_164917.jpg	16:49:17	56	Broad area of dirt/waste uphill of tarp area
76	20220623_165102.jpg	16:51:02	57	2H94 well cluster - all
77	20220623_165319.jpg	16:53:19	58	Tarp edge
78	20220623_165637.jpg	16:56:37	59	3V89 well cluster in dirt
81	20220623_170040.jpg	17:00:40	60	2V113 - well with some tarp wrapped in dirt area
82	20220623_170947.jpg	17:09:47	61	Valve with well at haul road above cell 5

APPENDIX B: FIELD MEASUREMENT DATA

Measured Exceedances

Flag #	Reading	Description	Latitude	Longitude
1	1%	Animal burrow by cleanout	44.69737457	-123.2356198
2	1000 F/O	Overlapping tarps	44.69745665	-123.2357082
3	1000	Discolored soil/distressed vegetation by INE9, multiple exceedances including multiple decommissioned wells	44.69766687	-123.2360485
4	2000	Cleanout	44.69775127	-123.2362152
5	1%	Decommissioned well and surrounding wells by RE8 manifold	44.69786105	-123.236267
6	700	Decommissioned PVC well (W9?)	44.69782839	-123.2365858
7	1500	Hole in liner	44.69865701	-123.2365257
8	1.20%	cleanout with gap in liner	44.69790548	-123.2358232
9	1.20%	Unmarked well with gap in liner weld and gap between well and dirt, plus nearby holes	44.69829911	-123.2354937
10	2.70%	Liner tear and adjacent hole	44.69842096	-123.23558
11	3700	3V91 Manifold, both at tarp edge and at multiple penetrations	44.69885999	-123.2350488
12	2.20%	Hole in liner	44.69830399	-123.2350079
13	5000	3V92 wells with tarp gap	44.69837287	-123.2347328
14	1200	3B0V0351 bad liner seal at base	44.69822886	-123.2340741
15	1200	Decommissioned well with tarp tear/gap	44.69836899	-123.2337448
16	9000	3H94 where horizontal intersects tarp, and multiple penetrations in cluster	44.698248	-123.2334448
17	4700	Cleanout by unknown well out of liner	44.69812972	-123.2337702
18	5500	Liner that had been pulled back from unknown well by chopped off pipe segment on ground	44.69811411	-123.2338379
19	2000	Unknown well at liner seam	44.69804442	-123.2344811
20	8000	Riser with bad liner seal	44.69804447	-123.2345951
21	1220	Well 3COV3 with liner gap	44.69784857	-123.2333245
22	2400	Cell 5 leachate riser complex - multiple risers and at pipe connection	44.70181118	-123.2257475
23	800	Well 5V40 in liner	44.70167582	-123.2273125
24	3000	Tarp anchor	44.70101596	-123.2273626
25	600	Tarp anchor	44.70114084	-123.2274474
26	1%	4B55 at base of cluster as well as top of mystery pipe with improvised cap with folded plastic wrap	44.70115072	-123.2275846
27	4000	2V114 at base in dirt	44.70111214	-123.2278246
28	1% F/O, 3%	Hole near edge of liner, and in neighboring hole	44.70103128	-123.2276965
29	4500	Tarp edge	44.70082423	-123.2275253
30	1%	Tarp hole and neighboring holes	44.70072043	-123.2273274
31	1500	Hole at tarp anchor	44.70068672	-123.227044

Measured Exceedances

Flag #	Reading	Description	Latitude	Longitude
32	3200	At abandoned well and nearby hole in liner	44.70068362	-123.2267606
33	1200	4V53 - well surrounded by sandbags in lined area	44.70057706	-123.2263945
34	1100	Anchor and nearby liner hole	44.7005098	-123.2261782
35	1%	Cleanout coming out of dirt	44.69962827	-123.2287076
36	1200	Vertical cleanout in dirt	44.69926032	-123.2301237
37	4%	Circular valve box	44.69922726	-123.2302603
38	1500	Hole in liner	44.69923732	-123.2303614
39	1200	Cleanout / hole in liner	44.69906809	-123.2308424
40	1600	Tarp hole and neighboring holes	44.69912191	-123.2309496
41	1%	PH2101, 2H101 - whole cluster of wells (some tarp gaps)	44.69926451	-123.230824
42	2%	3AV68 and nearby hole in liner	44.69929347	-123.2310994
43	3% F/O	2V100 well in tarp area	44.69920828	-123.2314229
44	1200	3V73 well in tarp gap	44.69913826	-123.2316593
45	2%	Tarp stake	44.6990841	-123.2318812
46	2%	Hole in tarp	44.69927783	-123.2319267
47	2500	Tarp edge	44.69937083	-123.2319
48	6000	3V74 - whole well cluster	44.69942123	-123.2320147
49	5000	tarp edge	44.69944725	-123.2316747
50	7000	2H86 cluster in tarp	44.69950461	-123.2315035
51	2%	Series of tarp tears near inflated tarp area	44.69964525	-123.2311715
52	2000	Tarp stake	44.69970317	-123.2309795
53	2%	Tarp stake (and every tarp stake between 52 and 53)	44.69985738	-123.2307325
54	7%	Tarp stake (and every tarp stake between 53 and 54)	44.69994174	-123.2304609
55	3%	Tarp edge	44.70001207	-123.2302193
56	800	Broad area of dirt/waste uphill of tarp area	44.70011566	-123.2300539
57	8000	2H94 well cluster - all	44.7001631	-123.2301332
58	2000	Tarp edge	44.70021131	-123.2296507
59	4000	3V89 well cluster in dirt	44.7005688	-123.2284677
60	4000	2V113 - well with some tarp wrapped in dirt area	44.70062987	-123.2276513
61	800	Valve with well at haul road above cell 5	44.70159276	-123.2253808

All readings are given as methane parts per million, except for readings above 10,000 ppm which are given as percent methane. “F/O” refers to instrument flame out, indicating readings above 5% that have exceeded the TVA measurement range.

Calibration and Instrument Information

Daniel Heins used a ThermoFisher Toxic Vapor Analyzer 2020 (TVA2020), designated as TVA A95732. The EPA TVA2020 response time is approximately 4.5 seconds.

	Calibration gas ppm	A95732 ppm
9:15 calibration check	500	500
13:30 drift check	500	464
17:50 drift check	500	462

EPA calibration gases

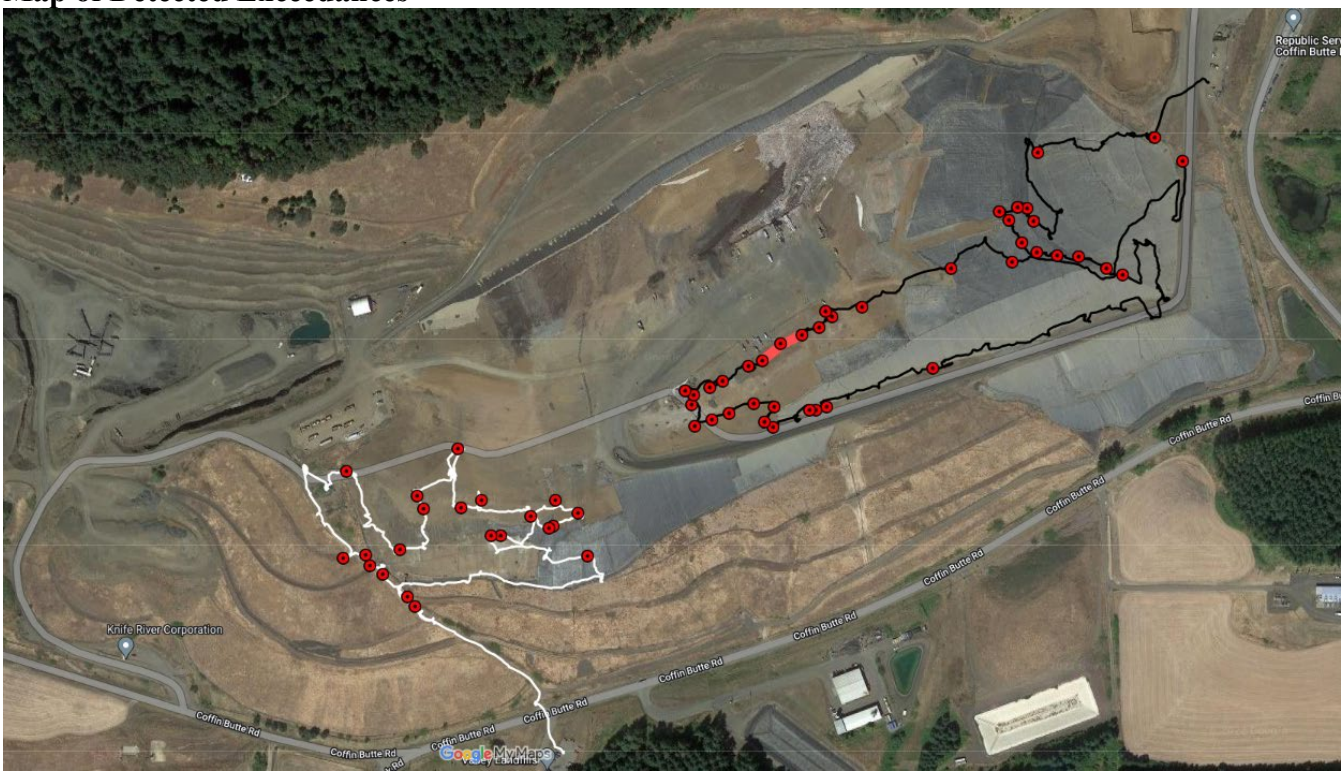
Composition	Lot #	Expiration
Air zero grade THC <1 ppm	DBJ-1-24	March 2023
Methane in air 500 ppm	1-167-64	June 2024

Background readings:

Upwind: 0 ppm

Downwind: 3 ppm

Map of Detected Exceedances



SEM exceedance locations plotted over Google Maps satellite imagery. Approximate monitoring paths included, derived from GPS data. Morning path shown in white, afternoon in black. Line of continuous exceedance at every tarp hole between flags 52 and 54 is highlighted in red.