

July 2024 Monthly Compliance Report

Solid Waste Permit No. 498
Bristol Integrated Solid Waste Management Facility
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INTRODUCTION

The City of Bristol, Virginia (City) prepared this report to the Virginia Department of Environmental Quality (VDEQ) in accordance with item 8 in Appendix B of the Consent Decree between the City and VDEQ. This report provides updates regarding the progress towards completion of the items outlined in Appendix B of the Consent Decree between the City and VDEQ. The following sections outline progress during the month of July 2024 related to Solid Waste Permit (SWP) No. 498.

1.0 LEACHATE PUMP STATION

The City completed repairs to the pumps and addressed other concerns related to the leachate pump station. The steps taken by the City are outlined in the following sections.

1.1 FLOATING MATERIAL

As described in the October 2022 Monthly Compliance Report for the SWP No. 498 Landfill, the floating material in the wet well was resolved.

1.2 PUMP REPLACEMENT

The City contracted with Buchanan Pump Service (Buchanan) to complete repairs to the pumps and infrastructure at the SWP No. 498 pump station. Buchanan completed repairs and replacement of the pumps at the SWP No. 498 pump station.

1.3 ALARM/NOTIFICATION SYSTEM

The alarm system at the SWP No. 498 Landfill pump station is currently functional and sending alerts to landfill staff via text message.

2.0 COVER INTEGRITY AND EXPOSED WASTES

The sections below describe steps taken by the City to address cover integrity and exposed wastes.

2.1 ALTERNATE DAILY COVER

During most of the month of May, the SWP 498 Landfill was covered by a geomembrane, drainage geocomposite, and an additional 24 inches of erosion control layer/vegetative support layer. Alternate daily cover was not required because these layers were in place.

2.2 INTERMEDIATE COVER

Placement of intermediate soil cover on the SWP No. 498 landfill is complete. Soil placement and thickness verification was documented in the April 2023 Compliance Report for the SWP No. 498 Landfill. The intermediate cover is now below a final cover system which includes a geomembrane.

2.3 SURFACE EMISSIONS MONITORING

On June 13, 2024, SCS performed the second quarter 2024 surface emissions monitoring event on the landfill.

The monitoring was performed in accordance with the site-specific GCCS Design Plan, the facility's Title V Permit, the requirements of 40 CFR 63.1960(c) and (d), 40 CFR 60.36f(c) and (d), and 40 CFR 60, Appendix A, Method 21. The landfill gas (LFG) collection system is required to operate such that the methane concentration is less than 500 ppm above background at the landfill surface.

The monitoring route included all applicable areas of the Permit No. 498 landfill. Sampling was conducted with a Thermo Scientific TVA-2020 Flame Ionization Detector (FID) at 30-meter intervals and where visual observations indicated the potential for elevated concentrations of LFG, such as distressed vegetation and surface cover cracks. In addition, in accordance with 40 CFR 63.1958(d)(ii)(2) and 40 CFR 60.34f(d), monitoring was conducted at all surface cover penetrations within the waste footprint.

No exceedances were detected during this monitoring event. A quarterly SEM report documenting corrective actions and remonitoring results will be submitted to the VDEQ as part of the Semi-Annual Report.

Table 1 summarizes the results of the monitoring event.

Table 1. Summary of June Surface Emissions Monitoring

Description	June 13, 2024
Number of Points Sampled	69
Number of Points in Serpentine Route	66
Number of Points at Surface Cover Penetrations	3
Number of Exceedances	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

The third quarter SEM Event will be completed prior to September 30, 2024.

3.0 GAS COLLECTION

The City has taken steps to optimize gas collection and minimize air intrusion as outlined in the sections below.

3.1 OPTIMIZATION PLAN AND REPORTING

The SWP No. 498 Landfill is approximately 12.0 acres and is located south of the SWP No. 221 Landfill and east of the SWP No. 588 Landfill. The installation of a comprehensive active LFG collection system was recently completed as described in Section 4.2. The previous system included three vertical wells (EW-19, EW-20, and EW-21) and a condensate trap (CT-1) at the low point. SWP No. 498 Landfill has no history of elevated temperatures and is not a significant source of odors.

To accommodate the Area 498 Final Closure and LFGCCS Plan, on November 1, 2023 all wells and isolation valves within the waste footprint were shut so that excavation could begin. The corresponding vacuum lateral piping was also removed.

3.1.1 Optimization Plan

On December 1, 2022, on behalf of the City, SCS submitted a plan that provides for means and methods for optimizing the performance of the existing gas extraction system in the SWP No. 498 landfill. Additional details about that plan were included along with a copy of the plan in the November Monthly Compliance Report for the SWP No. 498 Landfill.

3.1.1 Optimization Actions

During the month of January 2023 actions were taken to implement the submitted Optimization Plan. The actions taken at the SWP No. 498 Landfill in accordance with the plan were summarized in the January 2023 Monthly Compliance Report for the SWP No. 498 Landfill.

3.1.2 Monthly Wellhead Monitoring

On 24 July 2024, SCS-FS visited the landfill and performed monitoring of the landfill gas wells. The results of the monthly monitoring were submitted to VDEQ on July 3, 2024 and are included in Appendix A. The results of the monthly monitoring also include comments regarding observations and adjustments made by the field technician.

The monthly wellhead monitoring data are summarized in Appendix A. Wells EW-16, EW-17, EW-18, and EW-23 are outside the waste footprint. These collectors show low methane concentrations, as well as low flow, and are kept under minimal vacuum. Wells EW-19, EW-20, and EW-21 are vertical wells within the waste footprint and, when operating, exhibit gas concentrations that are consistent with older landfill gas. Due to ongoing construction, only the wells outside the waste footprint were monitored through April 2024. As of May 2024, EW-19 through 21, as well as six new horizontal collector wellheads (HC-04 through HC-09), were activated as final capping in the SWP No. 498 neared completion.

The average gas composition in wells within the SWP No. 498 waste footprint is shown in Table 1. The methane-to-carbon dioxide ratio measured in the wellheads in the waste is occasionally less than 1 because the organic fraction of the waste is more fully decomposed and the rate of methanogenesis has declined.

Table 1. Monthly Average Wellhead LFG Composition of SWP No. 498 Wells in Waste Footprint

Month	Average CH ₄ (% Vol)	Average CO ₂ (% Vol)	Average O ₂ (% Vol)	Average Pressure (inches w.c.)
September 2023	7.5	9.1	11.8	-4.5
October 2023	4.7	6.6	15.1	-4.2
November 2023	2.7	9.0	12.4	-13.1
December 2023 ¹	--	--	--	--
January 2024 ¹	--	--	--	--
February 2024 ¹	--	--	--	--
March 2024 ¹	--	--	--	--

Month	Average CH ₄ (% Vol)	Average CO ₂ (% Vol)	Average O ₂ (% Vol)	Average Pressure (inches w.c.)
April 2024	--	--	--	--
May 2024	12.6	10.0	12.9	-2.9
June 2024	6.6	7.7	12.5	-0.8
July 2024	34.2	18.2	5.5	-3.48

NOTE: Due to the construction of final cap in the SWP No. 498 Landfill, the LFG wells in waste were offline, and therefore not monitored, from December 2023 through April 2024.

4.0 GRADING, GEOMETRIC CONFIGURATION AND GAS EXPANSION

The City took the steps outlined in the sections below to grade the surface of the SWP No. 498 landfill to an appropriate geometric configuration to allow for final closure.

4.1 CLOSURE AND LFGCCS PLAN

SCS prepared plans on the City's behalf for closing and installing final cover on the Solid Waste Permit No. 498 landfill. The plans also include a comprehensive gas collection and control system and comprehensive stormwater management plan. VDEQ issued the 18th modification of the SWP No. 498 permit, which incorporated these plans on January 17, 2024. On February 26, 2024, SCS requested a minor modification to the solid waste permit on behalf of the City and the modification was subsequently approved by VDEQ in a letter dated March 1, 2024.

4.2 FINAL COVER AND LFGCCS INSTALLATION

The drawings described in Section 4.1 were used as the basis of bid drawings for procurement of a contractor to complete final cover and LFGCCS installation. Baker's Construction Services, Inc. (BCS) constructed the final cover system and LFGCCS. SCS CQA personnel were mobilized to the site to monitor BCS's progress.

The final cover system and LFGCCS installation was substantially completed during May 2024 and achieved final completion during June 2024. SCS conducted a walkthrough inspection of the site on 17 June 2024. On 27 June 2024, the City and DEQ completed a walkthrough inspection of the landfill final cover system and LFGCCS. Figures 1 and 3 show vegetative growth observed during the 17 June 2024 walkthrough. Figures 2 and 4 show vegetative growth observed on 8 August 2024.



Figure 1. Vegetative growth along eastern slope on 17 June 2024.



Figure 2. Vegetative growth along eastern slope on 8 Aug 2024.



Figure 3. Vegetative growth along northern slope on 17 June 2024.



Figure 4. Vegetative growth along northern slope on 8 Aug 2024

5.0 LEACHATE SEEPS AND PONDING

The sections below describe the steps taken by the City to address leachate seeps and ponding.

5.1 PERIODIC INSPECTIONS

The City initiated a process of tracking precipitation events that have the potential to create ponding and leachate seeps. After major precipitation events, City personnel inspect the landfill for ponding and leachate seeps. Locations of ponding and seeps are marked in the field.

The City performed inspections as appropriate during the month of July. Inspection forms were scanned and stored on the landfill computer server in a folder designated for the purpose of storing environmental records. Completed inspection forms are available for VDEQ to review upon request.

5.2 COMPLETION OF WORK ACTIVITIES

During the month of April 2023, the City completed work activities which eliminated areas of ponding and accomplished leachate seep repairs. Details about these activities were included in the April 2023 Compliance Report for the SWP No. 498 Landfill. Currently, the installed final cover drastically reduces the likelihood of leachate seeps, and ponding is managed by the installed stormwater controls.

6.0 STORMWATER DRAINAGE AND MANAGEMENT

The sections below outline the steps by the City to improve stormwater management and drainage.

6.1 STORMWATER MANAGEMENT PLAN

As noted in Section 4.1 the SWP No. 498 Closure plans included measures to address stormwater management. Following the installation of the final cover system, stormwater diversion berms and downchutes were installed. Stormwater is conveyed to perimeter channels and a stormwater sewer system which primarily discharge to the stormwater pond located at the northeast corner of the landfill.

The existing stormwater basin positioned near the northeast corner of the landfill was expanded to provide additional storage volume, and a new stormwater outlet structure was installed. The stormwater basin discharges via the existing 42-in reinforced concrete pipe (outfall SW-1). Stormwater modeling included with the permit modification documents demonstrates compliance with channel and flood protection criteria.

Stabilization of the stormwater basin area was started in February and is ongoing. Vegetative growth is underway and expected to continue during the remainder of 2024.

6.2 CLEANOUT OF STORMWATER DIVERSION CHANNEL/TRENCH BERM

Clean-out of the stormwater diversion channel/trench berm was completed in February 2023 as discussed in the February 2023 Monthly Compliance Report for the SWP No. 498 Landfill. On March 15, 2023, SCS submitted a letter to VDEQ verifying completion of the stormwater diversion channel/trench berm clean-out. The stormwater diversion channel/trench berm is being modified as part of final cover construction.

7.0 SELF-INSPECTION AND RECORDKEEPING

SCS prepared two self-inspection log templates, the Stormwater Management Inspection Log and the Daily Landfill Inspection Log. SCS provided updated self-inspection logs for SWP 498 to the City and VDEQ and completed self-inspection training with facility staff on November 30, 2022.

7.1 UPDATED SELF-INSPECTION LOGS

Copies of updated self-inspection log templates were submitted to VDEQ on November 30, 2022. Details about this log and the intended inspection process were detailed in the November 2022 Monthly Compliance Report for the SWP No. 498 Landfill. Copies of the log templates are also included in that report.

7.2 FACILITY TRAINING

On November 30, 2022, SCS personnel met members of the Facility staff to complete self-inspection training. A summary of this training and a record of attendees was included in the November Monthly Compliance Report for the SWP No. 498 Landfill.

7.3 SELF-INSPECTION AND RECORDKEEPING ASSIGNMENTS

Completed inspections will be held on-site at the facility office available for review by VDEQ upon request. Currently, self-inspections are being completed by Jonathan Hayes. Dave Cochran will serve as the primary alternate for inspections with the other members of the staff trained on inspection procedures filling in as needed. Inspection forms will be scanned and stored on the landfill computer server in a folder designated for the purpose of storing environmental records.

8.0 MONTHLY PROGRESS REPORTS

As described in the introduction this report is intended to provide comprehensive updates regarding progress towards completion of each item described in Appendix B of the Consent Decree between the City and VDEQ. Per the Consent Decree, the City intends to cease submission of this report upon submission of the final documentation associated with construction of the final cover system.

Appendix A
July Monthly Wellhead Monitoring Data

Bristol Virginia Landfill - Permit 498 Well Data: 1 – 31 July 2024

Point Name	Record Date	CH4 [%]	CO2 [%]	O2 [%]	Bal Gas [%]	Max Gas Temp [°F]	Init Stat Press [“H2O]	Adj Stat Press [“H2O]	Sys Pressure [“H2O]	Comments
16	7/22/2024 12:17:01 PM	0.7	1.3	19.2	78.8	84.2	-0.52	-0.52	-1.69	
16	7/23/2024 10:54:47 AM	1.7	2.0	18.8	77.5	87.8	-0.01	-0.01	-0.27	Valve adjustment: No Change
16	7/25/2024 2:11:59 PM	0.6	1.0	20.3	78.1	83.9	-1.47	-1.47	-4.90	Valve adjustment: No Change
17	7/22/2024 12:22:46 PM	59.8	40.2	0.0	0.0	83.1	-1.26	-1.10	-1.81	
17	7/23/2024 10:58:20 AM	55.8	42.0	0.1	2.0	84.2	-0.28	-0.28	-0.09	Valve adjustment: No Change
17	7/25/2024 2:15:21 PM	53.8	40.6	0.7	4.9	85.3	-4.71	-4.71	-4.78	Valve adjustment: No Change
18	7/22/2024 12:28:13 PM	45.4	36.5	0.4	17.7	88.7	-1.62	-1.64	-1.69	
18	7/24/2024 7:56:44 AM	45.8	37.6	0.4	16.2	70.2	-5.22	-5.22	-5.10	Valve adjustment: No Change
19	7/22/2024 12:39:43 PM	20.4	23.8	1.1	54.7	85.3	0.00	-0.03	0.02	
19	7/24/2024 7:43:34 AM	15.8	20.4	1.9	61.8	81	-0.59	-0.59	-4.66	Valve adjustment: No Change
20	7/22/2024 12:47:57 PM	49.5	29.1	0.1	21.3	83.9	-0.01	-0.03	0.02	
20	7/24/2024 7:39:22 AM	23.6	18.8	5.0	52.5	76.6	-0.59	-0.59	-4.71	Valve adjustment: No Change
21	7/22/2024 1:02:33 PM	41.0	20.3	6.0	32.7	86.8	-0.07	-0.07	-0.77	
21	7/24/2024 7:26:11 AM	14.0	7.6	15.1	63.3	72.4	-0.58	-0.58	-4.71	Valve adjustment: No Change
23	7/22/2024 9:29:31 AM	9.9	10.1	13.6	66.4	77.5	0.00	0.00	-0.01	
HC04	7/22/2024 1:45:39 PM	56.8	26.7	0.0	16.5	87	0.11	0.12		
HC04	7/24/2024 7:48:22 AM	23.6	18.7	7.4	50.3	80	-0.74	-0.65	-4.70	Valve adjustment: No Change
HC05	7/22/2024 1:41:53 PM	65.1	28.2	0.0	6.7	87.3	-0.01	-0.01		
HC05	7/24/2024 6:59:10 AM	17.7	10.7	14.0	57.7	73	-0.89	-0.89	-4.50	Valve adjustment: No Change
HC06	7/22/2024 1:38:09 PM	41.1	24.6	0.0	34.3	89.8	0.04	0.05		
HC06	7/24/2024 7:04:30 AM	5.1	6.7	15.2	73.1	77.8	-0.32	-0.32	-4.71	Valve adjustment: No Change
HC07	7/22/2024 1:32:27 PM	45.1	22.7	4.8	27.4	92.8	0.04	0.06		
HC07	7/24/2024 7:09:14 AM	20.9	15.4	7.6	56.1	82.7	-0.33	-0.33	-4.71	Valve adjustment: No Change
HC08	7/22/2024 1:26:25 PM	45.2	27.3	0.0	27.5	90.1	0.03	0.03		
HC08	7/22/2024 1:28:10 PM	44.9	27.0	0.0	28.1	88.4	-0.01	0.00		
HC08	7/24/2024 7:13:18 AM	11.0	8.2	13.5	67.4	81.1	-1.01	-1.01	-4.65	Valve adjustment: No Change
HC09	7/22/2024 1:14:14 PM	67.1	26.0	0.0	6.9	90.6	0.01	0.02		
HC09	7/24/2024 7:22:01 AM	21.4	11.5	11.4	55.7	73.5	-0.60	-0.60	-4.71	Valve adjustment: No Change
SEW1	7/22/2024 12:53:20 PM	67.2	12.1	0.0	20.7	87.1	0.06	-0.87		
SEW1	7/24/2024 7:34:58 AM	32.6	9.3	8.8	49.4	72.5	-4.72	-4.73	-4.69	Valve adjustment: No Change
SEW2	7/22/2024 12:56:10 PM	48.7	20.0	0.0	31.3	85.7	0.03	-0.72		
SEW2	7/24/2024 7:32:03 AM	32.4	12.4	7.0	48.2	72.2	-4.77	-4.78	-4.71	Valve adjustment: No Change