

January 2024 Monthly Compliance Report

Solid Waste Permit No. 221
Bristol Integrated Solid Waste Management Facility
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INTRODUCTION

On behalf of the City of Bristol, Virginia (City), SCS Engineers (SCS) has prepared this report to the Virginia Department of Environmental Quality (VDEQ). This report covers the Solid Waste Permit (SWP) No. 221 Landfill during the month of January.

The following sections outline actions completed towards the applicable items in Appendix B of the Consent Decree. The sections have been numbered to align with the numbering in Appendix B.

2.0 COVER INTEGRITY AND EXPOSED WASTES

As outlined in Appendix B of the Consent Decree, cover integrity of the SWP No. 221 Landfill will be managed primarily through ongoing surface emissions monitoring in accordance with Federal and State regulations.

2.3 SURFACE EMISSIONS MONITORING

On December 13, 2023, SCS performed surface emissions monitoring (SEM) on the landfill. During the monitoring event no exceedances were detected on the serpentine route or at pipe penetrations. Details of the surface emissions monitoring were included in the December 2023 Monthly Compliance Report for the SWP No. 221 Landfill. A letter outlining the results will be included in the Semi-Annual Report to be submitted to VDEQ prior to March 1, 2024.

The 2024 Annual SEM Event will be performed later this year.

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 SYSTEM OPTIMIZATION

There are currently 15 vertical extraction wells in the SWP No. 221 Landfill Area (Well Nos. 1 – 15). In waste disposal units where the age of the buried wastes is greater than 40 years, as is the case at SWP No. 221 Landfill, the rate and quantity of decomposition gas production declines significantly compared to the rate and quantity of LFG generated in more recently buried wastes. However, some of these devices will show normal methane ranges and are tuned accordingly. There is no historical evidence of elevated temperatures in the SWP No. 221 Landfill. Also, the No. 221 Landfill Area is not believed to be a significant source of fugitive LFG emissions or odors.

Each month, adjustments are made during routine wellfield monitoring to optimize gas quality and applied vacuum on the Area 221 wells. The average gas composition in the SWP No. 221 wells is shown in Table 2.

Landfill gas quality has declined starting in September 2023. SCS believes that this may be due to colder weather in the fall and winter months, and recent changes to system vacuum, to which landfills with aged waste are more sensitive. Technicians have not been able to decrease applied vacuum without gas building up in wells and causing positive pressure, and SCS and the City have prioritized maintaining applied vacuum to the wellfield rather than potentially increased gas quality in lower quantity.

Gas composition and a summary of adjustments made to individual wells are listed in Appendix A.

Table 1. Monthly Average Wellhead LFG Composition – SWP No. 221 Wells

Month	Average CH ₄ (% Vol)	Average CO ₂ (% Vol)	Average O ₂ (% Vol)	Average Pressure (inches w.c.)
November 2022	47.4	33.7	3.3	-11.9
December 2022	58.7	39.6	0.3	-2.7
January 2023	39.8	27.0	6.0	-20.6
February 2023	42.5	28.1	7.2	-15.6
March 2023	53.5	33.6	2.9	-20.4
April 2023	56.7	35.2	1.2	-20.7
May 2023	52.9	35.4	1.8	-18.8
June 2023	57.4	38.3	0.4	-17.4
July 2023	57.5	37.7	0.3	-5.2
August 2023	52.4	35.4	1.3	-16.8
September 2023	16.5	12.9	15.6	-6.4
October 2023	21.6	15.1	12.6	-4.9
November 2023	36.2	26.5	7.1	-20.7
December 2023	22.0	16.1	12.8	-18.9
January 2024	30.7	22.1	9.5	-16.8

3.2 OPTIMIZATION PLAN AND REPORTING

3.2.1 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 Solid Waste Permit No. 221 landfill. Additional details about that plan were included along with a copy of the plan in the November 2022 Monthly Compliance Report for the SWP No. 221 Landfill.

3.2.2 Optimization Actions

During the month of January 2023 actions were taken to implement the submitted Optimization Plan. The actions taken at the SWP No. 221 Landfill in accordance with the Plan were summarized in the January 2023 Monthly Compliance Report for the SWP No. 221 Landfill. SCS prepared a report that detailed the results of each of these activities and the report was submitted to VDEQ on February 1, 2023.

3.2.3 Monthly Wellhead Monitoring

On January 11, 2024, SCS Field Services (SCS-FS) visited the landfill and performed monitoring of the landfill gas wells. The results of the monthly monitoring were submitted to VDEQ on February 7, 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.



Appendix A
January Monthly Wellhead Monitoring Data

Bristol Virginia Landfill - Permit 221 Well Data - 11/01/2023 to 01/31/2024

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Temp (F)	System Pressure ("H2O)	Comments
01	11/2/2023 15:31	0.3	0.8	20.3	78.6	-22.2	-22.2	77.2	-22.2	Valve Adjustment:Closed valve 1/2 to 1 turn
01	12/15/2023 09:04	1.2	0.9	21.0	76.8	-17.5	-17.5	47.6	-17.7	
01	1/11/2024 09:02	59.8	39.5	0.0	0.7	9.1	9.1	41.2	6.1	
01	1/12/2024 08:39	5.8	3.9	20.3	70.0	-19.4	-20.2	46.0	-19.4	
02	11/2/2023 15:41	60.6	39.4	0.0	0.0	-22.4	-22.4	75.4	-22.3	
02	12/15/2023 09:12	50.9	35.1	2.5	11.5	-21.0	-21.1	31.9	-20.9	
02	1/11/2024 09:08	47.4	33.1	3.9	15.6	-22.2	-22.2	30.2	-22.3	
03	11/2/2023 15:47	41.1	41.2	0.0	17.7	-17.5	-18.7	82.7	-22.3	
03	12/15/2023 09:16	4.3	9.0	16.3	70.3	-18.1	-18.1	33.2	-19.7	
03	1/11/2024 09:12	22.9	29.4	1.3	46.5	-19.8	-19.8	34.1	-21.0	
04	11/2/2023 15:50	41.3	42.2	0.0	16.5	-16.5	-20.7	67.1	-22.0	
04	12/15/2023 09:19	20.9	24.0	7.8	47.2	-19.5	-19.6	56.3	-21.1	
04	1/11/2024 09:20	40.0	32.6	3.9	23.5	-21.2	-21.1	48.6	-22.3	
05	11/2/2023 15:58	54.2	42.6	0.3	2.8	-20.5	-21.6	74.8	-22.1	Valve Adjustment:Opened Valve 1/2 to 1 turn
05	12/15/2023 09:32	0.4	0.4	21.6	77.6	-20.7	-20.8	56.1	-21.0	
05	1/11/2024 09:28	53.3	39.1	1.7	5.8	-22.1	-22.0	53.8	-25.2	
06	11/2/2023 16:05	8.2	6.0	17.8	68.1	-21.8	-21.2	71.4	-22.0	Valve Adjustment:Closed valve 1/2 to 1 turn
06	12/15/2023 08:31	48.9	31.3	4.3	15.5	-14.5	-14.5	46.2	-20.8	
06	1/11/2024 09:33	50.2	32.2	3.6	14.0	-16.6	-16.6	48.0	-22.2	
07	11/2/2023 15:07	59.6	39.1	0.4	1.0	-21.3	-21.5	74.8	-22.3	Valve Adjustment:No Change
07	12/15/2023 08:34	20.7	16.4	13.4	49.5	-20.5	-20.5	52.3	-21.0	
07	1/11/2024 09:37	11.2	9.2	17.0	62.6	-22.0	-22.0	52.5	-22.8	
08	11/2/2023 15:09	45.6	29.0	4.7	20.7	-22.3	-22.2	70.2	-22.2	Valve Adjustment:No Change
08	12/15/2023 08:37	54.8	34.6	1.4	9.2	-21.0	-21.2	51.9	-17.4	
08	1/11/2024 09:45	55.8	35.3	1.4	7.4	-23.2	-23.1	67.6	-22.1	
09	11/2/2023 15:14	8.9	5.8	17.3	68.0	-22.2	-17.9	74.5	-22.3	Valve Adjustment:Closed Valve > 1 turn
09	12/15/2023 08:44	21.7	16.0	13.6	48.7	-18.2	-18.2	48.5	-20.9	
09	1/11/2024 09:49	0.8	0.5	21.4	77.4	-22.4	-22.7	66.5	-22.5	
10	11/2/2023 15:18	55.9	42.0	0.5	1.6	-30.4	-22.2	74.2	-22.3	Valve Adjustment:Opened Valve 1/2 to 1 turn
10	12/15/2023 08:47	30.2	24.3	9.8	35.7	-20.9	-20.9	51.4	-20.9	
10	1/11/2024 09:58	53.8	41.0	1.1	4.1	-22.1	-22.6	60.2	-22.3	
11	11/2/2023 15:27	59.0	41.0	0.0	0.0	-22.3	-22.2	71.6	-22.3	
11	12/15/2023 08:54	0.0	0.3	21.6	78.1	-21.2	-21.2	44.0	-21.2	
11	1/11/2024 10:08	0.3	0.7	21.4	77.7	-21.8	-22.0	54.2	-21.8	



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12	11/2/2023 15:24	24.9	17.7	11.6	45.9	-21.9	-19.5	74.9	-22.3	Valve Adjustment:Closed valve 1/2 to 1 turn
12	12/15/2023 09:00	0.0	0.0	21.8	78.2	-20.6	-20.7	40.6	-20.6	
12	1/11/2024 10:11	0.4	0.4	21.3	77.9	-22.4	-22.5	49.8	-22.4	
13	11/2/2023 15:54	12.0	11.1	15.0	61.9	-4.6	-4.5	65.8	-22.0	Valve Adjustment:Closed valve 1/2 to 1 turn
13	12/15/2023 09:25	8.2	6.6	18.2	67.1	-7.7	-7.7	48.8	-20.7	
13	1/11/2024 09:17	4.9	3.6	19.6	72.0	-7.7	-7.7	38.3	-19.6	
14	11/17/2023 11:19	64.5	35.4	0.1	0.0	-21.7	-21.9	84.5	-21.9	
14	12/15/2023 08:39	57.5	35.0	0.8	6.7	-20.9	-20.9	52.2	-20.8	
14	1/11/2024 09:40	47.1	29.5	5.0	18.5	-22.6	-22.7	61.0	-22.6	
15	11/2/2023 15:36	6.4	4.3	18.4	71.0	-22.2	-22.2	72.1	-22.2	
15	12/15/2023 08:51	10.2	7.8	17.8	64.2	-20.6		48.6	-20.9	
15	1/11/2024 10:04	59.1	39.9	0.0	1.0	7.0	6.7	57.6	-18.4	
15	1/12/2024 08:43	9.3	6.4	18.6	65.6	-15.8	-15.8	52.6	-19.3	

