Bristol ISWMF Semi-Monthly Status Update (2/1/23 - 2/15/23)

Bernier, Quinn <QBernier@scsengineers.com>

Wed 3/22/2023 10:22 AM

To: Blalock, Susan (DEQ) <Susan.Blalock@deq.virginia.gov>;hall.kristen@epa.gov <hall.kristen@epa.gov>

Cc: Randall Eads <citymanager@bristolva.org>;Jon Hayes <jon.hayes@bristolva.org>;Hurst, Jeffrey (DEQ) <Jeffrey.Hurst@deq.virginia.gov>;David Cochran <dcochran@bristolva.org>;Willard, Erin <willard.erinm@epa.gov>;Bowers, Stacy (DEQ) <Stacy.Bowers@deq.virginia.gov>;Lock, Tom <TLock@scsengineers.com>;Dick, Bob <BDick@scsengineers.com>;King, Brandon <BKing@scsengineers.com>

Ms. Hall and Ms. Blalock,

In accordance with EPA's letter, "Approval of Higher Operating Temperature Values of Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Facility" from August 2021, please see the attached status report on existing wells, expansion of the gas collection system, and continuing operating and monitoring results, covering the period from February 1-15, 2023.

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March 21, 2023
File No. 02218208.04

MEMORANDUM

TO: Kristin Hall, EPA Region III
Tracy Blalock, VDEQ-SWRO

FROM: D. Brandon King, SCS Engineers
Quinn Bernier, SCS Engineers

SUBJECT: Semi-Monthly Status Update – February 1st through February 15th , 2023
Bristol Integrated Waste Management Facility, Bristol, Virginia

SCS is submitting this semi-monthly status update to satisfy the conditions of compliance provision #2 of the Environmental Protection Agency (EPA) Region III letter, *Approval of Higher Operating Temperature Values for Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Management Facility*, dated 8/23/21. Accordingly, this memo is a summary of temperature monitoring activities as well as work accomplished during the semi-monthly monitoring period of 2/1/23 through 2/15/23.

TEMPERATURE MONITORING

Automated Wellhead Temperature Measurements

Twenty-five (25) individual landfill gas (LFG) wellheads in the Permit #588 Landfill have automated temperature sensors installed. Two wells (GW-51 and GW-68) are equipped with 2-inch automated temperature sensor tips and the remaining 23 wells have the shorter 1-inch tips. VDEQ and USEPA have been receiving Daily Gas Well Temperature Reports with data from these automated temperature sensors since 12/1/22.

Because the 2-inch sensors have yielded temperatures that align more closely with manually collected temperature data than the 1-inch sensors, 2-inch automated temperature sensors for the 23 remaining wells have been ordered and arrived in the first week of March (please see early March update memo for more detail). Manual daily temperature measurements discussed in the following section, using a handheld digital thermometer inserted into the wellhead monitoring port, are considered the more accurate representation of LFG temperatures within the wellheads.

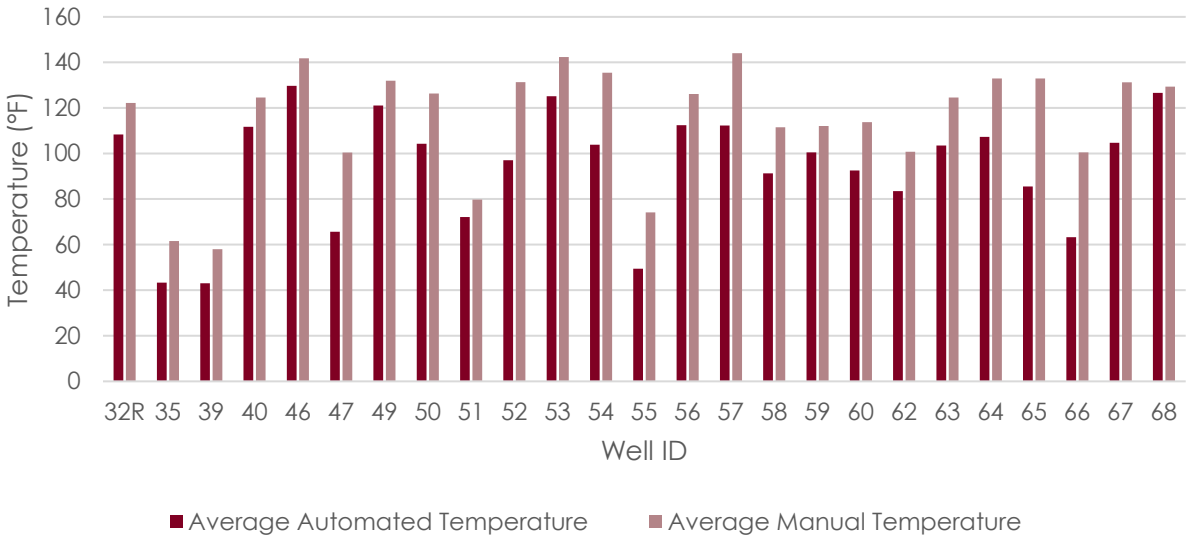
SCS reviewed the automated hourly temperature measurements from 2/1/23 to 2/15/23, and identified the following trends:

- **Temperatures over 145°F:** Temperatures over the NESHAP AAAA compliance threshold of 145°F were recorded at GW-53 and GW-67. At GW-53 these instances were short-lived, while temperatures greater than 145°F were persisted for approximately three days (2/10-2/13) at GW-67. By the end of 2/15/23 temperatures at both wells were less than 140°F.
- **Significant temperature increase at GW-62:** Temperatures at the beginning of the monitoring period at GW-62 hovered around 40°F, then abruptly increased on 2/3/23 and were thereafter consistently about 90°F. The low temperatures appear to have been caused by a

lack of applied vacuum, which was found during a wellfield monitoring event on 2/3/23 and field staff adjusted the wellhead to increase vacuum and reestablish LFG flow.

- **Temperature Trends by Location:** As shown in Figure 1, the wells with the highest average temperatures were GW-46, GW-49, GW-53, and GW-69. Spatially, only GW-46 and GW-53 are located in close proximity.

Figure 1. Average Daily Temperatures 2/1-2/15



Manual Daily Temperature Monitoring

Manual temperature measurements are being made daily by field staff with a GEM5000 or equivalent LFG analyzer. The manual measurements are used to verify the automated wellhead temperature sensors and to provide temperature data for the 13 wellheads without automated sensors.

As shown in Table 1, the temperatures measured manually during this monitoring period were greater than temperatures recorded by the automated temperature sensors in LFG wellheads, likely because the temperature probes on the GEM5000 extend further into the well than the automated sensors,and are less influenced by ambient temperatures. This is evident in the closer agreement between the manually measured temperatures and the automated temperatures measured with the longer 2-inch sensors at GW-51 and GW-68 (**BOLD** in Table 1). The 1-inch automated temperature sensors were replaced with 2-inch sensors in the first week of March.

Table 1. February 1st to 15th Temperature Exceedance Summary

Well ID	Average Automated Temperature Measurements (°F)	Average Manual Temperature Measurements (°F)	Difference Between Manual and Automated Temperature (°F)
32R	108.29	122.13	13.84
35	43.27	61.53	18.26
39	42.99	58.00	15.01
40	111.68	124.53	12.86
46	129.66	141.73	12.07
47	65.61	100.40	34.79
49	121.00	131.93	10.93
50	104.23	126.33	22.10
51	**72.06**	**79.73**	**7.67**
52	97.03	131.27	34.23
53	125.13	142.29	17.15
54	103.83	135.40	31.57
55	49.39	74.15	24.77
56	112.38	126.07	13.69
57	112.27	144.00	31.73
58	91.26	111.47	20.20
59	100.44	112.07	11.62
60	92.49	113.73	21.24
62	83.49	100.73	17.25
63	103.51	124.53	21.03
64	107.27	132.93	25.67
65	85.51	132.87	47.35
66	63.26	100.47	37.21
67	104.69	131.20	26.51
68	**126.6**	**129.3**	**2.75**

All daily temperatures recorded manually are provided in **Attachment A.**

Monthly Regulatory Wellhead Temperature Measurements

Routine monthly temperature monitoring for purposes of complying with 40 CFR 60.36f(a)(5) was conducted 2/1/23 – 2/3/23. During this monitoring period, wells that exhibited temperatures greater than 145°F or an approved HOV were retested after corrective actions. Temperatures greater than 145°F continue to be recorded consistently in GW-37 and GW-57 during this reporting period. See Table 2 for a list of the status of all exceedances recorded during this monitoring period.

Table 2. February Temperature Exceedance Summary

Well ID	Initial Exceedance Date	Last date/temperature measured	Duration of Exceedance	Status as of 2/15/23
GW-37	4/6/22	2/15/23 148.6°F	10 months	HOV request submitted 3/8/22
GW-57	1/5/23	2/15/23 149.6°F	41 days	Ongoing, past 15-day timeline but less than 60 days

Work Accomplished During Monitoring Period

LFG Sampling

SCS collected LFG samples from wells GW-37 and GW-57 using 1.5-L Summa canisters on 2/3/23, 2/8/23 and 2/15/23 to fulfill the requirement in 40 CFR 63.1961(a)(5) for temperature exceedances lasting more than 7 days. The samples were sent to Enthalpy Analytical for lab analysis of carbon monoxide (CO) and hydrogen (H_2) content. Lab results are summarized in Table 3. Full laboratory analytical data is included in **Attachment B** for further detail.

Table 2. LFG Wellhead Sampling Summary

Sample Date	GW-37		GW-57	
	CO (ppmv)	H2 (Vol. %)	CO (ppmv)	H2 (Vol. %)
2/3/23	152	2.36	288	5.03
2/8/23	158	2.54	272	4.57
2/15/23	147	2.48	373	5.51

The presence of hydrogen in samples from GW-37 and GW-57 indicates that combustion reactions are unlikely. The carbon monoxide measurements were all greater than 100 ppmv, indicating that continued weekly CO sampling should continue per 40 CFR 63.1961(a)(5)(viii) until the temperature exceedance is corrected or CO is less than 100 ppmv for four consecutive weekly samples.

Construction Activities

SCS-Field Services finished installation of the Pilot System Phase I of the Sidewall Odor Mitigation System (SOMS); four horizontal collectors connected to a pilot blower/flare system. The Pilot System was operated throughout this monitoring period. The City and SCS started/restarted and monitored the Pilot System throughout this monitoring period during the Facility's normal hours of operation. The City provided a propane tank for supplemental fuel to maintain consistent flare combustion throughout the evaluation. Methane concentrations ranging from approximately 36-40% and oxygen concentrations less than 3% were observed with a blower inlet vacuum less than -2.0 in-wc.

SCS-Field Services also continued work along the southeastern portion of the SOMS.

Weekly SEM

SCS is continuing weekly surface emissions monitoring (SEM) per the Plan of Action Report dated 7/6/22. No exceedances of the 500 ppmv threshold were recorded during the weekly SEM events held on 2/7/23 and 2/15/23.

The City has placed intermediate cover throughout the Permit No. 588 Landfill and installed well bore skirts at 19 select LFG wells exhibiting methane exceedances at pipe penetrations during past weekly SEM events. The actions appear to be working based on the results of the weekly SEM event during this monitoring period.

LFG System O&M

During this monitoring period, the City's O&M contractor performed pump maintenance, including cleaning check valves. In late January 2023, SCS observed condensate and air flowing through an unseated check valve at condensate sump CPS-2. The City procured ten additional 1" stainless steel check valves to install as backups when cleaning is needed.

Field work to repair/replace the 9 dedicated down-hole temperature probes that make up the temperature monitoring system (TMS) commenced 2/7/23. SCS Remote Monitoring Control (RMC) installed thermocouples in the dedicated temperature probes per SCS' revised design. In each down-hole probe, 8 thermocouples were affixed to a stainless steel, custom-fabricated plate. The 8 thermocouples were suspended at 25-foot intervals in order to evaluate the temperature of the waste mass by depth. The repaired TMS was reintegrated into the SCS RMC iOS cloud-based network for continuous monitoring on 2/11/23. Data from the TMS is discussed in the Monthly Compliance Reports sent to DEQ.

Please contact SCS or City personnel if you have any questions or require additional information.

cc: Randall Eads, City of Bristol
Jon Hayes, City of Bristol
Jeff Hurst, VDEQ-SWRO
Tom Lock, SCS Field Services
David Cochran, City of Bristol
Erin Willard, EPA Region III
Stacy Bowers, VDEQ-SWRO
Robert E. Dick, P.E., SCS Engineers

Attachment A

City of Bristol Daily LFG Well Temperature Readings

Note	Well Depth	Date Drill	Phase	Month	February	February	February	February	February	February	February	February	February	February	February	February	February	February
				Day	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
				Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
				Well Number															
1	102	10/16/2016	Old Well	**35**	48	45	38	25	52	60	70	66	73	60	73	75	76	80	82
2	70	9/6/2017	Old Well	**39**	42	40	34	25	48	60	68	67	73	61	65	70	68	72	77
3	100	9/7/2017	Old Well	**40**	127	125	114	94	126	122	131	128	128	128	128	130	127	130	130
4	110	10/4/2016	Old Well	**46**	140	140	140	142	144	142	142	140	142	142	142	145	140	142	143
5	120	10/4/2016	Old Well	**47**	100	106	80	86	98	102	103	104	103	104	102	100	106	105	107
6	120	9/17/2013	Old Well	**29**	46	48	72	51	83	88	92	92	92	90	90	95	97	100	162
7	100	8/23/2017	Old Well	**30R**	90	92	126	109	108	129	128	128	129	130	128	130	122	124	125
8	120	8/30/2017	Old Well	**31R**	132	130	126	127	131	133	133	132	135	138	134	135	140	142	140
9	70	7/29/2016	Old Well	**32**	65	68	55	79	79	77	80	75	81	80	76	75	75	76	77
10	100	7/28/2016	Old Well	**33**	40	44	124	124	125	125	125	124	126	126	124	120	122	120	122
11	100	7/30/2016	Old Well	**34**	128	129	97	104	114	113	124	122	127	130	125	124	124	125	126
12	100	8/1/2016	Old Well	**36**	67	64	36	Too Tall	Too Tall	70	75	77	75	72	74	75	76	77	80
13	100	8/24/2017	Old Well	**37**	149	150	148	149	150	150	150	149	150	150	155	160	150	149	150
14	50	8/25/2017	Old Well	**38**	105	108	83	90	89	91	90	88	97	90	89	90	92	98	99
15	75	9/8/2017	Old Well	**41**	99	102	82	68	95	85	100	101	99	96	100	105	104	108	106
16	57	9/8/2017	Old Well	**42**	103	100	97	101	111	109	111	110	111	109	110	115	112	114	118
17	110	10/7/2016	Old Well	**48**	35	38	28	17	51	60	67	66	72	62	68	70	71	76	77
1	120	10/1/2021	New Well	**32R**	122	124	119	119	123	122	123	124	123	122	104	126	125	128	128
2	110	10/1/2021	New Well	**49**	130	131	134	135	135	136	135	130	135	136	130	135	128	124	125
3	96	10/1/2021	New Well	**50**	124	127	127	124	124	124	128	127	127	126	126	125	127	130	129
4	114	10/1/2021	New Well	**51**	78	76	51	52	78	80	87	87	80	96	85	90	84	82	90
5	109	10/1/2021	New Well	**52**	135	136	140	148	143	141	121	131	128	121	125	130	128	122	120
6	91	10/1/2021	New Well	**53**	138	138	Steaming	115	133	160	164	162	148	132	145	140	138	139	140
7	91	10/1/2021	New Well	**54**	134	135	124	135	138	138	134	133	135	140	135	134	137	138	141
8	104	10/1/2021	New Well	**55**	Too Tall	Too Tall	44	41	70	75	82	81	81	81	80	85	82	80	82
9	109	10/1/2021	New Well	**56**	130	131	127	111	133	132	130	132	131	129	130	125	115	118	117
10	103	10/1/2021	New Well	**57**	157	155	150	135	151	148	147	145	150	150	145	143	130	129	125
11	92	10/1/2021	New Well	**58**	123	124	116	111	122	118	117	117	74	116	100	105	108	110	111
12	72	10/1/2021	New Well	**59**	114	112	116	110	114	112	111	113	113	113	110	105	116	112	110
13	120	10/1/2021	New Well	**60**	119	117	102	109	114	109	118	115	117	116	115	118	110	113	114
14	105	10/1/2021	New Well	**61**	120	122	119	113	113	116	118	115	116	123	120	125	123	122	120
15	120	10/1/2021	New Well	**62**	46	50	31	111	116	115	118	112	117	118	116	115	112	114	120
16	117	10/1/2021	New Well	**63**	130	128	109	118	123	126	127	122	124	126	125	130	131	130	119
17	120	10/1/2021	New Well	**64**	138	137	130	131	134	133	134	133	134	133	135	130	132	128	132
18	100	10/1/2021	New Well	**65**	132	133	132	132	134	134	134	135	133	134	130	135	134	131	130
19	102	10/1/2021	New Well	**66**	122	124	99	87	100	105	107	108	89	97	90	94	93	94	98
20	100	10/1/2021	New Well	**67**	135	133	116	114	123	117	116	117	122	170	140	138	150	138	139
21	75	10/1/2021	New Well	**68**	129	122	127	125	131	136	137	135	131	129	130	135	124	122	127

Attachment B

Laboratory Analytical Reports

1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 6, 2023 8:38
	4330 Lewis Road, Suite 1	Date Issued:	February 8, 2023 16:01
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/06/2023 08:38. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

TNI Accredited
VELAP ID 460021

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Submitted To:	Tom Lock	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
57	23B0248-01	Air	02/03/2023 10:45	02/06/2023 08:38
37	23B0248-02	Air	02/03/2023 10:25	02/06/2023 08:38

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 57

Sample ID: 23B0248-01

Sample Matrix: Air

Sampled: 2/3/2023 10:45

Sample Type: LV

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00476::15035

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 3.2

Receipt Vacuum(in Hg): 3.2

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	288	90.0	90.0		9	1	2/6/23 13:16	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	33.9	0.45	0.45		9	1	2/6/23 13:16	MER
Carbon dioxide, as received	51.7	0.45	0.45		9	1	2/6/23 13:16	MER
Oxygen (O2), as received	1.05	0.45	0.45		9	1	2/6/23 13:16	MER
Hydrogen (H2), as received	5.03	0.36	0.36		18	1	2/6/23 14:58	MER
Nitrogen (N2), as received	ND	9.00	9.00		9	1	2/6/23 13:16	MER
Carbon Monoxide, as received	0.03	0.009	0.009		9	1	2/6/23 13:16	MER

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B0248-02

Sample Matrix: Air

Sampled: 2/3/2023 10:25

Sample Type: LV

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00477::15036

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 4.6

Receipt Vacuum(in Hg): 4.6

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	152	90.0	90.0		9	1	2/6/23 14:07	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	12.0	0.45	0.45		9	1	2/6/23 14:07	MER
Carbon dioxide, as received	25.9	0.45	0.45		9	1	2/6/23 14:07	MER
Oxygen (O2), as received	6.70	0.45	0.45		9	1	2/6/23 14:07	MER
Hydrogen (H2), as received	2.36	0.18	0.18		9	1	2/6/23 14:07	MER
Nitrogen (N2), as received	45.0	18.0	18.0		18	1	2/6/23 15:14	MER
Carbon Monoxide, as received	0.02	0.009	0.009		9	1	2/6/23 14:07	MER

ENTHALPY ANALYTICAL

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B0248-01	1.00 mL / 1.00 mL	ALT-145	BGB0022	SGB0191	AG00026
23B0248-02	1.00 mL / 1.00 mL	ALT-145	BGB0022	SGB0191	AG00026
23B0248-01	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026
23B0248-01RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026
23B0248-02	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026
23B0248-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0022	SGB0191	AG00026

ENTHALPY ANALYTICAL

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Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Blank (BGB0022-BLK1)					Prepared & Analyzed: 02/01/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Oxygen (O2)	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Nitrogen (N2)	<	1.00	Vol%							
Carbon Monoxide	<	0.001	Vol%							
Carbon Monoxide	<	10.0	ppmv							
LCS (BGB0022-BS1)					Prepared & Analyzed: 02/01/2023					
Methane	4080	500	ppmv	5000		81.6	0-200			
Methane	4080	0.05	ppmv	5000		81.6	70-130			
Carbon dioxide	4450	500	ppmv	5000		89.0	0-200			
Carbon dioxide	4450	0.05	ppmv	5000		89.0	70-130			
Oxygen (O2)	5370	500	ppmv	5000		107	0-200			
Oxygen (O2)	5370	0.05	ppmv	5000		107	70-130			
Hydrogen (H2)	5890	200	ppmv	5100		116	0-200			
Nitrogen (N2)	5840	2000	ppmv	5000		117	0-200			
Nitrogen (N2)	5840	1	ppmv	5000		117	70-130			
Hydrogen (H2)	5890	0.02	ppmv	5100		116	70-130			
Carbon Monoxide	4970	0.001	ppmv	5000		99.4	70-130			
Carbon Monoxide	4970	10	ppmv	5000		99.4	0-200			
Duplicate (BGB0022-DUP1)					**Source: 23A1447-05** Prepared & Analyzed: 02/01/2023					
Methane	42.0	0.45	Vol%		41.9			0.231	5	
Methane	420000	4500	ppmv		419000			0.231	25	
Carbon dioxide	440000	4500	ppmv		437000			0.623	25	
Carbon dioxide	44.0	0.45	Vol%		43.7			0.623	5	
Oxygen (O2)	4750	4500	ppmv		4890			2.94	25	
Oxygen (O2)	0.47	0.45	Vol%		0.49			2.94	5	
Nitrogen (N2)	38200	18000	ppmv		38400			0.400	25	
Hydrogen (H2)	32700	1800	ppmv		32100			1.94	25	
Hydrogen (H2)	3.27	0.18	Vol%		3.21			1.94	5	

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Duplicate (BGB0022-DUP1)				**Source: 23A1447-05**	Prepared & Analyzed: 02/01/2023					
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Duplicate (BGB0022-DUP2)				**Source: 23B0113-01**	Prepared & Analyzed: 02/03/2023					
Methane	221000	4500	ppmv		223000			0.972	25	
Methane	22.1	0.45	Vol%		22.3			0.972	5	
Carbon dioxide	400000	4500	ppmv		401000			0.357	25	
Carbon dioxide	40.0	0.45	Vol%		40.1			0.357	5	
Oxygen (O2)	83700	4500	ppmv		84400			0.856	25	
Oxygen (O2)	8.37	0.45	Vol%		8.44			0.856	5	
Nitrogen (N2)	322000	18000	ppmv		324000			0.779	25	
Hydrogen (H2)	19600	1800	ppmv		19400			0.928	25	
Hydrogen (H2)	1.96	0.18	Vol%		1.94			0.928	5	
Nitrogen (N2)	32.2	9.00	Vol%		32.4			0.779	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Duplicate (BGB0022-DUP3)				**Source: 23B0113-02**	Prepared & Analyzed: 02/03/2023					
Methane	290000	4500	ppmv		290000			0.305	25	
Methane	29.0	0.45	Vol%		29.0			0.305	5	
Carbon dioxide	320000	4500	ppmv		319000			0.215	25	
Carbon dioxide	32.0	0.45	Vol%		31.9			0.215	5	
Oxygen (O2)	17100	4500	ppmv		16500			3.11	25	
Oxygen (O2)	1.71	0.45	Vol%		1.65			3.11	5	
Nitrogen (N2)	256000	18000	ppmv		256000			0.0254	25	
Hydrogen (H2)	65700	1800	ppmv		65500			0.262	25	
Nitrogen (N2)	25.6	9.00	Vol%		25.6			0.0254	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	

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Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Duplicate (BGB0022-DUP4)			**Source: 23B0113-03**		Prepared & Analyzed: 02/03/2023					
Methane	38.4	0.45	Vol%		38.1			0.726	5	
Methane	384000	4500	ppmv		381000			0.726	25	
Carbon dioxide	384000	4500	ppmv		381000			0.842	25	
Carbon dioxide	38.4	0.45	Vol%		38.1			0.842	5	
Oxygen (O2)	8.59	0.45	Vol%		8.54			0.608	5	
Oxygen (O2)	85900	4500	ppmv		85400			0.608	25	
Nitrogen (N2)	11.3	9.00	Vol%		11.3			0.598	5	
Nitrogen (N2)	113000	18000	ppmv		113000			0.598	25	
Hydrogen (H2)	64700	1800	ppmv		63600			1.73	25	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Carbon Monoxide	<	90.0	ppmv		<90.0			NA	25	
Duplicate (BGB0022-DUP5)			**Source: 23B0248-01**		Prepared & Analyzed: 02/06/2023					
Methane	33.9	0.45	Vol%		33.9			0.0304	5	
Methane	339000	4500	ppmv		339000			0.0304	25	
Carbon dioxide	519000	4500	ppmv		517000			0.314	25	
Carbon dioxide	51.9	0.45	Vol%		51.7			0.314	5	
Oxygen (O2)	10400	4500	ppmv		10500			0.876	25	
Oxygen (O2)	1.04	0.45	Vol%		1.05			0.876	5	
Hydrogen (H2)	51400	1800	ppmv		51200			0.527	25	
Nitrogen (N2)	33900	18000	ppmv		34300			1.30	25	
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Carbon Monoxide	289	90.0	ppmv		288			0.280	25	
Carbon Monoxide	0.03	0.009	Vol%		0.03			0.280	5	
Duplicate (BGB0022-DUP6)			**Source: 23B0248-02**		Prepared & Analyzed: 02/06/2023					
Methane	120000	4500	ppmv		120000			0.545	25	
Methane	12.0	0.45	Vol%		12.0			0.545	5	
Carbon dioxide	260000	4500	ppmv		259000			0.443	25	
Carbon dioxide	26.0	0.45	Vol%		25.9			0.443	5	
Oxygen (O2)	67100	4500	ppmv		67000			0.0471	25	
Oxygen (O2)	6.71	0.45	Vol%		6.70			0.0471	5	
Nitrogen (N2)	457000	18000	ppmv		456000			0.240	25	
Hydrogen (H2)	2.32	0.18	Vol%		2.36			1.71	5	
Hydrogen (H2)	23200	1800	ppmv		23600			1.71	25	

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0022 - No Prep VOC GC Air										
Duplicate (BGB0022-DUP6)				**Source: 23B0248-02**	Prepared & Analyzed: 02/06/2023					
Carbon Monoxide	152	90.0	ppmv		152			0.178	25	
Carbon Monoxide	0.02	0.009	Vol%		0.02			0.178	5	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		
Oxygen (O2)	VELAP		
Nitrogen (N2)	VELAP		

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2023
NC	North Carolina DENR	495	12/31/2023
NCDEQ	North Carolina DEQ	495	12/31/2023
NCDOH	North Carolina Department of Health	51714	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

TIC — Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside ± 10% of the absolute.

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formerly Air, Water & Soil Laboratories

AIR ANALYSIS
CHAIN OF CUSTODY

Equipment due 2/17/2023

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: **Same**	PROJECT NAME/Quote #: **Bristol**
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07220028.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #: EMAIL:		Pretreatment Program:
Is sample for compliance reporting? (YES) NO	**Regulatory State:** VA	Is sample from a chlorinated supply? ~~YES~~ (NO)	PWS I.D. #:
SAMPLER NAME (PRINT): Ryan Seymour	SAMPLER SIGNATURE: Ryan Seymour	**Turn Around Time:** Circle: 10 (5 Days) or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other_____

063-23A-0011

	CLIENT SAMPLE I.D.	Regulator Info: Flow Controller ID	Regulator Info: Cal Flow (mL/min)	Canister Information: Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Sampling Start Information: Barometric Pres. (in Hg): Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Sampling Stop Information: Barometric Pres. (in Hg): Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	ANALYSIS: Alt 145 CO	Hydrogen	3C
1)	57	5T005		15035	1.4	221220-02	21.4	~~10~~ 3.2	2/3/23	10:41 AM	28	150	2/3/23	10:45 AM	10	150	LG	x	Y	Y
2)	37	↓		15036	1.4	221220-02	21.4	~~17~~ 4.6	2/3/23	10:18 AM	28	148	2/3/23	10:25 AM	11	148	LG	x	Y	Y
3)				15037	1.4	221220-02	21.4										LG	x		
4)				15040	1.4	221220-02	21.4										LG	x		

SCS Field Services **23B0248**
Bristol
Recd: 02/06/2023 **Due: 02/13/2023**
v130325002

RELINQUISHED: Ryan Seymour	2/3/23	RECEIVED: FedEx E	DATE / TIME
RELINQUISHED: FedEx E	DATE / TIME	RECEIVED: M Stever	2/6/23 0830 DATE / TIME
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME

Q
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

310
19.8°C
no seal
no ice

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0248

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 6, 2023 8:38 February 8, 2023 16:01
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Sample Conditions Checklist

Samples Received at:	**19.80°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 9, 2023 14:00
	4330 Lewis Road, Suite 1	Date Issued:	February 16, 2023 14:27
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/09/2023 14:00. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

TNI Accredited
VELAP ID 460021

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 9, 2023 14:00
	4330 Lewis Road, Suite 1	Date Issued:	February 16, 2023 14:27
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Tom Lock	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
37	23B0613-01	Air	02/08/2023 09:38	02/09/2023 14:00
57	23B0613-02	Air	02/08/2023 09:48	02/09/2023 14:00

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Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B0613-01

Sample Matrix: Air

Sampled: 2/8/2023 09:38

Sample Type: LG

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00478::15037

Canister Size: 1.4

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 3

Receipt Vacuum(in Hg): 3

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	Result (ppmv)	MDL (ppmv)	LOQ (ppmv)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	158	90.0	90.0		9	1	2/13/23 15:45	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Result (Vol%)	MDL (Vol%)	LOQ (Vol%)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	12.6	0.45	0.45		9	1	2/13/23 15:45	MER
Carbon dioxide, as received	27.2	0.45	0.45		9	1	2/13/23 15:45	MER
Oxygen (O2), as received	6.64	0.45	0.45		9	1	2/13/23 15:45	MER
Hydrogen (H2), as received	2.54	0.18	0.18		9	1	2/13/23 15:45	MER
Nitrogen (N2), as received	45.3	18.0	18.0		18	1	2/14/23 10:49	MER
Carbon Monoxide, as received	0.02	0.009	0.009		9	1	2/13/23 15:45	MER

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 57

Sample ID: 23B0613-02

Sample Matrix: Air

Sampled: 2/8/2023 09:48

Sample Type: LG

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00479::15040

Canister Size: 1.4

Initial Vacuum(in Hg): 21.4

Final Vacuum(in Hg): 4.4

Receipt Vacuum(in Hg): 4.4

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	272	90.0	90.0		9	1	2/13/23 16:37	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Vol% Result	MDL	LOQ	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	35.0	0.45	0.45		9	1	2/13/23 16:37	MER
Carbon dioxide, as received	51.3	0.45	0.45		9	1	2/13/23 16:37	MER
Oxygen (O2), as received	1.11	0.45	0.45		9	1	2/13/23 16:37	MER
Hydrogen (H2), as received	4.67	0.36	0.36		18	1	2/14/23 11:04	MER
Nitrogen (N2), as received	ND	9.00	9.00		9	1	2/13/23 16:37	MER
Carbon Monoxide, as received	0.03	0.009	0.009		9	1	2/13/23 16:37	MER

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B0613-01	1.00 mL / 1.00 mL	ALT-145	BGB0413	SGB0435	AG00026
23B0613-02	1.00 mL / 1.00 mL	ALT-145	BGB0413	SGB0435	AG00026
23B0613-01	1.00 mL / 1.00 mL	EPA 3C	BGB0413	SGB0435	AG00026
23B0613-02	1.00 mL / 1.00 mL	EPA 3C	BGB0413	SGB0435	AG00026
23B0613-01RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0432	SGB0457	AG00026
23B0613-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0432	SGB0457	AG00026

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0413 - No Prep VOC GC Air										
Blank (BGB0413-BLK1)					Prepared & Analyzed: 02/13/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Oxygen (O2)	<	0.05	Vol%							
Nitrogen (N2)	<	1.00	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	10.0	ppmv							
Carbon Monoxide	<	0.001	Vol%							
LCS (BGB0413-BS1)					Prepared & Analyzed: 02/13/2023					
Methane	4220	500	ppmv	5000		84.3	0-200			
Methane	4220	0.05	ppmv	5000		84.3	80-120			
Carbon dioxide	4930	500	ppmv	5000		98.6	0-200			
Carbon dioxide	4930	0.05	ppmv	5000		98.6	80-120			
Oxygen (O2)	5040	500	ppmv	5000		101	0-200			
Oxygen (O2)	5040	0.05	ppmv	5000		101	80-120			
Nitrogen (N2)	5280	2000	ppmv	5000		106	0-200			
Nitrogen (N2)	5280	1	ppmv	5000		106	80-120			
Hydrogen (H2)	5920	200	ppmv	5100		116	0-200			
Hydrogen (H2)	5920	0.02	ppmv	5100		116	80-120			
Carbon Monoxide	4840	10	ppmv	5000		96.8	0-200			
Carbon Monoxide	4840	0.001	ppmv	5000		96.8	80-120			
Duplicate (BGB0413-DUP1)					**Source: 23B0613-01** Prepared & Analyzed: 02/13/2023					
Methane	125000	4500	ppmv		126000			1.29	25	
Methane	12.5	0.45	Vol%		12.6			1.29	5	
Carbon dioxide	269000	4500	ppmv		272000			1.10	25	
Carbon dioxide	26.9	0.45	Vol%		27.2			1.10	5	
Oxygen (O2)	6.57	0.45	Vol%		6.64			1.09	5	
Oxygen (O2)	65700	4500	ppmv		66400			1.09	25	
Hydrogen (H2)	2.52	0.18	Vol%		2.54			0.978	5	
Hydrogen (H2)	25200	1800	ppmv		25400			0.978	25	
Nitrogen (N2)	445000	18000	ppmv		450000			0.959	25	

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0413 - No Prep VOC GC Air										
Duplicate (BGB0413-DUP1)				**Source: 23B0613-01**			Prepared & Analyzed: 02/13/2023			
Carbon Monoxide	153	90.0	ppmv		158			3.47	25	
Carbon Monoxide	0.02	0.009	Vol%		0.02			3.47	5	
Duplicate (BGB0413-DUP2)				**Source: 23B0613-02**			Prepared & Analyzed: 02/13/2023			
Methane	349000	4500	ppmv		350000			0.407	25	
Methane	34.9	0.45	Vol%		35.0			0.407	5	
Carbon dioxide	51.3	0.45	Vol%		51.3			0.116	5	
Carbon dioxide	513000	4500	ppmv		513000			0.116	25	
Oxygen (O2)	1.10	0.45	Vol%		1.11			0.589	5	
Oxygen (O2)	11000	4500	ppmv		11100			0.589	25	
Hydrogen (H2)	47700	1800	ppmv		48200			0.992	25	
Nitrogen (N2)	36100	18000	ppmv		36500			1.09	25	
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Carbon Monoxide	0.03	0.009	Vol%		0.03			0.165	5	
Carbon Monoxide	273	90.0	ppmv		272			0.165	25	
Batch BGB0432 - No Prep VOC GC Air										
Blank (BGB0432-BLK1)							Prepared & Analyzed: 02/14/2023			
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Oxygen (O2)	<	0.05	Vol%							
Nitrogen (N2)	<	1.00	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	0.001	Vol%							
LCS (BGB0432-BS1)							Prepared & Analyzed: 02/14/2023			
Methane	4030	0.05	ppmv	5000		80.5	80-120			
Carbon dioxide	4580	0.05	ppmv	5000		91.5	80-120			
Oxygen (O2)	5130	0.05	ppmv	5000		103	80-120			
Nitrogen (N2)	5400	1	ppmv	5000		108	80-120			
Hydrogen (H2)	5940	0.02	ppmv	5100		116	80-120			
Carbon Monoxide	4930	0.001	ppmv	5000		98.6	80-120			

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Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0432 - No Prep VOC GC Air										
Duplicate (BGB0432-DUP1)				**Source: 23B0621-01**	Prepared & Analyzed: 02/14/2023					
Methane	58.0	0.45	Vol%		57.6			0.645	5	
Carbon dioxide	24.8	0.45	Vol%		24.7			0.373	5	
Oxygen (O2)	1.21	0.45	Vol%		1.20			0.825	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Nitrogen (N2)	13.0	9.00	Vol%		12.9			0.606	5	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	
Duplicate (BGB0432-DUP2)				**Source: 23B0621-02**	Prepared & Analyzed: 02/15/2023					
Methane	50.0	0.45	Vol%		51.1			2.25	5	
Carbon dioxide	38.6	0.45	Vol%		37.3			3.35	5	
Oxygen (O2)	0.72	0.45	Vol%		0.74			2.53	5	
Nitrogen (N2)	<	9.00	Vol%		<9.00			NA	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Carbon Monoxide	<	0.009	Vol%		<0.009			NA	5	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		
Oxygen (O2)	VELAP		
Nitrogen (N2)	VELAP		

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Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2023
NC	North Carolina DENR	495	12/31/2023
NCDEQ	North Carolina DEQ	495	12/31/2023
NCDOH	North Carolina Department of Health	51714	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

TIC — Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside ± 10% of the absolute.

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formerly Air, Water & Soil Laboratories

AIR ANALYSIS CHAIN OF CUSTODY

Equipment due 2/17/2023

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: Same	PROJECT NAME/Quote #: Bristol
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07220028.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #: EMAIL:		Pretreatment Program:
Is sample for compliance reporting? (YES) NO	Regulatory State: VA	Is sample from a chlorinated supply? ~~YES~~ (NO)
SAMPLER NAME (PRINT): Ryan Seymour	SAMPLER SIGNATURE: Ryan Seymour	PWS I.D. #:
		Turn Around Time: Circle: 10 (5 Days) or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other_____

063-23A-0011

	CLIENT SAMPLE I.D.	Regulator Info: Flow Controller ID	Regulator Info: Cal Flow (mL/min)	Canister Information: Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Sampling Start Information (Barometric Pres. (in Hg): 30.04): Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Sampling Stop Information (Barometric Pres. (in Hg): 30.04): Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	ANALYSIS: Alt 145 CO	Hydrogen Sulfide	TO-15
1)	57	ST005		15035	1.4	221220-02	21.4	10	2/3/23	10:41 AM	28	150	2/3/23	10:45 AM	10	150	LG	x	X	X
2)	37			15036	1.4	221220-02	21.4	11	2/3/23	10:18 AM	28	148	2/3/23	10:25 AM	11	148	LG	x	X	X
3)	37			15037	1.4	221220-02	21.4	~~10~~ 3.0	2/8/23	9:30 AM	27	149	2/8/23	9:38 AM	10	149	LG	x	X	X
4)	57			15040	1.4	221220-02	21.4	~~H~~ 4.4	2/8/23	9:40 AM	28	152	2/8/23	9:48 AM	11	152	LG	x	X	X

310, 20.5°C, no ice, no seal

RELINQUISHED: Ryan Seymour	DATE / TIME 2/3/23	RECEIVED: CSB FedEx	DATE / TIME
RELINQUISHED: Ryan Seymour	DATE / TIME 2/8/23	RECEIVED: FedEx	DATE / TIME
RELINQUISHED: FedEx	DATE / TIME	RECEIVED: CSB 2/9/23 1400	DATE / TIME

QC Data Package
Level I ☐
Level II ☐
Level III ☐
Level IV ☐

LAB USE ONLY

23B0613

SCS Field Services 23B0613
Bristol
Recd: 02/09/2023 Due: 02/16/2023

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Certificate of Analysis

Final Report

Laboratory Order ID 23B0613

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 9, 2023 14:00 February 16, 2023 14:27
Submitted To:	Tom Lock	Project Number:	[none]
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Sample Conditions Checklist

Samples Received at:	**20.50°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	No
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 17, 2023 9:35
	4330 Lewis Road, Suite 1	Date Issued:	February 24, 2023 16:23
	Harrisburg, PA 17111	Project Number:	07283016.00
Submitted To:	Ryan Seymour	Purchase Order:	07-SO04485
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 02/17/2023 09:35. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Ted Soyars

Technical Director

End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

TNI Accredited
VELAP ID 460021

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Certificate of Analysis

Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	February 17, 2023 9:35
	4330 Lewis Road, Suite 1	Date Issued:	February 24, 2023 16:23
	Harrisburg, PA 17111	Project Number:	07283016.00
Submitted To:	Ryan Seymour	Purchase Order:	07-SO04485

Client Site I.D.: Bristol

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
37	23B1140-01	Air	02/15/2023 10:35	02/17/2023 09:35
57	23B1140-02	Air	02/15/2023 12:30	02/17/2023 09:35

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Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 37

Sample ID: 23B1140-01

Sample Matrix: Air

Sampled: 2/15/2023 10:35

Sample Type:

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00268::13370

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.2

Final Vacuum(in Hg): 4.2

Receipt Vacuum(in Hg): 4.2

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
ALT-145

Analyte	Result (ppmv)	MDL (ppmv)	LOQ (ppmv)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	147	90.0	90.0		9	1	2/20/23 16:09	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis
EPA 3C

Analyte	Result (Vol%)	MDL (Vol%)	LOQ (Vol%)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	12.4	0.45	0.45		9	1	2/20/23 16:09	MER
Carbon dioxide, as received	26.5	0.45	0.45		9	1	2/20/23 16:09	MER
Hydrogen (H2), as received	2.48	0.18	0.18		9	1	2/20/23 16:09	MER

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

ANALYTICAL RESULTS

Project Location:

Field Sample #: 57

Sample ID: 23B1140-02

Sample Matrix: Air

Sampled: 2/15/2023 12:30

Sample Type:

Sample Description/Location:

Sub Description/Location:

Canister ID: 063-00364::13958

Canister Size: 1.4L

Initial Vacuum(in Hg): 21.2

Final Vacuum(in Hg): 5.2

Receipt Vacuum(in Hg): 5.2

Flow Controller Type: Passive

Flow Controller ID:

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	Result (ppmv)	MDL (ppmv)	LOQ (ppmv)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Carbon Monoxide, as received	373	90.0	90.0		9	1	2/20/23 17:00	MER

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis EPA 3C

Analyte	Result (Vol%)	MDL (Vol%)	LOQ (Vol%)	Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
Methane, as received	31.2	0.45	0.45		9	1	2/20/23 17:00	MER
Carbon dioxide, as received	51.9	0.45	0.45		9	1	2/20/23 17:00	MER
Hydrogen (H2), as received	5.51	0.36	0.36		18	1	2/21/23 14:23	MER

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Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			**Preparation Method:**	**No Prep VOC GC Air**	
23B1140-01RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0663	SGB0757	AG00026
23B1140-02RE1	1.00 mL / 1.00 mL	EPA 3C	BGB0663	SGB0757	AG00026
23B1140-01	1.00 mL / 1.00 mL	ALT-145	BGB0692	SGB0731	AG00026
23B1140-02	1.00 mL / 1.00 mL	ALT-145	BGB0692	SGB0731	AG00026
23B1140-01	1.00 mL / 1.00 mL	EPA 3C	BGB0692	SGB0731	AG00026
23B1140-02	1.00 mL / 1.00 mL	EPA 3C	BGB0692	SGB0731	AG00026

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Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0663 - No Prep VOC GC Air										
Blank (BGB0663-BLK1)					Prepared & Analyzed: 02/20/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
LCS (BGB0663-BS1)					Prepared & Analyzed: 02/20/2023					
Methane	4670	0.05	ppmv	5000		93.4	80-120			
Carbon dioxide	4350	0.05	ppmv	5000		87.0	80-120			
Hydrogen (H2)	5970	0.02	ppmv	5100		117	80-120			
Duplicate (BGB0663-DUP1)				**Source: 23B0710-04**	Prepared & Analyzed: 02/20/2023					
Methane	36.7	0.45	Vol%		36.8			0.364	5	
Carbon dioxide	26.5	0.45	Vol%		26.6			0.342	5	
Hydrogen (H2)	0.62	0.18	Vol%		0.65			4.22	5	
Duplicate (BGB0663-DUP2)				**Source: 23B0710-05**	Prepared & Analyzed: 02/20/2023					
Methane	43.6	0.45	Vol%		43.6			0.0718	5	
Carbon dioxide	31.3	0.45	Vol%		31.3			0.00374	5	
Hydrogen (H2)	0.93	0.18	Vol%		0.97			3.68	5	
Duplicate (BGB0663-DUP3)				**Source: 23B0788-02**	Prepared & Analyzed: 02/20/2023					
Methane	33.8	0.45	Vol%		33.7			0.372	5	
Carbon dioxide	26.7	0.45	Vol%		26.7			0.00502	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP4)				**Source: 23B0788-01**	Prepared & Analyzed: 02/21/2023					
Methane	<	0.45	Vol%		<0.45			NA	5	
Carbon dioxide	<	0.45	Vol%		<0.45			NA	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	

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Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0663 - No Prep VOC GC Air										
Duplicate (BGB0663-DUP5)				**Source: 23B0788-03**	Prepared & Analyzed: 02/21/2023					
Methane	10.4	0.45	Vol%		10.3			1.14	5	
Carbon dioxide	8.21	0.45	Vol%		8.11			1.21	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP6)				**Source: 23B0765-01**	Prepared & Analyzed: 02/22/2023					
Methane	59.9	0.45	Vol%		60.3			0.712	5	
Carbon dioxide	32.1	0.45	Vol%		32.3			0.485	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP7)				**Source: 23B0765-02**	Prepared & Analyzed: 02/22/2023					
Methane	27.8	0.45	Vol%		27.7			0.218	5	
Carbon dioxide	17.8	0.45	Vol%		17.7			0.548	5	
Hydrogen (H2)	<	0.18	Vol%		<0.18			NA	5	
Duplicate (BGB0663-DUP8)				**Source: 23B0869-01**	Prepared & Analyzed: 02/22/2023					
Methane	5.91	0.45	Vol%		5.83			1.42	5	
Hydrogen (H2)	<	0.18	Vol%		0.20			NA	5	
Batch BGB0692 - No Prep VOC GC Air										
Blank (BGB0692-BLK1)					Prepared & Analyzed: 02/20/2023					
Methane	<	0.05	Vol%							
Carbon dioxide	<	0.05	Vol%							
Hydrogen (H2)	<	0.02	Vol%							
Carbon Monoxide	<	10.0	ppmv							
LCS (BGB0692-BS1)					Prepared & Analyzed: 02/20/2023					
Methane	4670	500	ppmv	5000		93.4	0-200			
Methane	4670	0.05	ppmv	5000		93.4	80-120			
Carbon dioxide	4350	500	ppmv	5000		87.0	0-200			
Carbon dioxide	4350	0.05	ppmv	5000		87.0	80-120			
Oxygen (O2)	5080	500	ppmv	5000		102	0-200			
Hydrogen (H2)	5970	200	ppmv	5100		117	0-200			
Nitrogen (N2)	5340	2000	ppmv	5000		107	0-200			
Hydrogen (H2)	5970	0.02	ppmv	5100		117	80-120			
Carbon Monoxide	4860	10	ppmv	5000		97.2	0-200			

1941 Reymet Road ● Richmond, Virginia 23237 ● Tel: (804)-358-8295 Fax: (804)-358-8297

Certificate of Analysis

Final Report

Laboratory Order ID 23B1140

Client Name:	SCS Field Services - Harrisburg, PA 4330 Lewis Road, Suite 1 Harrisburg, PA 17111	Date Received: Date Issued:	February 17, 2023 9:35 February 24, 2023 16:23
Submitted To:	Ryan Seymour	Project Number:	07283016.00
Client Site I.D.:	Bristol	Purchase Order:	07-SO04485

Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

Enthalpy Analytical

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch BGB0692 - No Prep VOC GC Air										
Duplicate (BGB0692-DUP1)			**Source: 23B1140-01**		Prepared & Analyzed: 02/20/2023					
Methane	12.3	0.45	Vol%		12.4			0.0538	5	
Methane	123000	4500	ppmv		124000			0.0538	25	
Carbon dioxide	266000	4500	ppmv		265000			0.448	25	
Carbon dioxide	26.6	0.45	Vol%		26.5			0.448	5	
Oxygen (O2)	66500	4500	ppmv		66100			0.634	25	
Hydrogen (H2)	2.52	0.18	Vol%		2.48			1.40	5	
Hydrogen (H2)	25200	1800	ppmv		24800			1.40	25	
Nitrogen (N2)	442000	18000	ppmv		439000			0.607	25	
Carbon Monoxide	150	90.0	ppmv		147			1.64	25	
Duplicate (BGB0692-DUP2)			**Source: 23B1140-02**		Prepared & Analyzed: 02/20/2023					
Methane	311000	4500	ppmv		312000			0.119	25	
Methane	31.1	0.45	Vol%		31.2			0.119	5	
Carbon dioxide	520000	4500	ppmv		519000			0.193	25	
Carbon dioxide	52.0	0.45	Vol%		51.9			0.193	5	
Oxygen (O2)	12700	4500	ppmv		12700			0.166	25	
Hydrogen (H2)	57800	1800	ppmv		57400			0.773	25	
Nitrogen (N2)	41900	18000	ppmv		41900			0.0550	25	
Carbon Monoxide	376	90.0	ppmv		373			0.961	25	

Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
EPA 3C in Air			
Methane	VELAP		

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Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2023
NC	North Carolina DENR	495	12/31/2023
NCDEQ	North Carolina DEQ	495	12/31/2023
NCDOH	North Carolina Department of Health	51714	07/31/2023
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #008	68-03503	10/31/2023
VELAP	NELAP-Virginia Certificate #12157	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2023

Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

TIC — Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside ± 10% of the absolute.

ENTHALPY ANALYTICAL
formerly *Air, Water & Soil Laboratories*

Please make everything out to Ryan Seymour for delivery orders.

AIR ANALYSIS
CHAIN OF CUSTODY

Equipment due 2/6/2023

COMPANY NAME: SCS Field Services - Harrisburg	INVOICE TO: **Same**	PROJECT NAME/Quote #: **Bristol**
CONTACT:	INVOICE CONTACT:	SITE NAME: Bristol
ADDRESS:	INVOICE ADDRESS:	PROJECT NUMBER: 07223016.00
PHONE #:	INVOICE PHONE #:	P.O. #:
FAX #:	EMAIL:	Pretreatment Program:
Is sample for compliance reporting? (YES) NO	**Regulatory State:** VA / Is sample from a chlorinated supply? YES (NO)	PWS I.D. #:
SAMPLER NAME (PRINT): Ryan Seymour	SAMPLER SIGNATURE: Ryan Seymour	**Turn Around Time:** Circle: 10 (5 Days) or __ Day

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other LV

063-23A-0005

	Regulator Info		Canister Information					Sampling Start Information				Sampling Stop Information					ANALYSIS		
								Barometric Pres. (in Hg):				Barometric Pres. (in Hg):							
CLIENT SAMPLE I.D.	Flow Controller ID	Cal Flow (mL/min)	Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Stop Date	Stop Time (24hr clock)	Final Canister Vacuum (in Hg)	Ending Sample Temp °F	Matrix (See Codes)	Alt 145 CO	Hydrogen	[illegible]
1) 37	ST005		13370	1.4	221228-01	21.2	~~10~~ 4.2	2/15/23	10:32 AM	27	148	2/15/23	10:35 AM	10	148	LG	x	x	x
2) 57	↓		13958	1.4	221228-01	21.2	~~10~~ 5.2	2/15/23	12:20 ~~AM~~	27	149	2/15/23	12:30 PM	10	149	LG	x	x	x
3)																			
4)																			

20.8°C, 310, no ice, no seal

RELINQUISHED: Ryan Seymour 2/15/23 11:26 AM	RECEIVED: Fedex E DATE / TIME	QC Data Package: Level I ☐ Level II ☐ Level III ☐ Level IV ☐
RELINQUISHED: Fedex E DATE / TIME	RECEIVED: CSB 2/17/23 0935 DATE / TIME	
RELINQUISHED: DATE / TIME	RECEIVED: DATE / TIME	

LAB USE ONLY

SCS Field Services 23B1140
Bristol
Recd: 02/17/2023 Due: 02/24/2023

v130325002

063-23A-0005-Bristol CO in air 1-9-23

ENTHALPY ANALYTICAL

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Sample Conditions Checklist

Samples Received at:	**20.80°C**
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

Work Order Comments