

# Monthly Compliance Report

Solid Waste Permit #498  
Bristol Integrated Solid Waste Management Facility  
2655 Valley Drive  
Bristol, VA 24201  
(276) 645-7233

**SCS ENGINEERS**

02218208.05 | November 10, 2022

15521 Midlothian Turnpike Suite 305  
Midlothian, VA 23113  
804-378-7440

## Table of Contents

Section	Page
Executive Summary.....	1
1.0 Leachate Pump Station .....	1
1.1 Floating Material.....	1
1.2 Pump Replacement.....	3
1.3 Alarm/Notification System.....	3
2.0 Cover Integrity and Exposed Wastes.....	3
2.1 Intermediate Cover.....	3
2.2 Surface Emissions Monitoring.....	3
3.0 Gas Collection.....	4
4.0 Grading, Geometric Configuration and Gas Expansion.....	5
5.0 Leachate Seep and Ponding .....	5
6.0 Storm Water Drainage and Management.....	5
7.0 Self-Inspection and Recordkeeping.....	5

## Figures

Figure 1.	Photo of 498 Leachate Pump Station Tank Taken on October 20, 2022 .....	2
Figure 2.	Photo of Troubleshooting Activities on SWP 498 GCCS .....	4

## Tables

Table 1.	Summary of October Surface Emissions Monitoring.....	3
----------	--	---

## Appendices

Appendix A	498 Leachate Pump Station Monitoring Summary
Appendix B	Third Quarter Surface Emissions Monitoring Event

## EXECUTIVE SUMMARY

On behalf of the City of Bristol, Virginia (City), SCS Engineers has prepared this report to the Virginia Department of Environmental Quality (VDEQ) outlining steps taken towards the action items outlined in the Plan of Action submitted to VDEQ on July 6, 2022. This report covers the Solid Waste Permit #498 landfill during the month of October.

### 1.0 LEACHATE PUMP STATION

The City has begun the process of repairing the pumps and addressing other concerns related to the leachate pump station. The steps taken by the City are outlined in the following sections.

#### 1.1 FLOATING MATERIAL

On July 6, 2022 SCS received the results of samples taken from the Solid Waste Permit 498 Wet Well on May 25, 2022. Based on SCS' review of the data, the data indicates the liquid is non-hazardous. A letter submitted to the City on July 7, 2022 with SCS' review of the data and the underlying lab analysis is included in Appendix A.

The material substance that was previously identified in the tank is no longer present in the tank. SCS and the City understand that as liquids were pumped out of the tank, the material dissipated and was discharged after being diluted and mixed with other landfill liquids. Figure 1 shows a photo taken of liquids in the pump station tank on October 20, 2022. As can be seen in the photo, no floating material is present.

Figure 1. Photo of 498 Leachate Pump Station Tank Taken on October 20, 2022



## 1.2 PUMP REPLACEMENT

After receiving and reviewing the results of the samples, the City contracted with Buchanan Pump Service to complete the repairs to the pumps and infrastructure at the 498 wet well. Buchanan has ordered the necessary materials to complete the repair and will commence work when the materials arrive.

## 1.3 ALARM/NOTIFICATION SYSTEM

The City's Information technology department has begun the process of reviewing the alarm system. They have identified the materials necessary to repair the system and restore functionality.

## 2.0 COVER INTEGRITY AND EXPOSED WASTES

Outlined in the sections below are the steps taken by the City to address cover integrity and exposed wastes.

### 2.1 INTERMEDIATE COVER

The City has been hauling soil to the landfill to install a 12-inch thick intermediate cover across the entire landfill. The cover is being placed in accordance with 9VAC20-81-140(B)(1)(d). These activities are anticipated to continue throughout the month of November with coverage complete by the end of the month.

### 2.2 SURFACE EMISSIONS MONITORING

On October 12, 2022, SCS performed surface emissions monitoring 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.

VDEQ was copied on a letter outlining the results on October 28, 2022. A copy of that submittal is included in Appendix B. Table 1 summarizes the results of the monitoring event.

Table 1. Summary of October Surface Emissions Monitoring

Description	October 12, 2022
Number of Points Sampled	69
Number of Points in Serpentine Route	66
Number of Points at Surface Cover Penetrations	3

Description	October 12, 2022
Number of Exceedances	0
Number of Serpentine Exceedances	0
Number of Pipe Penetration Exceedances	0

### 3.0 GAS COLLECTION

At this time, the existing gas collection wells are not under vacuum due to damage to the landfill gas collection and control system (GCCS) infrastructure. SCS began the process of repairing the GCCS during the month of October. SCS replaced a butterfly valve and began to excavate the 6 in landfill gas header in order to determine the extents of damage to the GCCS. Investigation and repairs to the system are ongoing. No monitoring of the GCCS could be conducted this month because the system was not in operation. Figure 2 shows excavation activities conducted during the month of October in an attempt to identify damage to the landfill GCCS.

Figure 2. Photo of Troubleshooting Activities on SWP 498 GCCS



## **4.0 GRADING, GEOMETRIC CONFIGURATION AND GAS EXPASION**

The City through SCS contracted with NV5 (formerly Quantum Spatial) to collect topographic data of the entire landfill property using aerial Light Detection and Ranging (Lidar). On October 7, 2022 the flight was completed and the topographic data collected. This data will be compared to the proposed final grading in the Solid Waste Permit drawings. SCS is in the process of reviewing this data and permit documents in order to prepare a design approach for the City to review.

## **5.0 LEACHATE SEEP AND PONDING**

The City initiated a process of tracking precipitation events that exceed 0.25 inches using the on-site weather station. After each such event, City personnel will inspect the landfill for ponding and leachate seeps. Locations of ponding and seeps will be marked in the field. There have been no events exceeding 0.25 inches of precipitation since the City began keeping track of such event.

## **6.0 STORM WATER DRAINAGE AND MANAGEMENT**

As discussed in Section 4, topographic data was collected of the landfill surface. This data will be used to estimate stormwater flow rates and determine methods for managing stormwater.

## **7.0 SELF-INSPECTION AND RECORDKEEPING**

SCS has begun the process of preparing self-inspection log templates for the City to use during inspections. SCS is also preparing materials to conduct training of City staff who will be performing inspections. SCS intends to provide the forms and training to landfill staff during the month of November.

## Appendix A

### 498 Leachate Pump Station Monitoring Summary



July 7, 2022  
File No. 02218208.05, Task 6

via Email

Mr. Michael L. Martin  
Solid Waste Administrator  
City of Bristol Virginia  
2103 Shakesville Road  
Bristol, Virginia 24201

Subject: Bristol Integrated Solid Waste Management Facility  
City of Bristol Closed Sanitary Landfill, Solid Waste Permit #498  
498 Leachate Pump Station

Dear Mr. Martin:

SCS Engineers (SCS) is providing the following documentation regarding the collection and laboratory analysis of liquid samples from the 498 Leachate Pump Station. In response to the City's and the Virginia Department of Environmental Quality's concerns of the chemical make-up of the liquids within the 498 Leachate Pump Station, SCS collected samples of the liquid and free product layer on May 25, 2022 for analysis to assess if the samples are exhibiting hazardous waste characteristics.

The samples were collected by lowering a clean bucket into the Pump Station. A hole was made within the bottom portion of the bucket to sample the liquid layer (see **Exhibit 1**). The free product layer was sampled once the liquid layer was removed from the bucket

The samples were collected in laboratory-provided sampling containers and were stored in a clean, iced cooler for delivery to the laboratory. A chain-of-custody (COC) form was maintained and submitted with the samples to the laboratory to document sample custody. Upon receipt at the laboratory, the sample containers were inspected for integrity and consistency with the information entered on the chain-of-custody form.

The samples were delivered to Enthalpy Analytical in Richmond, Virginia for analysis to assess if the samples are exhibiting hazardous waste characteristics. The complete certificates of analysis (COAs), including chain-of-custody documentation, sample preservation logs, sample conditions checklists, and the laboratories' Virginia Environmental Laboratory Accreditation Program certifications, are attached. The liquid layer results are reported on COA 22E1462 and the product layer results are reported on COA 22E1464.

Exhibit 1. Sample Collection Method



According to Code of Federal Regulations (CFR), Title 40, Chapter I, Subchapter I, Part 261, Subpart C, §261.20 (a), "A solid waste, as defined in" 40 CFR 261.2, "which is not excluded from regulation as a hazardous waste under" 40 CFR 261.4 (b), "is a hazardous waste if it exhibits any of the characteristics identified" below:

- **Corrosivity** (40 CFR 261.22 (a) (1)) – It is aqueous and has a pH less than or equal to 2 s.u. or greater than or equal to 12.5 s.u., as determined by a pH meter using Method 9040C in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846.
- **Ignitability** (40 CFR 261.21 (a) (2)) - It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.
- **Reactivity** (40 CFR 261.23 (a) (5)) – It is a cyanide or sulfide bearing waste, which, when exposed to pH conditions between 2 s.u. and 12.5 s.u., can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
- **Toxicity** (40 CFR 261.24 (a)) – It contains a toxicity characteristic parameter concentration greater than the corresponding Regulatory Level listed on Table 1 of 40 CFR 261.24.

The May 2022 lab results for the 498 Pump Station samples were evaluated in accordance with the above criteria to assess the hazardous waste characteristic potential of the liquid and free product. Based on the below evaluation results, the samples did not exhibit hazardous waste characteristics.

- **Corrosivity**– Each sample was determined to be not corrosive.
- **Reactivity** – No cyanide or sulfide were detected in the samples. Therefore, the reactivity assessment does not apply.
- **Ignitability** – Each sample was a liquid; thus, the ignitability assessment does not apply.
- **Toxicity** – Each constituent listed on Table 1 of 40 CFR 261.24 were either not detected or detected at a concentration below the corresponding Regulatory Level listed on Table 1 of 40 CFR 261.24.

Mr. Michael Martin  
July 7, 2022  
Page 3

Please notify the undersigned if you have questions or comments regarding the information contained herein or require additional information.

Sincerely,



Logan A. Howard  
Project Professional  
**SCS ENGINEERS**  
Phone: 571-353-2040  
Email: lhoward@scsengineers.com



Jennifer S. Robb  
Vice President/Project Director  
**SCS ENGINEERS**  
Phone: 540-931-5549  
Email: jrobb@scsengineers.com

lah/jsr

cc File

Attachment



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

## Certificate of Analysis

*Final Report*

Laboratory Order ID 22E1462

Client Name: SCS Engineers-Winchester  
296 Victory Road  
Winchester, VA 22602

Date Received: May 27, 2022 16:30  
Date Issued: July 6, 2022 6:58  
Project Number: 02218208.05 T6  
Purchase Order:

Submitted To: Jennifer Robb

Client Site I.D.: City of Bristol

Enclosed are the results of analyses for samples received by the laboratory on 05/27/2022 16:30. 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.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Enthalpy Analytical.

**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Laboratory Sample ID: **22E1462-01**                      Client Sample ID: **Leachate**

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
TCLP 2-Butanone (MEK)	01	SW8260D	0.27		0.20	0.20	1	mg/L
TCLP Extraction Fluid, ZHE	01	SW1311	1		0	0	1	#
Corrosivity	01	SW7.2	NonCorrosive		0.00	0.00	1	--

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".

---

---

**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Leachate	22E1462-01	Waste Water	05/25/2022 19:10	05/27/2022 16:30

Analysis for Reactivity was subcontracted to Analytics. The subcontracted results are attached at the end of this Certificate of Analysis.

Final COA re-issued on 7/6/22 to attach Reactivity results to final COA.

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Client Sample ID: Leachate

Laboratory Sample ID: 22E1462-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Metals by 6000/7000 Series Methods</b>												
TCLP Silver	01	7440-22-4	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		0.100	0.100	1	mg/L	MAK
TCLP Arsenic	01	7440-38-2	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		0.100	0.100	1	mg/L	MAK
TCLP Barium	01	7440-39-3	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		1.00	5.00	1	mg/L	MAK
TCLP Cadmium	01	7440-43-9	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		0.0200	0.0400	1	mg/L	MAK
TCLP Chromium	01	7440-47-3	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		0.100	0.100	1	mg/L	MAK
TCLP Mercury	01	7439-97-6	SW7470A	06/02/2022 07:28	06/02/2022 11:27	BLOD		0.008	0.008	1	mg/L	MWL
TCLP Lead	01	7439-92-1	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		0.100	0.100	1	mg/L	MAK
TCLP Selenium	01	7782-49-2	SW6010D	06/01/2022 09:30	06/06/2022 15:40	BLOD		0.250	0.250	1	mg/L	MAK
<b>TCLP Volatile Organic Compounds by GCMS</b>												
<b>TCLP Extraction Fluid, ZHE</b>	01	NA	SW1311	05/31/2022 15:00	05/31/2022 16:09	1		0	0	1	#	RJB
TCLP 1,1-Dichloroethylene	01	75-35-4	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
TCLP 1,2-Dichloroethane	01	107-06-2	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
TCLP 1,4-Dichlorobenzene	01	106-46-7	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
<b>TCLP 2-Butanone (MEK)</b>	01	78-93-3	SW8260D	06/01/2022 00:00	06/01/2022 12:39	0.27		0.20	0.20	1	mg/L	RJB
TCLP Benzene	01	71-43-2	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.05	0.05	1	mg/L	RJB
TCLP Carbon tetrachloride	01	56-23-5	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Chlorobenzene	01	108-90-7	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Chloroform	01	67-66-3	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Tetrachloroethylene (PCE)	01	127-18-4	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.05	0.05	1	mg/L	RJB
TCLP Trichloroethylene	01	79-01-6	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Vinyl chloride	01	75-01-4	SW8260D	06/01/2022 00:00	06/01/2022 12:39	BLOD		0.02	0.02	1	mg/L	RJB
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>01</i>	<i>107 %</i>	<i>70-120</i>	<i>06/01/2022 00:00</i>	<i>06/01/2022 12:39</i>							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>01</i>	<i>90.8 %</i>	<i>75-120</i>	<i>06/01/2022 00:00</i>	<i>06/01/2022 12:39</i>							
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>01</i>	<i>97.9 %</i>	<i>80-119</i>	<i>06/01/2022 00:00</i>	<i>06/01/2022 12:39</i>							

---



---

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Client Sample ID: Leachate

Laboratory Sample ID: 22E1462-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Volatile Organic Compounds by GCMS</b>												
<i>Surr: Toluene-d8 (Surr)</i>	01	99.4 %	85-120	06/01/2022 00:00	06/01/2022 12:39							



## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Client Sample ID: Leachate

Laboratory Sample ID: 22E1462-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Semivolatile Organic Compounds by GCMS</b>												
TCLP 2,4,5-Trichlorophenol	01	95-95-4	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.001	0.02	1	mg/L	MGG
TCLP 2,4,6-Trichlorophenol	01	88-06-2	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.008	0.02	1	mg/L	MGG
TCLP 2,4-Dinitrotoluene	01	121-14-2	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.006	0.02	1	mg/L	MGG
TCLP Hexachlorobenzene	01	118-74-1	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.001	0.02	1	mg/L	MGG
TCLP Hexachlorobutadiene	01	87-68-3	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.004	0.02	1	mg/L	MGG
TCLP Hexachloroethane	01	67-72-1	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.004	0.02	1	mg/L	MGG
TCLP m+p-Cresols	01	1319-77-3	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.001	0.02	1	mg/L	MGG
TCLP Nitrobenzene	01	98-95-3	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.003	0.02	1	mg/L	MGG
TCLP o+m+p-Cresols	01	1319-77-3	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.003	0.02	1	mg/L	MGG
TCLP o-Cresol	01	95-48-7	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.008	0.02	1	mg/L	MGG
TCLP Pentachlorophenol	01	87-86-5	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.006	0.02	1	mg/L	MGG
TCLP Pyridine	01	110-86-1	SW8270E	06/07/2022 10:15	06/09/2022 18:30	BLOD		0.002	0.02	1	mg/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	01	85.8 %	7-150	06/07/2022 10:15	06/09/2022 18:30							
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	01	101 %	5-125	06/07/2022 10:15	06/09/2022 18:30							
<i>Surr: 2-Fluorophenol (Surr)</i>	01	67.1 %	5-80	06/07/2022 10:15	06/09/2022 18:30							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	01	110 %	5-117	06/07/2022 10:15	06/09/2022 18:30							
<i>Surr: Phenol-d5 (Surr)</i>	01	39.7 %	5-60	06/07/2022 10:15	06/09/2022 18:30							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	01	99.3 %	19.3-150	06/07/2022 10:15	06/09/2022 18:30							

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Client Sample ID: Leachate

Laboratory Sample ID: 22E1462-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Organochlorine Herbicides by GC/ECD</b>												
TCLP 2,4,5-TP (Silvex)	01	93-72-1	SW8151A	06/08/2022 15:17	06/09/2022 21:48	BLOD		0.0001	0.0005	1	mg/L	LBH2
TCLP 2,4-D	01	94-75-7	SW8151A	06/08/2022 15:17	06/09/2022 21:48	BLOD		0.0002	0.001	1	mg/L	LBH2
Surr: DCAA (Surr)	01	95.2 %	48.5-134	06/08/2022 15:17	06/09/2022 21:48							

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Client Sample ID: Leachate

Laboratory Sample ID: 22E1462-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Organochlorine Pesticides and PCBs by GC/ECD</b>												
TCLP Chlordane	01	57-74-9	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.008	0.120	4	mg/L	LBH2
TCLP Endrin	01	72-20-8	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.0002	0.020	4	mg/L	LBH2
TCLP gamma-BHC (Lindane)	01	58-89-9	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.0002	0.020	4	mg/L	LBH2
TCLP Heptachlor	01	76-44-8	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.0002	0.020	4	mg/L	LBH2
TCLP Heptachlor Epoxide	01	1024-57-3	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.0002	0.020	4	mg/L	LBH2
TCLP Methoxychlor	01	72-43-5	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.0002	0.020	4	mg/L	LBH2
TCLP Toxaphene	01	8001-35-2	SW8081B	06/10/2022 09:15	06/13/2022 12:32	BLOD		0.008	2.00	4	mg/L	LBH2
Surr: TCMX	01	63.8 %	18-112	06/10/2022 09:15	06/13/2022 12:32							
Surr: DCB	01	57.4 %	27-131	06/10/2022 09:15	06/13/2022 12:32							

---



---

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Client Sample ID: Leachate

Laboratory Sample ID: 22E1462-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Corrosivity	01	NA	SW7.2	06/07/2022 09:59	06/07/2022 09:59	NonCorrosive		0.00	0.00	1	--	WJL

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0011 - SW3010A

**Blank (BFF0011-BLK1)**

Prepared: 06/01/2022 Analyzed: 06/06/2022

Arsenic	ND	0.100	mg/L							
Barium	ND	5.00	mg/L							
Cadmium	ND	0.0400	mg/L							
Chromium	ND	0.100	mg/L							
Lead	ND	0.100	mg/L							
Selenium	ND	0.250	mg/L							
Silver	ND	0.100	mg/L							

**LCS (BFF0011-BS1)**

Prepared: 06/01/2022 Analyzed: 06/06/2022

Arsenic	2.39	0.100	mg/L	2.50		95.8	80-120			
Barium	2.48	5.00	mg/L	2.50		99.4	80-120			
Cadmium	2.48	0.0400	mg/L	2.50		99.4	80-120			
Chromium	2.40	0.100	mg/L	2.50		96.1	80-120			
Lead	2.55	0.100	mg/L	2.50		102	80-120			
Selenium	2.33	0.250	mg/L	2.50		93.1	80-120			
Silver	0.527	0.100	mg/L	0.500		105	80-120			

**Matrix Spike (BFF0011-MS1)**

Source: 22E1440-01

Prepared: 06/01/2022 Analyzed: 06/06/2022

Arsenic	2.64	0.100	mg/L	2.50	BLOD	106	75-125			
Barium	2.82	5.00	mg/L	2.50	BLOD	113	75-125			
Cadmium	2.57	0.0400	mg/L	2.50	0.0268	102	75-125			
Chromium	4.10	0.100	mg/L	2.50	1.79	92.7	75-125			
Lead	2.60	0.100	mg/L	2.50	0.156	97.9	75-125			
Selenium	2.80	0.250	mg/L	2.50	BLOD	112	75-125			
Silver	0.437	0.100	mg/L	0.500	BLOD	87.4	75-125			

**Matrix Spike Dup (BFF0011-MSD1)**

Source: 22E1440-01

Prepared: 06/01/2022 Analyzed: 06/06/2022

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

#### Batch BFF0011 - SW3010A

Matrix Spike Dup (BFF0011-MSD1)		Source: 22E1440-01		Prepared: 06/01/2022 Analyzed: 06/06/2022					
Arsenic	2.69	0.100	mg/L	2.50	BLOD	108	75-125	1.95	20
Barium	2.85	5.00	mg/L	2.50	BLOD	114	75-125	1.13	20
Cadmium	2.59	0.0400	mg/L	2.50	0.0268	103	75-125	0.836	20
Chromium	4.19	0.100	mg/L	2.50	1.79	96.4	75-125	2.19	20
Lead	2.58	0.100	mg/L	2.50	0.156	96.9	75-125	0.904	20
Selenium	2.83	0.250	mg/L	2.50	BLOD	113	75-125	1.09	20
Silver	0.431	0.100	mg/L	0.500	BLOD	86.3	75-125	1.24	20

#### Batch BFF0077 - SW7470A

Blank (BFF0077-BLK1)				Prepared & Analyzed: 06/02/2022					
Mercury	ND	0.008	mg/L						
LCS (BFF0077-BS1)				Prepared & Analyzed: 06/02/2022					
Mercury	0.052	0.008	mg/L	0.0500	103	80-120			
Matrix Spike (BFF0077-MS1)		Source: 22E1440-01		Prepared & Analyzed: 06/02/2022					
Mercury	0.055	0.008	mg/L	0.0500	BLOD	109	80-120		
Matrix Spike Dup (BFF0077-MSD1)		Source: 22E1440-01		Prepared & Analyzed: 06/02/2022					
Mercury	0.054	0.008	mg/L	0.0500	BLOD	109	80-120	0.401	20

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFE1191 - SW1311 ZHE

**Blank (BFE1191-BLK1)**

Prepared &amp; Analyzed: 05/31/2022

Extraction Fluid, ZHE	1	0	#
-----------------------	---	---	---

### Batch BFF0036 - SW5030B-MS

**Blank (BFF0036-BLK2)**

Prepared &amp; Analyzed: 06/01/2022

1,1-Dichloroethylene	ND	0.02	mg/L
1,2-Dichloroethane	ND	0.02	mg/L
1,4-Dichlorobenzene	ND	0.02	mg/L
2-Butanone (MEK)	ND	0.20	mg/L
Benzene	ND	0.05	mg/L
Carbon tetrachloride	ND	0.02	mg/L
Chlorobenzene	ND	0.02	mg/L
Chloroform	ND	0.02	mg/L
Tetrachloroethylene (PCE)	ND	0.05	mg/L
Trichloroethylene	ND	0.02	mg/L
Vinyl chloride	ND	0.02	mg/L

<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	51.1		mg/L	50.0	102	70-120
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	47.3		mg/L	50.0	94.7	75-120
<i>Surr: Dibromofluoromethane (Surr)</i>	48.5		mg/L	50.0	97.0	80-119
<i>Surr: Toluene-d8 (Surr)</i>	50.2		mg/L	50.0	100	85-120

**LCS (BFF0036-BS2)**

Prepared &amp; Analyzed: 06/01/2022

1,1-Dichloroethylene	44.1	20	mg/L	50.0	88.3	70-130
1,2-Dichloroethane	48.8	20	mg/L	50.0	97.6	70-130
1,4-Dichlorobenzene	49.2	20	mg/L	50.0	98.3	75-125
2-Butanone (MEK)	37.4	200	mg/L	50.0	74.9	30-150

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0036 - SW5030B-MS

**LCS (BFF0036-BS2)**

Prepared &amp; Analyzed: 06/01/2022

Benzene	51.3	50	mg/L	50.0		103	80-120			
Carbon tetrachloride	49.0	20	mg/L	50.0		98.1	65-140			
Chlorobenzene	50.4	20	mg/L	50.0		101	80-120			
Chloroform	48.4	20	mg/L	50.0		96.8	65-135			
Tetrachloroethylene (PCE)	80.2	50	mg/L	50.0		160	45-150			L
Trichloroethylene	49.7	20	mg/L	50.0		99.3	70-125			
Vinyl chloride	56.3	20	mg/L	50.0		113	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>51.2</i>		mg/L	<i>50.0</i>		<i>102</i>	<i>70-120</i>			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	<i>48.8</i>		mg/L	<i>50.0</i>		<i>97.5</i>	<i>75-120</i>			
<i>Surr: Dibromofluoromethane (Surr)</i>	<i>50.2</i>		mg/L	<i>50.0</i>		<i>100</i>	<i>80-119</i>			
<i>Surr: Toluene-d8 (Surr)</i>	<i>50.1</i>		mg/L	<i>50.0</i>		<i>100</i>	<i>85-120</i>			

**Matrix Spike (BFF0036-MS1)**

Source: 22E1435-01

Prepared &amp; Analyzed: 06/01/2022

1,1-Dichloroethylene	42.8	20	mg/L	50.0	BLOD	85.6	70-130			
1,2-Dichloroethane	48.5	20	mg/L	50.0	BLOD	96.9	70-130			
1,4-Dichlorobenzene	50.4	20	mg/L	50.0	BLOD	101	75-125			
2-Butanone (MEK)	39.4	200	mg/L	50.0	31.6	15.6	30-150			M
Benzene	52.1	50	mg/L	50.0	BLOD	104	80-120			
Carbon tetrachloride	50.0	20	mg/L	50.0	BLOD	99.9	65-140			
Chlorobenzene	50.3	20	mg/L	50.0	BLOD	101	80-120			
Chloroform	47.5	20	mg/L	50.0	BLOD	95.0	65-135			
Tetrachloroethylene (PCE)	81.7	50	mg/L	50.0	BLOD	163	45-150			M
Trichloroethylene	50.2	20	mg/L	50.0	BLOD	100	70-125			
Vinyl chloride	53.2	20	mg/L	50.0	BLOD	106	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	<i>48.8</i>		mg/L	<i>50.0</i>		<i>97.5</i>	<i>70-120</i>			



## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0036 - SW5030B-MS</b>										
<b>Matrix Spike (BFF0036-MS1)</b>		<b>Source: 22E1435-01</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	48.5		mg/L	50.0		97.0	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	49.5		mg/L	50.0		99.0	80-119			
<i>Surr: Toluene-d8 (Surr)</i>	50.2		mg/L	50.0		100	85-120			
<b>Matrix Spike Dup (BFF0036-MSD1)</b>		<b>Source: 22E1435-01</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
1,1-Dichloroethylene	41.6	20	mg/L	50.0	BLOD	83.3	70-130	2.68	30	
1,2-Dichloroethane	47.0	20	mg/L	50.0	BLOD	93.9	70-130	3.17	30	
1,4-Dichlorobenzene	49.4	20	mg/L	50.0	BLOD	98.7	75-125	2.18	30	
2-Butanone (MEK)	37.2	200	mg/L	50.0	31.6	11.2	30-150	5.72	30	M
Benzene	50.7	50	mg/L	50.0	BLOD	101	80-120	2.67	30	
Carbon tetrachloride	49.2	20	mg/L	50.0	BLOD	98.4	65-140	1.53	30	
Chlorobenzene	50.2	20	mg/L	50.0	BLOD	100	80-120	0.179	30	
Chloroform	46.4	20	mg/L	50.0	BLOD	92.7	65-135	2.45	30	
Tetrachloroethylene (PCE)	80.3	50	mg/L	50.0	BLOD	161	45-150	1.78	30	M
Trichloroethylene	49.6	20	mg/L	50.0	BLOD	99.3	70-125	1.10	30	
Vinyl chloride	49.9	20	mg/L	50.0	BLOD	99.8	50-145	6.35	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	47.8		mg/L	50.0		95.7	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	49.2		mg/L	50.0		98.4	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	48.8		mg/L	50.0		97.7	80-119			
<i>Surr: Toluene-d8 (Surr)</i>	50.3		mg/L	50.0		101	85-120			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

**Blank (BFF0403-BLK1)**

Prepared &amp; Analyzed: 06/09/2022

2,4,5-Trichlorophenol	ND	0.02	mg/L							
2,4,6-Trichlorophenol	ND	0.02	mg/L							
2,4-Dinitrotoluene	ND	0.02	mg/L							
Hexachlorobenzene	ND	0.02	mg/L							
Hexachlorobutadiene	ND	0.02	mg/L							
Hexachloroethane	ND	0.02	mg/L							
m+p-Cresols	ND	0.02	mg/L							
Nitrobenzene	ND	0.02	mg/L							
o+m+p-Cresols	ND	0.02	mg/L							
o-Cresol	ND	0.02	mg/L							
Pentachlorophenol	ND	0.02	mg/L							
Pyridine	ND	0.02	mg/L							

<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>0.0606</i>		mg/L	<i>0.100</i>		<i>60.6</i>	<i>7-150</i>			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>0.0417</i>		mg/L	<i>0.0500</i>		<i>83.4</i>	<i>5-125</i>			
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>0.0597</i>		mg/L	<i>0.100</i>		<i>59.7</i>	<i>5-80</i>			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>0.0484</i>		mg/L	<i>0.0500</i>		<i>96.8</i>	<i>5-117</i>			
<i>Surr: Phenol-d5 (Surr)</i>	<i>0.0317</i>		mg/L	<i>0.100</i>		<i>31.7</i>	<i>5-60</i>			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>0.0373</i>		mg/L	<i>0.0500</i>		<i>74.6</i>	<i>19.3-150</i>			

**LCS (BFF0403-BS1)**

Prepared &amp; Analyzed: 06/09/2022

1,2,4-Trichlorobenzene	0.02	0.01	mg/L	0.0500		48.8	8-120			
1,2-Dichlorobenzene	0.02	0.01	mg/L	0.0500		32.3	3-97			
1,3-Dichlorobenzene	0.02	0.01	mg/L	0.0500		31.8	3-112			
1,4-Dichlorobenzene	0.01	0.01	mg/L	0.0500		29.9	3-112			
2,4,6-Trichlorophenol	0.02	0.02	mg/L	0.0500		48.6	11-145			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

**LCS (BFF0403-BS1)**

Prepared &amp; Analyzed: 06/09/2022

2,4-Dichlorophenol	0.03	0.01	mg/L	0.0500		62.6	11-75			
2,4-Dimethylphenol	0.03	0.0005	mg/L	0.0500		51.7	11-121			
2,4-Dinitrophenol	0.04	0.05	mg/L	0.0500		82.9	11-165			
2,4-Dinitrotoluene	0.003	0.02	mg/L	0.0500		6.40	17-155			L
2,6-Dinitrotoluene	0.03	0.01	mg/L	0.0500		52.3	15-125			
2-Chloronaphthalene	0.02	0.01	mg/L	0.0500		44.8	12-113			
2-Chlorophenol	0.02	0.01	mg/L	0.0500		44.2	15-110			
2-Nitrophenol	0.03	0.01	mg/L	0.0500		51.0	11-125			
4,6-Dinitro-2-methylphenol	0.04	0.05	mg/L	0.0500		79.6	25-153			
4-Bromophenyl phenyl ether	0.02	0.01	mg/L	0.0500		48.8	15-113			
4-Chlorophenyl phenyl ether	0.02	0.01	mg/L	0.0500		50.0	15-110			
4-Nitrophenol	0.01	0.05	mg/L	0.0500		29.4	12-70			
Acenaphthene	0.02	0.01	mg/L	0.0500		46.2	18-119			
Acenaphthylene	0.02	0.01	mg/L	0.0500		44.7	20-117			
Anthracene	0.02	0.01	mg/L	0.0500		49.5	16-118			
Benzo (a) anthracene	0.04	0.001	mg/L	0.0500		83.6	28-129			
Benzo (a) pyrene	0.04	0.01	mg/L	0.0500		78.7	23-131			
Benzo (b) fluoranthene	0.04	0.01	mg/L	0.0500		85.6	20-141			
Benzo (g,h,i) perylene	0.04	0.01	mg/L	0.0500		79.6	9-138			
Benzo (k) fluoranthene	0.04	0.01	mg/L	0.0500		84.2	21-138			
bis (2-Chloroethoxy) methane	0.03	0.01	mg/L	0.0500		52.6	25-110			
bis (2-Chloroethyl) ether	0.02	0.01	mg/L	0.0500		47.0	8-107			
2,2'-Oxybis (1-chloropropane)	0.02	0.01	mg/L	0.0500		40.4	8-112			
bis (2-Ethylhexyl) phthalate	0.04	0.01	mg/L	0.0500		76.8	14-147			
Butyl benzyl phthalate	0.03	0.01	mg/L	0.0500		65.5	20-146			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

**LCS (BFF0403-BS1)**

Prepared &amp; Analyzed: 06/09/2022

Carbazole	0.03	0.002	mg/L	0.0500		59.5	0-200			
Chrysene	0.04	0.01	mg/L	0.0500		75.9	21-136			
Dibenz (a,h) anthracene	0.04	0.01	mg/L	0.0500		87.0	14-142			
Diethyl phthalate	0.03	0.01	mg/L	0.0500		54.2	11-121			
Dimethyl phthalate	0.02	0.01	mg/L	0.0500		48.9	3-125			
Di-n-butyl phthalate	0.03	0.01	mg/L	0.0500		63.1	35-115			
Di-n-octyl phthalate	0.03	0.01	mg/L	0.0500		69.7	25-175			
Fluoranthene	0.04	0.01	mg/L	0.0500		79.2	25-135			
Fluorene	0.02	0.01	mg/L	0.0500		46.5	15-122			
Hexachlorobenzene	0.03	0.02	mg/L	0.0500		58.8	25-125			
Hexachlorobutadiene	0.03	0.02	mg/L	0.0500		59.0	25-125			
Hexachlorocyclopentadiene	0.01	0.01	mg/L	0.0500		27.8	25-125			
Hexachloroethane	0.02	0.02	mg/L	0.0500		46.1	3-125			
Indeno (1,2,3-cd) pyrene	0.04	0.01	mg/L	0.0500		83.6	16-137			
Isophorone	0.02	0.01	mg/L	0.0500		37.2	6-110			
Naphthalene	0.02	0.01	mg/L	0.0500		42.9	12-105			
Nitrobenzene	0.03	0.02	mg/L	0.0500		62.7	9-119			
n-Nitrosodimethylamine	0.02	0.01	mg/L	0.0500		33.6	10-85			
n-Nitrosodi-n-propylamine	0.03	0.01	mg/L	0.0500		51.9	8-108			
n-Nitrosodiphenylamine	0.02	0.01	mg/L	0.0500		39.8	12-97			
p-Chloro-m-cresol	0.04	0.01	mg/L	0.0500		71.0	10-128			
Pentachlorophenol	0.02	0.02	mg/L	0.0500		41.0	11-117			
Phenanthrene	0.03	0.01	mg/L	0.0500		57.8	17-128			
Phenol	0.01	0.02	mg/L	0.0505		21.8	3-80			
Pyrene	0.03	0.01	mg/L	0.0500		59.3	15-141			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

**LCS (BFF0403-BS1)**

Prepared &amp; Analyzed: 06/09/2022

Pyridine	0.03	0.02	mg/L	0.0500		55.7	0-200			
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>0.0390</i>		mg/L	<i>0.100</i>		<i>39.0</i>	<i>7-150</i>			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>0.0238</i>		mg/L	<i>0.0500</i>		<i>47.6</i>	<i>5-125</i>			
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>0.0302</i>		mg/L	<i>0.100</i>		<i>30.2</i>	<i>5-80</i>			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>0.0282</i>		mg/L	<i>0.0500</i>		<i>56.4</i>	<i>5-117</i>			
<i>Surr: Phenol-d5 (Surr)</i>	<i>0.0191</i>		mg/L	<i>0.100</i>		<i>19.1</i>	<i>5-60</i>			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>0.0336</i>		mg/L	<i>0.0500</i>		<i>67.3</i>	<i>19.3-150</i>			

**Matrix Spike (BFF0403-MS1)**

Source: 22E1462-01

Prepared &amp; Analyzed: 06/09/2022

1,2,4-Trichlorobenzene	0.15	0.01	mg/L	0.500	BLOD	29.8	9-104			
1,2-Dichlorobenzene	0.12	0.01	mg/L	0.500	BLOD	25.0	3-105			
1,3-Dichlorobenzene	0.12	0.01	mg/L	0.500	BLOD	23.5	6-108			
1,4-Dichlorobenzene	0.10	0.01	mg/L	0.500	BLOD	20.7	3-90			
2,4,6-Trichlorophenol	0.19	0.02	mg/L	0.500	BLOD	38.4	17-123			
2,4-Dichlorophenol	0.18	0.01	mg/L	0.500	BLOD	36.9	35-128			
2,4-Dimethylphenol	0.16	0.005	mg/L	0.500	BLOD	32.0	30-114			
2,4-Dinitrophenol	0.42	0.05	mg/L	0.500	BLOD	83.0	15-190			
2,4-Dinitrotoluene	0.03	0.02	mg/L	0.500	BLOD	6.08	17-141			M
2,6-Dinitrotoluene	0.23	0.01	mg/L	0.500	BLOD	45.8	15-127			
2-Chloronaphthalene	0.15	0.01	mg/L	0.500	BLOD	30.3	27-121			
2-Chlorophenol	0.16	0.01	mg/L	0.500	BLOD	32.9	19-116			
2-Nitrophenol	0.18	0.01	mg/L	0.500	BLOD	36.0	10-133			
4,6-Dinitro-2-methylphenol	0.33	0.05	mg/L	0.500	BLOD	65.8	15-157			
4-Bromophenyl phenyl ether	0.24	0.01	mg/L	0.500	BLOD	47.1	15-123			
4-Chlorophenyl phenyl ether	0.20	0.01	mg/L	0.500	BLOD	40.9	15-114			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

Matrix Spike (BFF0403-MS1)	Source: 22E1462-01			Prepared & Analyzed: 06/09/2022						
4-Nitrophenol	0.16	0.05	mg/L	0.500	BLOD	31.8	12-70			
Acenaphthene	0.17	0.01	mg/L	0.500	BLOD	33.2	24-128			
Acenaphthylene	0.16	0.01	mg/L	0.500	BLOD	32.6	16-121			
Anthracene	0.23	0.01	mg/L	0.500	BLOD	46.7	11-128			
Benzo (a) anthracene	0.31	0.01	mg/L	0.500	BLOD	62.0	18-139			
Benzo (a) pyrene	0.26	0.01	mg/L	0.500	BLOD	52.8	15-175			
Benzo (b) fluoranthene	0.27	0.01	mg/L	0.500	BLOD	54.5	1-167			
Benzo (g,h,i) perylene	0.27	0.01	mg/L	0.500	BLOD	54.8	40-142			
Benzo (k) fluoranthene	0.30	0.01	mg/L	0.500	BLOD	59.5	45-209			
bis (2-Chloroethoxy) methane	0.16	0.01	mg/L	0.500	BLOD	32.9	11-115			
bis (2-Chloroethyl) ether	0.17	0.01	mg/L	0.500	BLOD	33.4	6-117			
2,2'-Oxybis (1-chloropropane)	0.15	0.01	mg/L	0.500	BLOD	30.2	8-119			
bis (2-Ethylhexyl) phthalate	0.28	0.01	mg/L	0.500	BLOD	56.0	4-156			
Butyl benzyl phthalate	0.26	0.01	mg/L	0.500	BLOD	52.9	15-151			
Carbazole	0.27	0.002	mg/L	0.500	BLOD	54.8	0-200			
Chrysene	0.28	0.01	mg/L	0.500	BLOD	55.9	11-146			
Dibenz (a,h) anthracene	0.29	0.01	mg/L	0.500	BLOD	58.1	10-149			
Diethyl phthalate	0.21	0.01	mg/L	0.500	BLOD	42.3	9-128			
Dimethyl phthalate	0.21	0.01	mg/L	0.500	BLOD	41.3	3-125			
Di-n-butyl phthalate	0.25	0.01	mg/L	0.500	BLOD	49.3	6-152			
Di-n-octyl phthalate	0.26	0.01	mg/L	0.500	BLOD	52.3	9-214			
Fluoranthene	0.32	0.01	mg/L	0.500	BLOD	64.7	3-154			
Fluorene	0.19	0.01	mg/L	0.500	BLOD	37.3	10-132			
Hexachlorobenzene	0.25	0.02	mg/L	0.500	BLOD	50.3	10-125			
Hexachlorobutadiene	0.17	0.02	mg/L	0.500	BLOD	33.4	7-125			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

Matrix Spike (BFF0403-MS1)	Source: 22E1462-01		Prepared & Analyzed: 06/09/2022							
Hexachlorocyclopentadiene	0.09	0.01	mg/L	0.500	BLOD	18.4	10-90			
Hexachloroethane	0.16	0.02	mg/L	0.500	BLOD	32.6	3-125			
Indeno (1,2,3-cd) pyrene	0.28	0.01	mg/L	0.500	BLOD	57.0	4-142			
Isophorone	0.11	0.01	mg/L	0.500	BLOD	22.1	6-110			
Naphthalene	0.13	0.01	mg/L	0.500	0.01	24.4	7-117			
Nitrobenzene	0.23	0.02	mg/L	0.500	BLOD	46.3	10-121			
n-Nitrosodimethylamine	0.10	0.01	mg/L	0.500	BLOD	20.5	10-90			
n-Nitrosodi-n-propylamine	0.17	0.01	mg/L	0.500	BLOD	34.9	7-116			
n-Nitrosodiphenylamine	0.17	0.01	mg/L	0.500	BLOD	34.0	7-102			
p-Chloro-m-cresol	0.23	0.01	mg/L	0.500	BLOD	46.9	10-135			
Pentachlorophenol	0.23	0.02	mg/L	0.500	BLOD	45.6	7-138			
Phenanthrene	0.25	0.01	mg/L	0.500	0.06	39.7	5-139			
Phenol	0.10	0.02	mg/L	0.505	BLOD	20.1	3-70			
Pyrene	0.25	0.01	mg/L	0.500	BLOD	50.8	8-152			
Pyridine	0.16	0.02	mg/L	0.500	BLOD	32.9	0-200			
<hr/>										
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>0.396</i>		mg/L	<i>1.00</i>		<i>39.6</i>	<i>7-150</i>			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>0.158</i>		mg/L	<i>0.500</i>		<i>31.5</i>	<i>5-125</i>			
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>0.223</i>		mg/L	<i>1.00</i>		<i>22.3</i>	<i>5-80</i>			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>0.197</i>		mg/L	<i>0.500</i>		<i>39.5</i>	<i>5-117</i>			
<i>Surr: Phenol-d5 (Surr)</i>	<i>0.157</i>		mg/L	<i>1.00</i>		<i>15.7</i>	<i>5-60</i>			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>0.242</i>		mg/L	<i>0.500</i>		<i>48.3</i>	<i>19.3-150</i>			

Matrix Spike Dup (BFF0403-MSD1)	Source: 22E1462-01		Prepared & Analyzed: 06/09/2022							
1,2,4-Trichlorobenzene	0.31	0.01	mg/L	0.500	BLOD	62.7	9-104	71.2	20	P
1,2-Dichlorobenzene	0.23	0.01	mg/L	0.500	BLOD	45.9	3-105	59.1	20	P

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

Matrix Spike Dup (BFF0403-MSD1)	Source: 22E1462-01		Prepared & Analyzed: 06/09/2022							
1,3-Dichlorobenzene	0.22	0.01	mg/L	0.500	BLOD	43.2	6-108	59.0	20	P
1,4-Dichlorobenzene	0.22	0.01	mg/L	0.500	BLOD	43.9	3-90	71.8	20	P
2,4,6-Trichlorophenol	0.36	0.02	mg/L	0.500	BLOD	71.9	17-123	60.7	20	P
2,4-Dichlorophenol	0.38	0.01	mg/L	0.500	BLOD	75.7	35-128	69.0	20	P
2,4-Dimethylphenol	0.32	0.005	mg/L	0.500	BLOD	63.2	30-114	65.6	20	P
2,4-Dinitrophenol	0.79	0.05	mg/L	0.500	BLOD	157	15-190	61.9	20	P
2,4-Dinitrotoluene	0.03	0.02	mg/L	0.500	BLOD	6.18	17-141	1.63	20	M
2,6-Dinitrotoluene	0.43	0.01	mg/L	0.500	BLOD	85.1	15-127	60.1	20	P
2-Chloronaphthalene	0.29	0.01	mg/L	0.500	BLOD	57.6	27-121	62.2	20	P
2-Chlorophenol	0.29	0.01	mg/L	0.500	BLOD	58.0	19-116	55.3	20	P
2-Nitrophenol	0.36	0.01	mg/L	0.500	BLOD	72.1	10-133	66.7	20	P
4,6-Dinitro-2-methylphenol	0.65	0.05	mg/L	0.500	BLOD	130	15-157	65.2	20	P
4-Bromophenyl phenyl ether	0.41	0.01	mg/L	0.500	BLOD	82.4	15-123	54.5	20	P
4-Chlorophenyl phenyl ether	0.39	0.01	mg/L	0.500	BLOD	77.7	15-114	62.0	20	P
4-Nitrophenol	0.29	0.05	mg/L	0.500	BLOD	58.9	12-70	59.6	20	P
Acenaphthene	0.33	0.01	mg/L	0.500	BLOD	65.8	24-128	65.7	20	P
Acenaphthylene	0.31	0.01	mg/L	0.500	BLOD	61.7	16-121	61.8	20	P
Anthracene	0.38	0.01	mg/L	0.500	BLOD	76.4	11-128	48.3	20	P
Benzo (a) anthracene	0.49	0.01	mg/L	0.500	BLOD	98.1	18-139	45.1	20	P
Benzo (a) pyrene	0.45	0.01	mg/L	0.500	BLOD	89.1	15-175	51.2	20	P
Benzo (b) fluoranthene	0.48	0.01	mg/L	0.500	BLOD	95.1	1-167	54.3	20	P
Benzo (g,h,i) perylene	0.44	0.01	mg/L	0.500	BLOD	88.8	40-142	47.4	20	P
Benzo (k) fluoranthene	0.48	0.01	mg/L	0.500	BLOD	95.8	45-209	46.8	20	P
bis (2-Chloroethoxy) methane	0.32	0.01	mg/L	0.500	BLOD	64.4	11-115	64.7	20	P
bis (2-Chloroethyl) ether	0.29	0.01	mg/L	0.500	BLOD	58.7	6-117	54.8	20	P



## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

Matrix Spike Dup (BFF0403-MSD1)

Source: 22E1462-01

Prepared &amp; Analyzed: 06/09/2022

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
2,2'-Oxybis (1-chloropropane)	0.29	0.01	mg/L	0.500	BLOD	58.1	8-119	63.2	20	P
bis (2-Ethylhexyl) phthalate	0.45	0.01	mg/L	0.500	BLOD	90.3	4-156	46.9	20	P
Butyl benzyl phthalate	0.36	0.01	mg/L	0.500	BLOD	72.7	15-151	31.6	20	P
Carbazole	0.43	0.002	mg/L	0.500	BLOD	86.0	0-200	44.4	20	P
Chrysene	0.43	0.01	mg/L	0.500	BLOD	86.6	11-146	43.1	20	P
Dibenz (a,h) anthracene	0.48	0.01	mg/L	0.500	BLOD	96.6	10-149	49.8	20	P
Diethyl phthalate	0.40	0.01	mg/L	0.500	BLOD	79.7	9-128	61.3	20	P
Dimethyl phthalate	0.39	0.01	mg/L	0.500	BLOD	77.8	3-125	61.3	20	P
Di-n-butyl phthalate	0.42	0.01	mg/L	0.500	BLOD	84.1	6-152	52.3	20	P
Di-n-octyl phthalate	0.40	0.01	mg/L	0.500	BLOD	79.6	9-214	41.3	20	P
Fluoranthene	0.53	0.01	mg/L	0.500	BLOD	107	3-154	49.0	20	P
Fluorene	0.36	0.01	mg/L	0.500	BLOD	72.0	10-132	63.6	20	P
Hexachlorobenzene	0.45	0.02	mg/L	0.500	BLOD	89.3	10-125	55.8	20	P
Hexachlorobutadiene	0.37	0.02	mg/L	0.500	BLOD	74.3	7-125	75.8	20	P
Hexachlorocyclopentadiene	0.19	0.01	mg/L	0.500	BLOD	37.8	10-90	69.0	20	P
Hexachloroethane	0.32	0.02	mg/L	0.500	BLOD	64.0	3-125	65.0	20	P
Indeno (1,2,3-cd) pyrene	0.47	0.01	mg/L	0.500	BLOD	93.6	4-142	48.6	20	P
Isophorone	0.24	0.01	mg/L	0.500	BLOD	47.4	6-110	72.8	20	P
Naphthalene	0.28	0.01	mg/L	0.500	0.01	54.1	7-117	71.5	20	P
Nitrobenzene	0.42	0.02	mg/L	0.500	BLOD	84.6	10-121	58.5	20	P
n-Nitrosodimethylamine	0.20	0.01	mg/L	0.500	BLOD	40.3	10-90	64.9	20	P
n-Nitrosodi-n-propylamine	0.31	0.01	mg/L	0.500	BLOD	61.8	7-116	55.6	20	P
n-Nitrosodiphenylamine	0.30	0.01	mg/L	0.500	BLOD	60.8	7-102	56.5	20	P
p-Chloro-m-cresol	0.46	0.01	mg/L	0.500	BLOD	91.2	10-135	64.1	20	P
Pentachlorophenol	0.44	0.02	mg/L	0.500	BLOD	88.7	7-138	64.2	20	P

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Semivolatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0403 - SW3580A-MS

Matrix Spike Dup (BFF0403-MSD1)	Source: 22E1462-01			Prepared & Analyzed: 06/09/2022						
Phenanthrene	0.45	0.01	mg/L	0.500	0.06	78.2	5-139	55.0	20	P
Phenol	0.18	0.02	mg/L	0.505	BLOD	35.0	3-70	54.0	20	P
Pyrene	0.39	0.01	mg/L	0.500	BLOD	77.1	8-152	41.1	20	P
Pyridine	0.34	0.02	mg/L	0.500	BLOD	68.3	0-200	70.0	20	P
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	<i>0.764</i>		mg/L	<i>1.00</i>		<i>76.4</i>	<i>7-150</i>			
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	<i>0.318</i>		mg/L	<i>0.500</i>		<i>63.5</i>	<i>5-125</i>			
<i>Surr: 2-Fluorophenol (Surr)</i>	<i>0.402</i>		mg/L	<i>1.00</i>		<i>40.2</i>	<i>5-80</i>			
<i>Surr: Nitrobenzene-d5 (Surr)</i>	<i>0.371</i>		mg/L	<i>0.500</i>		<i>74.1</i>	<i>5-117</i>			
<i>Surr: Phenol-d5 (Surr)</i>	<i>0.283</i>		mg/L	<i>1.00</i>		<i>28.3</i>	<i>5-60</i>			
<i>Surr: p-Terphenyl-d14 (Surr)</i>	<i>0.408</i>		mg/L	<i>0.500</i>		<i>81.6</i>	<i>19.3-150</i>			

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0462 - SW3510C/EPA600-ECD</b>										
<b>Blank (BFF0462-BLK1)</b>										
				Prepared: 06/10/2022 Analyzed: 06/13/2022						
Chlordane	ND	0.030	mg/L							
Endrin	ND	0.005	mg/L							
gamma-BHC (Lindane)	ND	0.005	mg/L							
Heptachlor	ND	0.005	mg/L							
Heptachlor Epoxide	ND	0.005	mg/L							
Methoxychlor	ND	0.005	mg/L							
Toxaphene	ND	0.500	mg/L							
<i>Surr: TCMX</i>	<i>0.000107</i>		mg/L	<i>0.000200</i>		<i>53.4</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.000129</i>		mg/L	<i>0.000200</i>		<i>64.6</i>	<i>27-131</i>			
<b>LCS (BFF0462-BS1)</b>										
				Prepared: 06/10/2022 Analyzed: 06/13/2022						
Endrin	0.0001	0.005	mg/L	0.000100		114	23-134			
Heptachlor	0.00008	0.005	mg/L	0.000100		80.9	23-134			
Heptachlor Epoxide	0.0001	0.005	mg/L	0.000100		104	23-134			
Methoxychlor	0.0001	0.005	mg/L	0.000100		114	23-134			
<i>Surr: TCMX</i>	<i>0.000101</i>		mg/L	<i>0.000200</i>		<i>50.6</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.0000808</i>		mg/L	<i>0.000200</i>		<i>40.4</i>	<i>27-131</i>			
<b>LCS (BFF0462-BS3)</b>										
				Prepared: 06/10/2022 Analyzed: 06/13/2022						
Toxaphene	0.001	0.500	mg/L	0.00250		59.3	23-134			
<i>Surr: TCMX</i>	<i>0.000110</i>		mg/L	<i>0.000200</i>		<i>55.0</i>	<i>18-112</i>			
<i>Surr: DCB</i>	<i>0.000130</i>		mg/L	<i>0.000200</i>		<i>64.8</i>	<i>27-131</i>			
<b>LCS (BFF0462-BS4)</b>										
				Prepared: 06/10/2022 Analyzed: 06/13/2022						
Chlordane	0.001	0.030	mg/L	0.00250		51.7	23-134			
<i>Surr: TCMX</i>	<i>0.0000916</i>		mg/L	<i>0.000200</i>		<i>45.8</i>	<i>18-112</i>			

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

TCLP Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

#### Batch BFF0462 - SW3510C/EPA600-ECD

**LCS (BFF0462-BS4)**

Prepared: 06/10/2022 Analyzed: 06/13/2022

<i>Surr: DCB</i>	0.000104		mg/L	0.000200		52.0	27-131			
<b>Matrix Spike (BFF0462-MS1)</b>	<b>Source: 22E1462-01</b>									
Prepared: 06/10/2022 Analyzed: 06/13/2022										
Endrin	0.0008	0.020	mg/L	0.00100	BLOD	75.2	23-134			
Heptachlor	0.0006	0.020	mg/L	0.00100	BLOD	60.1	23-134			
Heptachlor Epoxide	0.0007	0.020	mg/L	0.00100	BLOD	69.0	23-134			
Methoxychlor	0.0007	0.020	mg/L	0.00100	BLOD	71.6	23-134			
<i>Surr: TCMX</i>	0.000675		mg/L	0.00200		33.8	18-112			
<i>Surr: DCB</i>	0.000365		mg/L	0.00200		18.3	27-131			DS

**Matrix Spike Dup (BFF0462-MSD1)**

Source: 22E1462-01

Prepared: 06/10/2022 Analyzed: 06/13/2022

Endrin	0.002	0.020	mg/L	0.00100	BLOD	163	23-134	73.9	20	M2, P
Heptachlor	0.001	0.020	mg/L	0.00100	BLOD	131	23-134	74.0	20	P
Heptachlor Epoxide	0.002	0.020	mg/L	0.00100	BLOD	193	23-134	94.5	20	M2, P
Methoxychlor	0.002	0.020	mg/L	0.00100	BLOD	155	23-134	73.8	20	M2, P
<i>Surr: TCMX</i>	0.00146		mg/L	0.00200		72.8	18-112			
<i>Surr: DCB</i>	0.000950		mg/L	0.00200		47.5	27-131			

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

**Batch BFF0252 - No Prep Wet Chem**

**Duplicate (BFF0252-DUP1)**

**Source: 22E1303-03**

Prepared & Analyzed: 06/07/2022

Corrosivity	6.20	0.00	--		6.31			1.76	20	
-------------	------	------	----	--	------	--	--	------	----	--

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

### Analytical Summary

22E1462-01 Subcontract

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
22E1462-01	50.0 mL / 50.0 mL	SW7.2	BFF0252	SFF0234	
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW1311 Metals</b>	
22E1462-01	100 mL / 2000 mL	SW1311	BFF0005	SFF0006	
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW1311 ZHE</b>	
22E1462-01	6.96 g / 139 mL	SW1311	BFE1191	SFE1105	AE20123
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW3010A</b>	
22E1462-01	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
<b>TCLP Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
22E1462-01	100 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143
<b>TCLP Semivolatile Organic Compounds</b>			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
22E1462-01	100 mL / 2000 mL	SW1311	BFF0370	SFF0337	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Semivolatile Organic Compounds by GCMS</b>					
22E1462-01	100 mL / 1.00 mL	SW8270E	BFF0403	SFF0918	AC20134
			<b>Preparation Method:</b>	<b>SW3580A-MS</b>	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Volatile Organic Compounds by GCMS</b>					
22E1462-01	0.250 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>					
22E1462-01	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
			<b>Preparation Method:</b>	<b>SW7470A</b>	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Organochlorine Herbicides by GC/ECD</b>					
22E1462-01	100 mL / 5.00 mL	SW8151A	BFF0369	SFF0393	AD20156
			<b>Preparation Method:</b>	<b>SW8151A/EPA600</b>	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFF0252-BS1		SW7.2	BFF0252	SFF0234	
BFF0252-DUP1	1.00 mL / 1.00 mL	SW7.2	BFF0252	SFF0234	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW1311 Metals</b>	
BFF0005-BLK1	100 mL / 2000 mL	SW1311	BFF0005	SFF0006	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW1311 ZHE</b>	
BFE1191-BLK1	1.00 g / 1.00 mL	SW1311	BFE1191	SFE1105	AE20123
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW3010A</b>	
BFF0011-BLK1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
BFF0011-BS1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
BFF0011-MS1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
BFF0011-MSD1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method:</b>	<b>SW3510C/EPA600-ECD</b>	
BFF0462-BLK1	1000 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method: SW3510C/EPA600-ECD</b>		
BFF0462-BS1	1000 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143
BFF0462-BS2		SW8081B	BFF0462		
BFF0462-BS3	1000 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143
BFF0462-BS4	1000 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143
BFF0462-MS1	100 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143
BFF0462-MSD1	100 mL / 1.00 mL	SW8081B	BFF0462	SFF0939	AE20143

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Semivolatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW3580A-MS</b>		
BFF0403-BLK1	1000 mL / 1.00 mL	SW8270E	BFF0403	SFF0918	AC20134
BFF0403-BS1	1000 mL / 1.00 mL	SW8270E	BFF0403	SFF0918	AC20134
BFF0403-MS1	100 mL / 1.00 mL	SW8270E	BFF0403	SFF0918	AC20134
BFF0403-MSD1	100 mL / 1.00 mL	SW8270E	BFF0403	SFF0918	AC20134

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW5030B-MS</b>		
BFF0036-BLK1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-BLK2	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-BS1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-BS2	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-MS1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-MSD1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
BFF0077-BLK1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
BFF0077-BS1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method: SW7470A</b>		
BFF0077-MS1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
BFF0077-MSD1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Organochlorine Herbicides by GC/ECD</b>			<b>Preparation Method: SW8151A/EPA600</b>		
BFF0369-BLK1		SW8151A	BFF0369	SFF0393	AD20156
BFF0369-BS1		SW8151A	BFF0369	SFF0393	AD20156
BFF0369-MS1		SW8151A	BFF0369	SFF0393	AD20156
BFF0369-MSD1		SW8151A	BFF0369	SFF0393	AD20156

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

### Certified Analyses included in this Report

Analyte	Certifications
<b>SW1311 in Solids</b>	
Extraction Fluid, ZHE	VELAP
<b>SW6010D in Non-Potable Water</b>	
Arsenic	VELAP,WVDEP,NHDES
Barium	VELAP,WVDEP,NHDES
Cadmium	VELAP,WVDEP,NHDES
Chromium	VELAP,WVDEP,NHDES
Lead	VELAP,WVDEP,NHDES
Selenium	VELAP,WVDEP,NHDES
Silver	VELAP,WVDEP,NHDES
<b>SW7470A in Non-Potable Water</b>	
Mercury	VELAP,WVDEP,NHDES
<b>SW8081B in Non-Potable Water</b>	
Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-BHC (Lindane)	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor Epoxide	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Methoxychlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Toxaphene	NCDEQ,VELAP,WVDEP,PADEP,NHDES
<b>SW8151A in Non-Potable Water</b>	
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1-Dichloroethylene	NCDEQ,VELAP,NHDES
1,2-Dichloroethane	NCDEQ,VELAP,NHDES

---



---

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

### Certified Analyses included in this Report

Analyte	Certifications
1,4-Dichlorobenzene	NCDEQ,VELAP,NHDES
2-Butanone (MEK)	NCDEQ,VELAP,NHDES
Benzene	NCDEQ,VELAP,NHDES
Carbon tetrachloride	NCDEQ,VELAP,NHDES
Chlorobenzene	NCDEQ,VELAP,NHDES
Chloroform	NCDEQ,VELAP,NHDES
Tetrachloroethylene (PCE)	NCDEQ,VELAP,NHDES
Trichloroethylene	NCDEQ,VELAP,NHDES
Vinyl chloride	NCDEQ,VELAP,NHDES
<b><i>SW8270E in Non-Potable Water</i></b>	
2,4,5-Trichlorophenol	WVDEP,NHDES
2,4,6-Trichlorophenol	VELAP,WVDEP,NHDES
2,4-Dinitrotoluene	VELAP,WVDEP,NHDES
Hexachlorobenzene	VELAP,WVDEP,NHDES
Hexachlorobutadiene	VELAP,WVDEP,NHDES
Hexachloroethane	VELAP,WVDEP,NHDES
m+p-Cresols	WVDEP,NHDES
Nitrobenzene	VELAP,WVDEP,NHDES
o+m+p-Cresols	WVDEP
o-Cresol	VELAP,WVDEP,NHDES
Pentachlorophenol	VELAP,WVDEP,NHDES
Pyridine	WVDEP,NHDES

---

---

**Certificate of Analysis**Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

Code	Description	Laboratory ID	Expires
MADEP	Massachusetts DEP	M-VA913	06/30/2022
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NC	North Carolina DENR	495	07/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NCDOH	North Carolina Department of Health	51714	07/31/2022
NJDEP	NELAP-New Jersey DEP	VA015	06/30/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

---

---

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

### Qualifiers and Definitions

DS Surrogate concentration reflects a dilution factor.

J The reported result is an estimated value.

L LCS recovery is outside of established acceptance limits

M Matrix spike recovery is outside established acceptance limits

M2 Sample was diluted due to matrix interference.

NonCorr NonCorrosive

P Duplicate analysis does not meet the acceptance criteria for precision

RPD Relative Percent Difference

Qual Qualifiers

-RE Denotes sample was re-analyzed

LOD Limit of Detection

BLOD Below Limit of Detection

LOQ Limit of Quantitation

DF Dilution Factor

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.

PCBs, Total Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

**CHAIN OF CUSTODY**

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218204.05 TG
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? YES  No  Is sample from a chlorinated supply? YES  NO  PWS I.D. #:

SAMPLER NAME (PRINT): Logan Howard  
Minh Nguyen SAMPLER SIGNATURE: *[Signature]* Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS
											VSWMR Table 3-1B	VOC Table 3-1 B/EDB-8044	TEL P - Full	Corrosivity	Reactivity	TEL P - VOC	
1) Leachate Trip Blank	X					052522 1410			WW 11		X	X	X				
2) Trip Blank	X					052322 1023			EDI 2					X			
3)																	
4)																	
5)																	
6)																	
7)																	
8)																	
9)																	

PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)

RECEIVED: <i>[Signature]</i> DATE / TIME: 05/20/22	RECEIVED: LCN DATE / TIME: mm 5/20/22	QC Data Package	LAB USE ONLY	COOLER TEMP 3.0 °C
RECEIVED: LCN DATE / TIME: mm 5/20/22	RECEIVED: mm 5/20/22	Level I <input type="checkbox"/>	271	SCS-W 22E1462 1st Semi-Annual 2022 Recd: 05/27/2022 Due: 06/13/2022
		Level II <input checked="" type="checkbox"/>	ice	
		Level III <input type="checkbox"/>	Sealed	
		Level IV <input type="checkbox"/>		

Page 36 of 44

## Sample Preservation Log

Order ID: 22E1462

Date Performed: 5/31/22

Analyst Performing Check: MBS

Sample ID	Container ID	Metals		Cyanide		Sulfide		Ammonia		TKN		Phos, Tot		NO3+NO2		DRO		Pesticide (808/808/808) PCB DW only		SVOC (828/8270/828)			CrVI * **		Pest/POB (808) / SVOC(828)									
		pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH	Received Res. Cl	Final + Dr.	Received Res. Cl	Final + Dr.	Received pH	Final pH	pH as Received	Final pH	pH as Received	Final pH	pH as Received	Final pH					
01	E																	X		X														

NaOH ID: \_\_\_\_\_ HNO<sub>3</sub> ID: \_\_\_\_\_ CrVI preserved date/time: \_\_\_\_\_ Analyst Initials: \_\_\_\_\_  
H<sub>2</sub>SO<sub>4</sub> ID: \_\_\_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub> ID: \_\_\_\_\_ \*pH must be adjusted between 8.3 - 9.7  
Buffer Sol'n ID: \_\_\_\_\_  
HCL ID: \_\_\_\_\_ Na<sub>2</sub>SO<sub>3</sub> ID: \_\_\_\_\_ 1N NaOH ID: \_\_\_\_\_ 8N NaOH: \_\_\_\_\_

\*W.Va only certifies DIS8 CrVI and not T CrVI as an approved analyte under 40CFR136 for waste water.



---

---

**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 6:58:05AM

**Laboratory Order ID: 22E1462**

### Sample Conditions Checklist

Samples Received at:	3.00°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
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?	Yes
Are all volatile organic and TOX containers free of headspace?	Yes
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.	Yes
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes



Analytics Corporation  
10329 Stony Run Lane  
Ashland, VA 23005  
Phone: (804) 365-3000  
Fax: (804) 365-3002

June 06, 2022

SARAH ENDSLEY  
AIR WATER \_SOIL  
1941 REYMET ROAD  
Richmond, VA 23237

Account ID: 45819840 45819840  
Purchase Order: PO-022492  
Client ID: 22E1462-01: LEACHATE  
Work Order: 1059603

Dear SARAH ENDSLEY

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, May 31, 2022. The signature below certifies that the results are based on the referenced methods and applicable certifications or accreditations are noted for each parameter reported (see key at end of report).

Unless otherwise specified all analyses of solid materials are based on dry weight.

Reported results relate only to the items tested, as received by the laboratory.

On-site analysis (analysis ASAP) is recommended for the following tests: pH, temperature, dissolved oxygen, residual chlorine and sulfite. When performed off-site, these tests do not meet NELAC standards.

Abbreviations:ug/L = micrograms per Liter, mg/L = milligrams per Liter, ug/g = micrograms per gram, mg/kg = milligrams per kilogram ug/wp = micrograms per wipe, ug/ml = micrograms per millimeter, uS/cm = microsiemens per centimeter at 25 degrees Celcius ppb = parts per billion, DF = Dilution Factor.

If you have any questions concerning this report, please feel free to call Client Services at 1-800-888-8061.

Sincerely,

Dawn Casto  
Technical Director (or designee)

Enclosures

**CERTIFICATE OF ANALYSIS**

This report shall not be reproduced, except in full,  
without the written consent of Analytics Corporation



Analytics Corporation  
 10329 Stony Run Lane  
 Ashland, VA 23005  
 Phone: (804) 365-3000  
 Fax: (908) 365-3002

**ANALYTICAL RESULTS**

Workorder: 1059603      22E1462-01: LEACHATE

Lab ID:	<b>1059603001</b>	Date Received:	05/31/2022 16:22	Matrix	Aqueous Liquid
Sample ID:	<b>22E1462-01: LEACHATE</b>	Date Collected:	05/25/2022 14:10	Sample Type:	GRAB

Parameters	Results	Units	LOQ	DF	Prepared	By	Analyzed	By	Qual	Certifications
------------	---------	-------	-----	----	----------	----	----------	----	------	----------------

Analytical Method:	SW-846 9014	Preparation Method:	SW-846 Chapter 7.3
--------------------	-------------	---------------------	--------------------

Reactive Cyanide	<200	mg/L	200	1	06/01/2022	16:00	CLB	6/6/2022	00:00	CLB
------------------	------	------	-----	---	------------	-------	-----	----------	-------	-----

Analytical Method:	SW-846 9034	Preparation Method:	SW-846 Chapter 7.3
--------------------	-------------	---------------------	--------------------

Reactive Sulfide	<200	mg/L	200	1	06/01/2022	16:00	CLB	6/6/2022	16:00	CLB
------------------	------	------	-----	---	------------	-------	-----	----------	-------	-----

**CERTIFICATE OF ANALYSIS**

This report shall not be reproduced, except in full,  
 without the written consent of Analytics Corporation



Analytics Corporation  
10329 Stony Run Lane  
Ashland, VA 23005  
Phone: (804) 365-3000  
Fax: (908) 365-3002

## ANALYTICAL RESULTS

Workorder: 1059603      22E1462-01: LEACHATE

### Qualifiers

--

---

Certification Index:

Virginia (NELAC) - 1 VAC 30-46 H 1, Laboratory ID: 460160

### CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Analytics Corporation



Analytics Laboratories  
10329 Stony Run Lane  
Ashland VA 23005

**CHAIN OF CUSTODY**

COMPANY NAME: AWS Labs, Inc.		INVOICE TO: AWS Labs, Inc.		PROJECT NAME/Quote #: 22E1462	
CONTACT: Sarah Endsley		INVOICE CONTACT: Sarah Endsley		SITE NAME: 22E1462	
ADDRESS: 1941 Reymet Road, Richmond, VA 23237		INVOICE ADDRESS: 1941 Reymet Rd., Richmond, VA 23237		PROJECT NUMBER: 22E1462	
PHONE #: (804) 358-8295		INVOICE PHONE #: (804) 358-8295		P.O. #: <i>PO-022492</i>	
FAX #:		EMAIL: support@awslabs.com		Pretreatment Program:	
Is sample for compliance reporting? YES NO		Is sample from a chlorinated supply? YES NO		PWS I.D. #:	
SAMPLER NAME (PRINT):			SAMPLER SIGNATURE:		
Turn Around Time: <i>SD</i>					

Matrix Codes: WW=Water Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other _____												COMMENTS						
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						Due:	
											Reactivity							
1) 22E1462-01: Leachate	X					05.25.22	1410		WW	2	X							
2)																		
3)																		
4)																		
5)																		
6)																		
7)																		
8)																		
9)																		
10)																		

RELINQUISHED: <i>JH</i> 5/31/22 1520	DATE / TIME	RECEIVED: <i>[Signature]</i> 5/31/22 1520	DATE / TIME	QC Data Package	LAB USE ONLY	COOLER TEMP <i>38°C cool</i>
RELINQUISHED: <i>[Signature]</i> 5/31/22 16:20	DATE / TIME	RECEIVED: <i>[Signature]</i> 5/31/22 16:20	DATE / TIME	Level I <input type="checkbox"/>		
RELINQUISHED:	DATE / TIME	RECEIVED: <b>COLLIN WOODWARD</b>	DATE / TIME	Level II <input type="checkbox"/>		
				Level III <input type="checkbox"/>		



# Sample Container Receipt Form

Version 6-24-2011

Work Order: 1059603

Customer Name: AIR WATER & SOIL

45819840 4581984

CLIENT SAMPLE ID	LAB CONTAINER ID	TYPE OF CONTAINER	QTY	Temp(C)	pH	Chlorine on Arrival (ppm)	Condition Code	Preservative
22E1462-01: LEACH	1059603001-B	1000P	1	3.8	7	ND	OK	NONE
22E1462-01: LEACH	1059603001-A	1000P	1	3.8	7	ND	OK	NONE

**Notes**

COLLIN WOODWARD

Sample Custodian Signature

Date:

6/1/22

**Condition Code Definitions**

OK Received in good condition



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

## Certificate of Analysis

*Final Report*

Laboratory Order ID 22E1464

Client Name: SCS Engineers-Winchester  
296 Victory Road  
Winchester, VA 22602

Date Received: May 27, 2022 16:30  
Date Issued: July 6, 2022 7:00  
Project Number: 02218208.05 T6  
Purchase Order:

Submitted To: Jennifer Robb

Client Site I.D.: City of Bristol

Enclosed are the results of analyses for samples received by the laboratory on 05/27/2022 16:30. 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.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Enthalpy Analytical.



**Analysis Detects Report**

Client Name: SCS Engineers-Winchester  
 Client Site ID: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Laboratory Sample ID: 22E1464-01      Client Sample ID: Leachate #2

Parameter	Samp ID	Reference Method	Sample Results	Qual	LOD	LOQ	Dil. Factor	Units
TCLP Arsenic	01	SW6010D	0.108		0.100	0.100	1	mg/L
TCLP 1,4-Dichlorobenzene	01	SW8260D	0.14		0.02	0.02	1	mg/L
TCLP Extraction Fluid, ZHE	01	SW1311	1		0	0	1	#
Corrosivity	01	SW7.2	NonCorrosive		0.00	0.00	1	--

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".

---

---

**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Leachate #2	22E1464-01	Waste Water	05/25/2022 19:25	05/27/2022 16:30

Analysis for Reactivity was subcontracted to Analytics. The subcontracted results are attached at the end of this Certificate of Analysis.

Final COA re-issued on 7/6/22 to attach Reactivity results to final COA.

## Certificate of Analysis

Client Name: SCS Engineers-Winchester

Date Issued: 7/6/2022 7:00:43AM

Client Site I.D.: City of Bristol

Submitted To: Jennifer Robb

Client Sample ID: Leachate #2

Laboratory Sample ID: 22E1464-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Metals by 6000/7000 Series Methods</b>												
TCLP Silver	01	7440-22-4	SW6010D	06/01/2022 09:30	06/06/2022 15:44	BLOD		0.100	0.100	1	mg/L	MAK
<b>TCLP Arsenic</b>	01	7440-38-2	SW6010D	06/01/2022 09:30	06/06/2022 15:44	0.108		0.100	0.100	1	mg/L	MAK
TCLP Barium	01	7440-39-3	SW6010D	06/01/2022 09:30	06/06/2022 15:44	BLOD		1.00	5.00	1	mg/L	MAK
TCLP Cadmium	01	7440-43-9	SW6010D	06/01/2022 09:30	06/06/2022 15:44	BLOD		0.0200	0.0400	1	mg/L	MAK
TCLP Chromium	01	7440-47-3	SW6010D	06/01/2022 09:30	06/06/2022 15:44	BLOD		0.100	0.100	1	mg/L	MAK
TCLP Mercury	01	7439-97-6	SW7470A	06/02/2022 07:28	06/02/2022 11:35	BLOD		0.008	0.008	1	mg/L	MWL
TCLP Lead	01	7439-92-1	SW6010D	06/01/2022 09:30	06/06/2022 15:44	BLOD		0.100	0.100	1	mg/L	MAK
TCLP Selenium	01	7782-49-2	SW6010D	06/01/2022 09:30	06/06/2022 15:44	BLOD		0.250	0.250	1	mg/L	MAK
<b>TCLP Volatile Organic Compounds by GCMS</b>												
<b>TCLP Extraction Fluid, ZHE</b>	01	NA	SW1311	05/31/2022 15:00	05/31/2022 16:09	1		0	0	1	#	RJB
TCLP 1,1-Dichloroethylene	01	75-35-4	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
TCLP 1,2-Dichloroethane	01	107-06-2	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
<b>TCLP 1,4-Dichlorobenzene</b>	01	106-46-7	SW8260D	06/01/2022 00:00	06/01/2022 13:04	0.14		0.02	0.02	1	mg/L	RJB
TCLP 2-Butanone (MEK)	01	78-93-3	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.20	0.20	1	mg/L	RJB
TCLP Benzene	01	71-43-2	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.05	0.05	1	mg/L	RJB
TCLP Carbon tetrachloride	01	56-23-5	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Chlorobenzene	01	108-90-7	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Chloroform	01	67-66-3	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Tetrachloroethylene (PCE)	01	127-18-4	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.05	0.05	1	mg/L	RJB
TCLP Trichloroethylene	01	79-01-6	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
TCLP Vinyl chloride	01	75-01-4	SW8260D	06/01/2022 00:00	06/01/2022 13:04	BLOD		0.02	0.02	1	mg/L	RJB
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	01	97.6 %	70-120	06/01/2022 00:00	06/01/2022 13:04							
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	01	99.3 %	75-120	06/01/2022 00:00	06/01/2022 13:04							
<i>Surr: Dibromofluoromethane (Surr)</i>	01	96.2 %	80-119	06/01/2022 00:00	06/01/2022 13:04							

---



---

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Client Sample ID: Leachate #2

Laboratory Sample ID: 22E1464-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Volatile Organic Compounds by GCMS</b>												
<i>Surr: Toluene-d8 (Surr)</i>	01	97.8 %	85-120	06/01/2022 00:00	06/01/2022 13:04							

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Client Sample ID: Leachate #2

Laboratory Sample ID: 22E1464-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Semivolatile Organic Compounds by GCMS</b>												
TCLP 2,4,5-Trichlorophenol	01	95-95-4	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP 2,4,6-Trichlorophenol	01	88-06-2	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP 2,4-Dinitrotoluene	01	121-14-2	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP Hexachlorobenzene	01	118-74-1	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP Hexachlorobutadiene	01	87-68-3	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP Hexachloroethane	01	67-72-1	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP m+p-Cresols	01	1319-77-3	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP Nitrobenzene	01	98-95-3	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP o+m+p-Cresols	01	1319-77-3	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		600	2000	20	mg/L	MGG
TCLP o-Cresol	01	95-48-7	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
TCLP Pentachlorophenol	01	87-86-5	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	4000	20	mg/L	MGG
TCLP Pyridine	01	110-86-1	SW8270E	06/07/2022 14:05	06/09/2022 23:56	BLOD		200	2000	20	mg/L	MGG
<i>Surr: 2,4,6-Tribromophenol (Surr)</i>	01		% 7-150	06/07/2022 14:05	06/09/2022 23:56							DS
<i>Surr: 2-Fluorobiphenyl (Surr)</i>	01		68.0 % 5-125	06/07/2022 14:05	06/09/2022 23:56							
<i>Surr: 2-Fluorophenol (Surr)</i>	01		24.0 % 5-80	06/07/2022 14:05	06/09/2022 23:56							
<i>Surr: Nitrobenzene-d5 (Surr)</i>	01		1520 % 5-117	06/07/2022 14:05	06/09/2022 23:56							DS
<i>Surr: Phenol-d5 (Surr)</i>	01		38.0 % 5-60	06/07/2022 14:05	06/09/2022 23:56							
<i>Surr: p-Terphenyl-d14 (Surr)</i>	01		36.0 % 19.3-150	06/07/2022 14:05	06/09/2022 23:56							

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Client Sample ID: Leachate #2

Laboratory Sample ID: 22E1464-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Organochlorine Herbicides by GC/ECD</b>												
TCLP 2,4,5-TP (Silvex)	01	93-72-1	SW8151A	06/09/2022 13:55	06/13/2022 10:12	BLOD		0.214	1.00	10	mg/L	LBH2
TCLP 2,4-D	01	94-75-7	SW8151A	06/09/2022 13:55	06/13/2022 10:12	BLOD		0.400	2.00	10	mg/L	LBH2
Surr: DCAA (Surr)	01	2900 %	48.5-134	06/09/2022 13:55	06/13/2022 10:12							DS

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Client Sample ID: Leachate #2

Laboratory Sample ID: 22E1464-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>TCLP Organochlorine Pesticides and PCBs by GC/ECD</b>												
TCLP Chlordane	01	57-74-9	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		20.0	300	10	mg/L	LBH2
TCLP Endrin	01	72-20-8	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		0.500	50.0	10	mg/L	LBH2
TCLP gamma-BHC (Lindane)	01	58-89-9	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		0.500	50.0	10	mg/L	LBH2
TCLP Heptachlor	01	76-44-8	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		0.500	50.0	10	mg/L	LBH2
TCLP Heptachlor Epoxide	01	1024-57-3	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		0.500	50.0	10	mg/L	LBH2
TCLP Methoxychlor	01	72-43-5	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		0.500	50.0	10	mg/L	LBH2
TCLP Toxaphene	01	8001-35-2	SW8081B	06/09/2022 13:55	06/13/2022 15:20	BLOD		20.0	5000	10	mg/L	LBH2
Surr: TCMX	01	112 %	18-112	06/09/2022 13:55	06/13/2022 15:20							
Surr: DCB	01	192 %	27-131	06/09/2022 13:55	06/13/2022 15:20							DS

---



---

### Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Client Sample ID: Leachate #2

Laboratory Sample ID: 22E1464-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	LOD	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Corrosivity	01	NA	SW7.2	06/07/2022 09:59	06/07/2022 09:59	NonCorrosive		0.00	0.00	1	--	WJL



## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFF0011 - SW3010A

**Blank (BFF0011-BLK1)**

Prepared: 06/01/2022 Analyzed: 06/06/2022

Arsenic	ND	0.100	mg/L							
Barium	ND	5.00	mg/L							
Cadmium	ND	0.0400	mg/L							
Chromium	ND	0.100	mg/L							
Lead	ND	0.100	mg/L							
Selenium	ND	0.250	mg/L							
Silver	ND	0.100	mg/L							

**LCS (BFF0011-BS1)**

Prepared: 06/01/2022 Analyzed: 06/06/2022

Arsenic	2.39	0.100	mg/L	2.50		95.8	80-120			
Barium	2.48	5.00	mg/L	2.50		99.4	80-120			
Cadmium	2.48	0.0400	mg/L	2.50		99.4	80-120			
Chromium	2.40	0.100	mg/L	2.50		96.1	80-120			
Lead	2.55	0.100	mg/L	2.50		102	80-120			
Selenium	2.33	0.250	mg/L	2.50		93.1	80-120			
Silver	0.527	0.100	mg/L	0.500		105	80-120			

**Matrix Spike (BFF0011-MS1)**

Source: 22E1440-01

Prepared: 06/01/2022 Analyzed: 06/06/2022

Arsenic	2.64	0.100	mg/L	2.50	BLOD	106	75-125			
Barium	2.82	5.00	mg/L	2.50	BLOD	113	75-125			
Cadmium	2.57	0.0400	mg/L	2.50	0.0268	102	75-125			
Chromium	4.10	0.100	mg/L	2.50	1.79	92.7	75-125			
Lead	2.60	0.100	mg/L	2.50	0.156	97.9	75-125			
Selenium	2.80	0.250	mg/L	2.50	BLOD	112	75-125			
Silver	0.437	0.100	mg/L	0.500	BLOD	87.4	75-125			

**Matrix Spike Dup (BFF0011-MSD1)**

Source: 22E1440-01

Prepared: 06/01/2022 Analyzed: 06/06/2022

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

TCLP Metals by 6000/7000 Series Methods - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

#### Batch BFF0011 - SW3010A

Matrix Spike Dup (BFF0011-MSD1)		Source: 22E1440-01		Prepared: 06/01/2022 Analyzed: 06/06/2022					
Arsenic	2.69	0.100	mg/L	2.50	BLOD	108	75-125	1.95	20
Barium	2.85	5.00	mg/L	2.50	BLOD	114	75-125	1.13	20
Cadmium	2.59	0.0400	mg/L	2.50	0.0268	103	75-125	0.836	20
Chromium	4.19	0.100	mg/L	2.50	1.79	96.4	75-125	2.19	20
Lead	2.58	0.100	mg/L	2.50	0.156	96.9	75-125	0.904	20
Selenium	2.83	0.250	mg/L	2.50	BLOD	113	75-125	1.09	20
Silver	0.431	0.100	mg/L	0.500	BLOD	86.3	75-125	1.24	20

#### Batch BFF0077 - SW7470A

Blank (BFF0077-BLK1)				Prepared & Analyzed: 06/02/2022					
Mercury	ND	0.008	mg/L						
LCS (BFF0077-BS1)				Prepared & Analyzed: 06/02/2022					
Mercury	0.052	0.008	mg/L	0.0500	103	80-120			
Matrix Spike (BFF0077-MS1)		Source: 22E1440-01		Prepared & Analyzed: 06/02/2022					
Mercury	0.055	0.008	mg/L	0.0500	BLOD	109	80-120		
Matrix Spike Dup (BFF0077-MSD1)		Source: 22E1440-01		Prepared & Analyzed: 06/02/2022					
Mercury	0.054	0.008	mg/L	0.0500	BLOD	109	80-120	0.401	20

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

TCLP Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BFE1191 - SW1311 ZHE

**Blank (BFE1191-BLK1)**

Prepared &amp; Analyzed: 05/31/2022

Extraction Fluid, ZHE	1	0	#
-----------------------	---	---	---

### Batch BFF0036 - SW5030B-MS

**Blank (BFF0036-BLK2)**

Prepared &amp; Analyzed: 06/01/2022

1,1-Dichloroethylene	ND	0.02	mg/L
1,2-Dichloroethane	ND	0.02	mg/L
1,4-Dichlorobenzene	ND	0.02	mg/L
2-Butanone (MEK)	ND	0.20	mg/L
Benzene	ND	0.05	mg/L
Carbon tetrachloride	ND	0.02	mg/L
Chlorobenzene	ND	0.02	mg/L
Chloroform	ND	0.02	mg/L
Tetrachloroethylene (PCE)	ND	0.05	mg/L
Trichloroethylene	ND	0.02	mg/L
Vinyl chloride	ND	0.02	mg/L

<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	51.1		mg/L	50.0	102	70-120
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	47.3		mg/L	50.0	94.7	75-120
<i>Surr: Dibromofluoromethane (Surr)</i>	48.5		mg/L	50.0	97.0	80-119
<i>Surr: Toluene-d8 (Surr)</i>	50.2		mg/L	50.0	100	85-120

**LCS (BFF0036-BS2)**

Prepared &amp; Analyzed: 06/01/2022

1,1-Dichloroethylene	44.1	20	mg/L	50.0	88.3	70-130
1,2-Dichloroethane	48.8	20	mg/L	50.0	97.6	70-130
1,4-Dichlorobenzene	49.2	20	mg/L	50.0	98.3	75-125
2-Butanone (MEK)	37.4	200	mg/L	50.0	74.9	30-150

## Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

TCLP Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0036 - SW5030B-MS</b>										
<b>LCS (BFF0036-BS2)</b>			Prepared & Analyzed: 06/01/2022							
Benzene	51.3	50	mg/L	50.0		103	80-120			
Carbon tetrachloride	49.0	20	mg/L	50.0		98.1	65-140			
Chlorobenzene	50.4	20	mg/L	50.0		101	80-120			
Chloroform	48.4	20	mg/L	50.0		96.8	65-135			
Tetrachloroethylene (PCE)	80.2	50	mg/L	50.0		160	45-150			L
Trichloroethylene	49.7	20	mg/L	50.0		99.3	70-125			
Vinyl chloride	56.3	20	mg/L	50.0		113	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	51.2		mg/L	50.0		102	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	48.8		mg/L	50.0		97.5	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	50.2		mg/L	50.0		100	80-119			
<i>Surr: Toluene-d8 (Surr)</i>	50.1		mg/L	50.0		100	85-120			
<b>Matrix Spike (BFF0036-MS1)</b>			<b>Source: 22E1435-01</b>		Prepared & Analyzed: 06/01/2022					
1,1-Dichloroethylene	42.8	20	mg/L	50.0	BLOD	85.6	70-130			
1,2-Dichloroethane	48.5	20	mg/L	50.0	BLOD	96.9	70-130			
1,4-Dichlorobenzene	50.4	20	mg/L	50.0	BLOD	101	75-125			
2-Butanone (MEK)	39.4	200	mg/L	50.0	31.6	15.6	30-150			M
Benzene	52.1	50	mg/L	50.0	BLOD	104	80-120			
Carbon tetrachloride	50.0	20	mg/L	50.0	BLOD	99.9	65-140			
Chlorobenzene	50.3	20	mg/L	50.0	BLOD	101	80-120			
Chloroform	47.5	20	mg/L	50.0	BLOD	95.0	65-135			
Tetrachloroethylene (PCE)	81.7	50	mg/L	50.0	BLOD	163	45-150			M
Trichloroethylene	50.2	20	mg/L	50.0	BLOD	100	70-125			
Vinyl chloride	53.2	20	mg/L	50.0	BLOD	106	50-145			
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	48.8		mg/L	50.0		97.5	70-120			

### Certificate of Analysis

 Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

TCLP Volatile Organic Compounds by GCMS - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BFF0036 - SW5030B-MS</b>										
<b>Matrix Spike (BFF0036-MS1)</b>		<b>Source: 22E1435-01</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	48.5		mg/L	50.0		97.0	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	49.5		mg/L	50.0		99.0	80-119			
<i>Surr: Toluene-d8 (Surr)</i>	50.2		mg/L	50.0		100	85-120			
<b>Matrix Spike Dup (BFF0036-MSD1)</b>		<b>Source: 22E1435-01</b>			<b>Prepared &amp; Analyzed: 06/01/2022</b>					
1,1-Dichloroethylene	41.6	20	mg/L	50.0	BLOD	83.3	70-130	2.68	30	
1,2-Dichloroethane	47.0	20	mg/L	50.0	BLOD	93.9	70-130	3.17	30	
1,4-Dichlorobenzene	49.4	20	mg/L	50.0	BLOD	98.7	75-125	2.18	30	
2-Butanone (MEK)	37.2	200	mg/L	50.0	31.6	11.2	30-150	5.72	30	M
Benzene	50.7	50	mg/L	50.0	BLOD	101	80-120	2.67	30	
Carbon tetrachloride	49.2	20	mg/L	50.0	BLOD	98.4	65-140	1.53	30	
Chlorobenzene	50.2	20	mg/L	50.0	BLOD	100	80-120	0.179	30	
Chloroform	46.4	20	mg/L	50.0	BLOD	92.7	65-135	2.45	30	
Tetrachloroethylene (PCE)	80.3	50	mg/L	50.0	BLOD	161	45-150	1.78	30	M
Trichloroethylene	49.6	20	mg/L	50.0	BLOD	99.3	70-125	1.10	30	
Vinyl chloride	49.9	20	mg/L	50.0	BLOD	99.8	50-145	6.35	30	
<i>Surr: 1,2-Dichloroethane-d4 (Surr)</i>	47.8		mg/L	50.0		95.7	70-120			
<i>Surr: 4-Bromofluorobenzene (Surr)</i>	49.2		mg/L	50.0		98.4	75-120			
<i>Surr: Dibromofluoromethane (Surr)</i>	48.8		mg/L	50.0		97.7	80-119			
<i>Surr: Toluene-d8 (Surr)</i>	50.3		mg/L	50.0		101	85-120			

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Wet Chemistry Analysis - Quality Control

Enthalpy Analytical

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

**Batch BFF0252 - No Prep Wet Chem**

**Duplicate (BFF0252-DUP1)**

**Source: 22E1303-03**

Prepared & Analyzed: 06/07/2022

Corrosivity	6.20	0.00	--		6.31			1.76	20	
-------------	------	------	----	--	------	--	--	------	----	--

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

### Analytical Summary

22E1464-01 Subcontract

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method: No Prep Wet Chem</b>		
22E1464-01	50.0 mL / 50.0 mL	SW7.2	BFF0252	SFF0234	
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method: SW1311 Metals</b>		
22E1464-01	100 mL / 2000 mL	SW1311	BFF0005	SFF0006	
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method: SW1311 ZHE</b>		
22E1464-01	5.80 g / 116 mL	SW1311	BFE1191	SFE1105	AE20123
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method: SW3010A</b>		
22E1464-01	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
<b>TCLP Organochlorine Pesticides and PCBs by GC/ECD</b>			<b>Preparation Method: SW3510C/EPA600-ECD</b>		
22E1464-01	1.00 mL / 10.0 mL	SW8081B	BFF0422	SFF0939	AE20143
<b>TCLP Semivolatile Organic Compounds</b>			<b>Preparation Method: SW3580A-MS</b>		
22E1464-01	100 mL / 2000 mL	SW1311	BFF0370	SFF0337	

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Semivolatile Organic Compounds by GCMS</b>					
22E1464-01	1.00 g / 10.0 mL	SW8270E	BFF0423	SFF0918	AC20134
<b>TCLP Volatile Organic Compounds by GCMS</b>					
22E1464-01	0.250 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
<b>TCLP Metals by 6000/7000 Series Methods</b>					
22E1464-01	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
<b>TCLP Organochlorine Herbicides by GC/ECD</b>					
22E1464-01	0.500 mL / 5.00 mL	SW8151A	BFF0421	SFF0915	AD20156



## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

### QC Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
BFF0252-BS1		SW7.2	BFF0252	SFF0234	
BFF0252-DUP1	1.00 mL / 1.00 mL	SW7.2	BFF0252	SFF0234	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW1311 Metals</b>	
BFF0005-BLK1	100 mL / 2000 mL	SW1311	BFF0005	SFF0006	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW1311 ZHE</b>	
BFE1191-BLK1	1.00 g / 1.00 mL	SW1311	BFE1191	SFE1105	AE20123
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW3010A</b>	
BFF0011-BLK1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
BFF0011-BS1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
BFF0011-MS1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
BFF0011-MSD1	10.0 mL / 50.0 mL	SW6010D	BFF0011	SFF0196	AF20029
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFF0036-BLK1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Volatile Organic Compounds by GCMS</b>			<b>Preparation Method:</b>	<b>SW5030B-MS</b>	
BFF0036-BLK2	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-BS1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-BS2	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-MS1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123
BFF0036-MSD1	5.00 mL / 5.00 mL	SW8260D	BFF0036	SFF0036	AE20123

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>TCLP Metals by 6000/7000 Series Methods</b>			<b>Preparation Method:</b>	<b>SW7470A</b>	
BFF0077-BLK1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
BFF0077-BS1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
BFF0077-MS1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009
BFF0077-MSD1	1.00 mL / 20.0 mL	SW7470A	BFF0077	SFF0061	AF20009

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

### Certified Analyses included in this Report

Analyte	Certifications
<b>SW1311 in Solids</b>	
Extraction Fluid, ZHE	VELAP
<b>SW6010D in Non-Potable Water</b>	
Arsenic	VELAP,WVDEP,NHDES
Barium	VELAP,WVDEP,NHDES
Cadmium	VELAP,WVDEP,NHDES
Chromium	VELAP,WVDEP,NHDES
Lead	VELAP,WVDEP,NHDES
Selenium	VELAP,WVDEP,NHDES
Silver	VELAP,WVDEP,NHDES
<b>SW7470A in Non-Potable Water</b>	
Mercury	VELAP,WVDEP,NHDES
<b>SW8081B in Non-Potable Water</b>	
Chlordane	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Endrin	NCDEQ,VELAP,WVDEP,PADEP,NHDES
gamma-BHC (Lindane)	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Heptachlor Epoxide	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Methoxychlor	NCDEQ,VELAP,WVDEP,PADEP,NHDES
Toxaphene	NCDEQ,VELAP,WVDEP,PADEP,NHDES
<b>SW8151A in Non-Potable Water</b>	
2,4,5-TP (Silvex)	VELAP,PADEP,NCDEQ,WVDEP
2,4-D	VELAP,PADEP,NCDEQ,WVDEP
<b>SW8260D in Non-Potable Water</b>	
1,1-Dichloroethylene	NCDEQ,VELAP,NHDES
1,2-Dichloroethane	NCDEQ,VELAP,NHDES

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

### Certified Analyses included in this Report

Analyte	Certifications
1,4-Dichlorobenzene	NCDEQ,VELAP,NHDES
2-Butanone (MEK)	NCDEQ,VELAP,NHDES
Benzene	NCDEQ,VELAP,NHDES
Carbon tetrachloride	NCDEQ,VELAP,NHDES
Chlorobenzene	NCDEQ,VELAP,NHDES
Chloroform	NCDEQ,VELAP,NHDES
Tetrachloroethylene (PCE)	NCDEQ,VELAP,NHDES
Trichloroethylene	NCDEQ,VELAP,NHDES
Vinyl chloride	NCDEQ,VELAP,NHDES
<b>SW8270E in Organic</b>	
2,4,5-Trichlorophenol	VELAP,PADEP,NCDEQ,WVDEP,NHDES
2,4,6-Trichlorophenol	VELAP,PADEP,NCDEQ,WVDEP,NHDES
2,4-Dinitrotoluene	VELAP,PADEP,NCDEQ,WVDEP,NHDES
Hexachlorobenzene	VELAP,PADEP,NCDEQ,WVDEP,NHDES
Hexachlorobutadiene	VELAP,PADEP,NCDEQ,WVDEP,NHDES
Hexachloroethane	VELAP,PADEP,NCDEQ,WVDEP,NHDES
m+p-Cresols	VELAP,PADEP,NCDEQ,WVDEP,NHDES
Nitrobenzene	VELAP,PADEP,NCDEQ,WVDEP,NHDES
o+m+p-Cresols	VELAP,PADEP,NCDEQ,WVDEP,NHDES
o-Cresol	VELAP,PADEP,NCDEQ,WVDEP,NHDES
Pentachlorophenol	VELAP,PADEP,NCDEQ,WVDEP,NHDES
Pyridine	VELAP,PADEP,NCDEQ,WVDEP,NHDES

---



---

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

Code	Description	Laboratory ID	Expires
MADEP	Massachusetts DEP	M-VA913	06/30/2022
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NC	North Carolina DENR	495	07/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NCDOH	North Carolina Department of Health	51714	07/31/2022
NJDEP	NELAP-New Jersey DEP	VA015	06/30/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

---

---

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

### Qualifiers and Definitions

DS Surrogate concentration reflects a dilution factor.

J The reported result is an estimated value.

L LCS recovery is outside of established acceptance limits

M Matrix spike recovery is outside established acceptance limits

NonCorr NonCorrosive

RPD Relative Percent Difference

Qual Qualifiers

-RE Denotes sample was re-analyzed

LOD Limit of Detection

BLOD Below Limit of Detection

LOQ Limit of Quantitation

DF Dilution Factor

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.

PCBs, Total Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

**CHAIN OF CUSTODY**

PAGE 1 OF 1

COMPANY NAME: SCS Engineers	INVOICE TO: SCS Reston	Project Name: City of Bristol 1st Semi-Annual
CONTACT: Jennifer Robb	INVOICE CONTACT: Jennifer Robb	Site Name:
ADDRESS: 296 Victory Road, Winchester, VA 22602	INVOICE ADDRESS:	PROJECT NUMBER: 02218208.05 TG
PHONE #: (703) 471-6150	INVOICE PHONE #:	P.O. #:
FAX #: (703) 471-6676	EMAIL: Jrobb@scsengineers.com	Pretreatment Program:

Is sample for compliance reporting? YES va Is sample from a chlorinated supply? YES NO PWS I.D. #:

SAMPLER NAME (PRINT): Logan Haverd Minh Nguyen SAMPLER SIGNATURE: [Signature] Turn Around Time: 10 Day(s)

Matrix Codes: WW=Waste Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS		
											vSWMR Table 3.1B	vOC Table 3.1 B/EDB-8011	X TELP - full	X Corrosivity	X Reactivity	X TELP-VOC			
1) Leachate #2	X					052522	1925		WW	11									
2) Trip Blank	X					052322	1023		OI	2									
3)																			
4)																			
5)																			
6)																			
7)																			
8)																			
9)																			
10)																			

RELINQUISHED: <u>[Signature]</u> DATE / TIME: <u>05/27/22 1230</u>	RECEIVED: <u>LCN</u> DATE / TIME: <u></u>	QC Data Package	LAB USE ONLY	COOLER TEMP <u>3.0</u> °C
RELINQUISHED: <u>LCN</u> DATE / TIME: <u></u>	RECEIVED: <u>mm 5/27/22 1630</u> DATE / TIME: <u></u>	Level I <input type="checkbox"/>	271 Sealed Ice	SCS-W 22E1464 1st Semi-Annual 2022 Recd: 05/27/2022 Due: 06/13/2022
RELINQUISHED: <u></u> DATE / TIME: <u></u>	RECEIVED: <u></u> DATE / TIME: <u></u>	Level II <input checked="" type="checkbox"/>		
RELINQUISHED: <u></u> DATE / TIME: <u></u>	RECEIVED: <u></u> DATE / TIME: <u></u>	Level III <input type="checkbox"/>		
RELINQUISHED: <u></u> DATE / TIME: <u></u>	RECEIVED: <u></u> DATE / TIME: <u></u>	Level IV <input type="checkbox"/>		

---

---

**Certificate of Analysis**

Client Name: SCS Engineers-Winchester  
Client Site I.D.: City of Bristol  
Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM



---



---

## Certificate of Analysis

Client Name: SCS Engineers-Winchester  
 Client Site I.D.: City of Bristol  
 Submitted To: Jennifer Robb

Date Issued: 7/6/2022 7:00:43AM

**Laboratory Order ID: 22E1464**

### Sample Conditions Checklist

Samples Received at:	3.00°C
How were samples received?	Logistics Courier
Were Custody Seals used? If so, were they received intact?	Yes
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

\*Chlorine check could not be performed on -01A: Leachate #2 due to color/opacity of sample. Jennifer Robb notified via email. MRS 05/31/22



Analytics Corporation  
10329 Stony Run Lane  
Ashland, VA 23005  
Phone: (804) 365-3000  
Fax: (804) 365-3002

June 06, 2022

SARAH ENDSLEY  
AIR WATER \_SOIL  
1941 REYMET ROAD  
Richmond, VA 23237

Account ID: 45819840 45819840  
Purchase Order: PO-022492  
Client ID: 22E1464  
Work Order: 1059604

Dear SARAH ENDSLEY

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, May 31, 2022. The signature below certifies that the results are based on the referenced methods and applicable certifications or accreditations are noted for each parameter reported (see key at end of report).

Unless otherwise specified all analyses of solid materials are based on dry weight.

Reported results relate only to the items tested, as received by the laboratory.

On-site analysis (analysis ASAP) is recommended for the following tests: pH, temperature, dissolved oxygen, residual chlorine and sulfite. When performed off-site, these tests do not meet NELAC standards.

Abbreviations:ug/L = micrograms per Liter, mg/L = milligrams per Liter, ug/g = micrograms per gram, mg/kg = milligrams per kilogram ug/wp = micrograms per wipe, ug/ml = micrograms per millimeter, uS/cm = microsiemens per centimeter at 25 degrees Celcius ppb = parts per billion, DF = Dilution Factor.

If you have any questions concerning this report, please feel free to call Client Services at 1-800-888-8061.

Sincerely,

Dawn Casto  
Technical Director (or designee)

Enclosures

**CERTIFICATE OF ANALYSIS**

This report shall not be reproduced, except in full,  
without the written consent of Analytics Corporation



Analytics Corporation  
 10329 Stony Run Lane  
 Ashland, VA 23005  
 Phone: (804) 365-3000  
 Fax: (908) 365-3002

**ANALYTICAL RESULTS**

Workorder: 1059604 22E1464

Lab ID: **1059604001** Date Received: 05/31/2022 16:22 Matrix Aqueous Liquid  
 Sample ID: **22E1464-01: LEACHATE #2** Date Collected: 05/25/2022 19:25 Sample Type: GRAB

Parameters	Results	Units	LOQ	DF	Prepared	By	Analyzed	By	Qual	Certifications
------------	---------	-------	-----	----	----------	----	----------	----	------	----------------

Analytical Method:	SW-846 9014	Preparation Method:	SW-846 Chapter 7.3
--------------------	-------------	---------------------	--------------------

Reactive Cyanide	<200	mg/L	200	1	06/01/2022	16:00	CLB	6/6/2022	00:00	CLB
------------------	------	------	-----	---	------------	-------	-----	----------	-------	-----

Analytical Method:	SW-846 9034	Preparation Method:	SW-846 Chapter 7.3
--------------------	-------------	---------------------	--------------------

Reactive Sulfide	<200	mg/L	200	1	06/01/2022	16:00	CLB	6/6/2022	16:00	CLB
------------------	------	------	-----	---	------------	-------	-----	----------	-------	-----

**CERTIFICATE OF ANALYSIS**

This report shall not be reproduced, except in full,  
 without the written consent of Analytics Corporation



Analytics Corporation  
10329 Stony Run Lane  
Ashland, VA 23005  
Phone: (804) 365-3000  
Fax: (908) 365-3002

## ANALYTICAL RESULTS

Workorder: 1059604      22E1464

### Qualifiers

--

---

Certification Index:

Virginia (NELAC) - 1 VAC 30-46 H 1, Laboratory ID: 460160

### CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Analytics Corporation



Analytics Laboratories  
10329 Stony Run Lane  
Ashland VA 23005

**CHAIN OF CUSTODY**

COMPANY NAME: AWS Labs, Inc.		INVOICE TO: AWS Labs, Inc.	PROJECT NAME/Quote #: 22E1464
CONTACT: Sarah Endsley		INVOICE CONTACT: Sarah Endsley	SITE NAME: 22E1464
ADDRESS: 1941 Reymet Road, Richmond, VA 23237		INVOICE ADDRESS: 1941 Reymet Rd., Richmond, VA 23237	PROJECT NUMBER: 22E1464
PHONE #: (804) 358-8295		INVOICE PHONE #: (804) 358-8295	P.O. #: <u>PO-628492</u>
FAX #:	EMAIL: support@awslabs.com		Pretreatment Program:
Is sample for compliance reporting? YES NO		Is sample from a chlorinated supply? YES NO	
SAMPLER NAME (PRINT):		SAMPLER SIGNATURE:	PWS I.D. #:
			Turn Around Time: <u>5 Days</u>

Matrix Codes: WW=Water Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other \_\_\_\_\_

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Stop Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS	
											Reactivity							
1) 22E1464-01: Leachate #2	X					05.25.22	1925		WW	2	X							<b>Due:</b>
2)																		
3)																		
4)																		
5)																		
6)																		
7)																		
8)																		
9)																		
10)																		

RELINQUISHED: <u>JH</u> <u>5/31/20</u> <u>1520</u>	DATE / TIME	RECEIVED: <u>[Signature]</u> <u>5/31/20</u> <u>1520</u>	DATE / TIME	QC Data Package	LAB USE ONLY	COOLER TEMP <u>3.9°C</u>
RELINQUISHED: <u>[Signature]</u> <u>5/31/20</u> <u>1620</u>	DATE / TIME	RECEIVED: <u>[Signature]</u> <u>5/31/20</u> <u>16:22</u>	DATE / TIME	Level I <input type="checkbox"/>		
RELINQUISHED:	DATE / TIME	RECEIVED:	DATE / TIME	Level II <input type="checkbox"/>		
				Level III <input type="checkbox"/>		

**COLLIN WOODWARD**



# Sample Container Receipt Form

Version 6-24-2011

Page 31 of 31

Work Order: 1059604

Customer Name: AIR WATER & SOIL

45819840 4581984

CLIENT SAMPLE ID	LAB CONTAINER ID	TYPE OF CONTAINER	QTY	Temp(C)	pH	Chlorine on Arrival (ppm)	Condition Code	Preservative
22E1464-01: LEACH	1059604001-B	1000P	1	3.8	7	ND	OK	NONE
22E1464-01: LEACH	1059604001-A	1000P	1	3.8	7	ND	OK	NONE

**Notes**

COLLIN WOODWARD

Sample Custodian Signature

Date:

6/1/24

**Condition Code Definitions**

OK Received in good condition

## Appendix B

### Third Quarter Surface Emissions Monitoring Event

October 28, 2022  
File No. 02218208.04

Mr. Mike Martin  
Solid Waste Administrator  
City of Bristol Virginia  
2125 Shakesville, Rd  
Bristol, VA 2125

Subject: Third Quarter Surface Emissions Monitoring Event – October 12, 2022  
Bristol Integrated Solid Waste Facility – Bristol, Virginia

Dear Mr. Martin:

SCS Engineers (SCS) is pleased to submit the results of the Third Quarter 2022 Surface Emissions Monitoring (SEM) event performed at the Bristol Integrated Solid Waste Facility located in Bristol, Virginia on October 12, 2022. Note that while this monitoring occurred in the fourth quarter, this is intended to be counted as the Third Quarter Event since one was not completed between July 1<sup>st</sup> and September 30<sup>th</sup>. A separate fourth quarter event will be completed prior to the end of the calendar year. 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. The approximate monitoring route and sampling locations are presented in the attached Drawing.

At the time of monitoring, all areas of the Permit No. 498 landfill footprint are subject to regulatory monitoring based on the regulatory time schedule stipulated in 40 CFR 63.1960(b) and 40 CFR 60.36f(b). This yields a total monitored landfill footprint of approximately 11.1 acres for this quarterly event. Therefore, the target number of sampling points to cover the appropriate portion of the landfill footprint, utilizing a 30-meter grid interval, is approximately 53 (4.75 points per acre).

During the Third Quarter 2022 SEM event, SCS sampled 69 points, including three surface cover penetrations. The recorded methane concentrations are presented in Exhibit 1. None of the 69 sampling locations demonstrated a methane concentration that exceeded the regulatory limit of 500 ppm above background. Therefore, no additional monitoring is required for this Third Quarter event.

SCS will notify the City of Bristol of the proposed schedule for the Fourth Quarter SEM event for 2022 (to be performed prior to December 31, 2022).





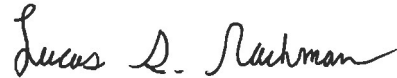
Mr. Mike Martin  
October 28, 2022  
Page 2

If you have questions or require additional information, please contact either of the undersigned.

Sincerely,



Lauren E. Harris  
Associate Staff Professional  
SCS Engineers



Lucas S. Nachman  
Project Professional  
SCS Engineers

LEH/LSN

Cc Joey Lamie, City of Bristol  
Jacob Chandler, PE, City of Bristol  
Crystal Bazyk, Virginia Department of Environmental Quality  
Encl.

**EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS  
 PERMIT NO. 498 - THIRD QUARTER INITIAL EVENT - OCTOBER 12, 2022  
 BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA**

Date	Time	ID #	Methane Concentration	Compliance	Comments
10/12/22	12:42	1	4.6 PPM	OK	
10/12/22	12:42	2	6.2 PPM	OK	
10/12/22	12:42	3	4.9 PPM	OK	
10/12/22	12:43	4	2.8 PPM	OK	
10/12/22	12:43	5	3.4 PPM	OK	
10/12/22	12:44	6	2.4 PPM	OK	
10/12/22	12:44	7	8.6 PPM	OK	
10/12/22	12:45	8	1.0 PPM	OK	
10/12/22	12:46	9	22.0 PPM	OK	
10/12/22	12:46	10	3.5 PPM	OK	
10/12/22	12:47	11	3.2 PPM	OK	
10/12/22	12:47	12	1.6 PPM	OK	GW-19
10/12/22	12:48	13	0.9 PPM	OK	
10/12/22	12:49	14	2.0 PPM	OK	
10/12/22	12:49	15	1.2 PPM	OK	
10/12/22	12:50	16	0.6 PPM	OK	
10/12/22	12:50	17	0.9 PPM	OK	
10/12/22	12:50	18	272.0 PPM	OK	GW-20
10/12/22	12:51	19	2.1 PPM	OK	
10/12/22	12:52	20	18.4 PPM	OK	
10/12/22	12:52	21	0.1 PPM	OK	
10/12/22	12:52	22	0.1 PPM	OK	GW-21
10/12/22	12:53	23	0.7 PPM	OK	
10/12/22	12:53	24	0.1 PPM	OK	
10/12/22	12:54	25	0.2 PPM	OK	
10/12/22	12:54	26	0.2 PPM	OK	
10/12/22	12:55	27	0.3 PPM	OK	
10/12/22	12:55	28	0.5 PPM	OK	
10/12/22	12:55	29	5.6 PPM	OK	
10/12/22	12:56	30	1.2 PPM	OK	
10/12/22	12:57	31	0.0 PPM	OK	
10/12/22	12:58	32	0.3 PPM	OK	
10/12/22	12:58	33	0.2 PPM	OK	
10/12/22	12:59	34	0.0 PPM	OK	
10/12/22	13:00	35	0.0 PPM	OK	
10/12/22	13:00	36	0.6 PPM	OK	
10/12/22	13:01	37	0.4 PPM	OK	
10/12/22	13:02	38	1.5 PPM	OK	
10/12/22	13:02	39	2.5 PPM	OK	
10/12/22	13:03	40	2.6 PPM	OK	
10/12/22	13:03	41	6.7 PPM	OK	
10/12/22	13:04	42	3.6 PPM	OK	
10/12/22	13:05	43	1.4 PPM	OK	
10/12/22	13:05	44	1.9 PPM	OK	
10/12/22	13:05	45	2.6 PPM	OK	
10/12/22	13:06	46	3.6 PPM	OK	
10/12/22	13:06	47	2.1 PPM	OK	
10/12/22	13:07	48	1.2 PPM	OK	
10/12/22	13:07	49	1.8 PPM	OK	
10/12/22	13:08	50	2.2 PPM	OK	
10/12/22	13:08	51	2.1 PPM	OK	
10/12/22	13:08	52	2.9 PPM	OK	
10/12/22	13:09	53	1.4 PPM	OK	
10/12/22	13:09	54	1.4 PPM	OK	
10/12/22	13:09	55	3.6 PPM	OK	
10/12/22	13:10	56	1.8 PPM	OK	
10/12/22	13:10	57	4.3 PPM	OK	
10/12/22	13:11	58	1.8 PPM	OK	
10/12/22	13:11	59	1.8 PPM	OK	
10/12/22	13:12	60	1.4 PPM	OK	
10/12/22	13:12	61	34.0 PPM	OK	
10/12/22	13:12	62	5.7 PPM	OK	
10/12/22	13:13	63	1.0 PPM	OK	
10/12/22	13:13	64	1.4 PPM	OK	
10/12/22	13:13	65	1.3 PPM	OK	
10/12/22	13:14	66	1.1 PPM	OK	
10/12/22	13:14	67	1.1 PPM	OK	
10/12/22	13:14	68	1.2 PPM	OK	
10/12/22	13:14	69	3.0 PPM	OK	

**EXHIBIT 1. SURFACE EMISSIONS MONITORING RESULTS  
PERMIT NO. 498 - THIRD QUARTER INITIAL EVENT - OCTOBER 12, 2022  
BRISTOL INTEGRATED SOLID WASTE FACILITY - BRISTOL, VIRGINIA**

Date	Time	ID #	Methane Concentration	Compliance	Comments
------	------	------	--------------------------	------------	----------

Number of points sampled:	69
Number of exceedance locations:	0

**NOTES:**

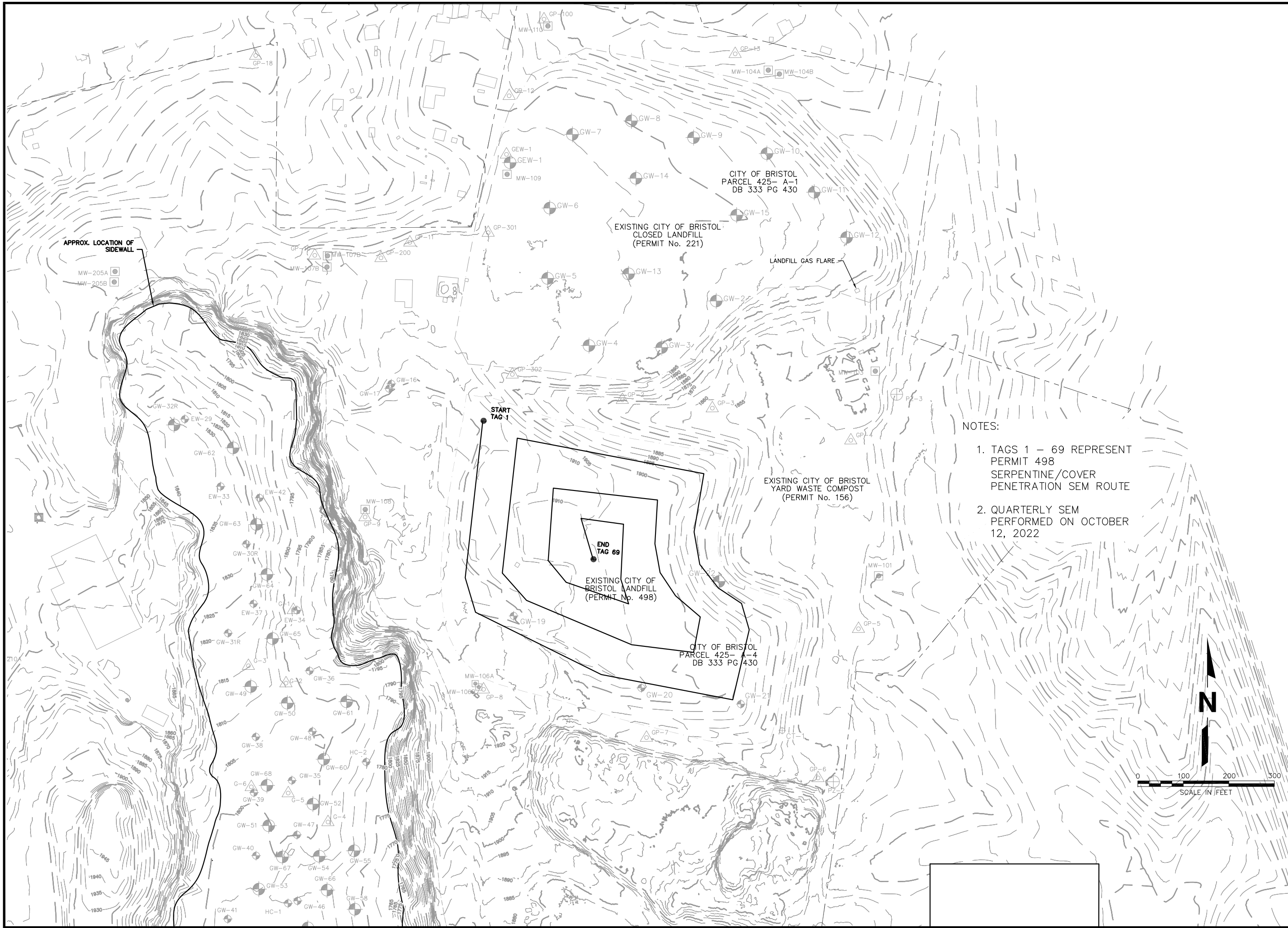
Weather Conditions (10/12/22): Partly Cloudy, 64°F, Winds: 6 MPH SSE

Sampling Calibration: Methane - 500 ppm, Zero Air - 0.0 ppm

10/12/22	11:25	Zero	0.1 PPM
10/12/22	11:26	SPAN	498.0 PPM

Background Reading:

10/12/22	11:30	Upwind	1.9 PPM
10/12/22	11:36	Downwind	3.8 PPM



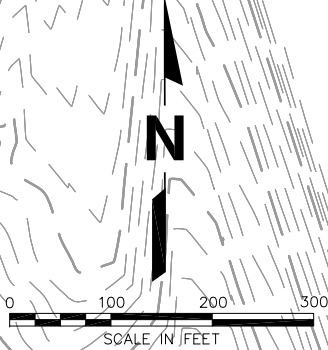
APPROX. LOCATION OF SIDEWALL

START TAG 1

END TAG 69

NOTES:

1. TAGS 1 – 69 REPRESENT PERMIT 498 SERPENTINE/COVER PENETRATION SEM ROUTE
2. QUARTERLY SEM PERFORMED ON OCTOBER 12, 2022



NO.	▲	▲	▲	▲	▲
	REVISION				
	DATE				
SHEET TITLE	BRISTOL SEM ROUTE				
PROJECT TITLE	ANNUAL SURFACE EMISSIONS MONITORING SOLID WASTE PERMIT #498				
CLIENT	BRISTOL INTEGRATED SOLID WASTE MANAGEMENT FACILITY 2125 SHAKESVILLE RD BRISTOL, VA				
CONTRACT NO.	02218205.04				
DATE	10/28/22				
SCALE	AS SHOWN				
DRAWING NO.	1 of 1				

**SCS ENGINEERS**  
 STEARNS, CONRAD AND SCHMIDT  
 CONSULTING ENGINEERS, INC.  
 2828 W. MAIN ST., SUITE 200  
 PH. (804) 376-7440 FAX. (804) 376-7433

PROJ. NO. 02218205.04  
 DATE 10/28/22  
 SCALE AS SHOWN  
 DRAWING NO. 1 of 1

Midlothian, VA

PROJECT: City Bristol, LF Engineering, ISWMF, VA 02218208.05      DATE: 11/10/2022

SUBJECT: Monthly Reports SWP# 588, 498, & 221      TRANSMITTAL ID: 00002

PURPOSE: For your review and comment      VIA: Info Exchange

FROM

NAME	COMPANY	EMAIL	PHONE
Charles Warren Midlothian, VA	SCS Engineers	CWarren@scsengineers.com	+1-804-486-1903

TO

NAME	COMPANY	EMAIL	PHONE
Jonathan Chapman 355-A Deadmore Street Abingdon VA 24210 United States	Virginia Department of Environmental Quality	Jonathan.chapman@deq.virginia.gov	

REMARKS: Jonathan,

The Monthly Reports of the Solid Waste Permit #588, 498, and 221 landfills can be downloaded using the links below. Let us know if you have questions about the contents of these reports.

Regards,  
Charles

Charles J. Warren, PE<sup>1</sup>  
Project Manager  
SCS Engineers  
15521 Midlothian Turnpike, Suite 305  
Midlothian, VA 23113 USA  
804-486-1903 (W)  
[cwarren@scsengineers.com](mailto:cwarren@scsengineers.com)

**Driven by Client Success**  
[www.scsengineers.com](http://www.scsengineers.com)

<sup>1</sup> Registered in VA

# Transmittal

DATE: 11/10/2022  
TRANSMITTAL ID: 00002

## DESCRIPTION OF CONTENTS

QTY	DATED	TITLE	NOTES
1	11/10/2022	October Compliance Report - SWP 588.pdf	
1	11/10/2022	October Compliance Report - SWP 498.pdf	
1	11/10/2022	October Compliance Report - SWP 221.pdf	

## COPIES:

Bob Dick (SCS Engineers)  
Brandon King (SCS Engineers)  
Charles Warren (SCS Engineers)  
Crystal Bazyk (Virginia Department of Environmental Quality)  
Jacob Chandler (Bristol, VA, City of)  
Jeffery Hurst (Virginia Department of Environmental Quality)  
Jennifer Robb (SCS Engineers)  
Tom Lock (SCS Field Services)  
Stacy Bowers (Virginia Department of Environmental Quality)  
Randall Eads (City of Bristol)  
Michael Martin (Bristol, VA, City of)  
Joey Lamie (City of Bristol)  
Robert Gardner (SCS Engineers)