**AECOM** 

AECOM 101 Research Drive Columbia, SC 29223 www.aecom.com 803-254-4400 tel 803-776-6676 fax

May 15, 2023

CANNED

Ms. Kim Kuhn
Bureau of Land and Waste Management
SC Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

RECEIVED

MAY 17 2023

SITE ASSESSMENT, REMEDIATION, & REVITALIZATION

RE: Pilot Study Work Plan

Shakespeare Composite Structures Site, Newberry, South Carolina SCDHEC VCC Number 14-6271-RP

Dear Ms. Kuhn:

On behalf of Signify North America Corporation (Signify), please find enclosed the Pilot Study (PS) Report for the Shakespeare Composite Structures Site (the Site) located in Newberry, South Carolina. The PS Report contains a summary of the PS baseline groundwater sampling event, the chemical oxidant and carbon substrate injections, the 15 months of performance groundwater monitoring, and study conclusions. The following recommendations and next step actions are also offered at the end of the report:

- Signify requests that the PS results be accepted by SCDHEC.
- Both ISCO and ISERD should be retained as potential treatment technologies and for remedial alternative development in the FS.
- Data contained in the Sitewide Groundwater Monitoring Report (still in progress at the time this PS Report is being submitted), for monitoring conducted in 2022, will also be used during FS development.
- We plan to initiate the feasibility study (FS) as soon as possible.
- Due to an unexpected increase in the trichloroethene (TCE) concentration (to greater than 3 mg/L) in
  the final PS monitoring event (December 2022) groundwater sample from monitoring well MW-31, it is
  recommended that a limited additional assessment of groundwater quality, including installation of up
  to six additional monitoring wells, be performed in the vicinity of monitoring this well, A work plan and
  monitoring well request will be submitted to SCDHEC within the next week.

If you have questions regarding this PS Report, please feel free to contact me, or Dave Oliphant of AECOM at 864-380-6950, at your convenience.

Sincerely,

**AECOM Technical Services, Inc.** 

Scott E. Ross, P.G. Project Manager 803-201-9662

scott.ross@aecom.com

cc: Mr. Emil Filc – Signify North America Corporation

Mr. Dave Oliphant – AECOM



5/025 AECOM

CD Scanned PM Copy

# Pilot Study Report Shakespeare Composite Structures Site

RECEIVED

MAY 17 2023

SITE ASSESSMENT, REMEDIATION, & REVITALIZATION

RP-VCC-14-6271-RP Signify North America Corporation



## Quality information

Dave Oliphant, CHMM Scott Ross, P.G. Tan Ross, P.E. Scott Ross, P.G.

Dave Oliphant, CHMM Project Manager

Scott Ross, P.G. Project Hydrogeologist

5.11·23

Scott Ross, P.G. Project Manager

#### Prepared for:

Signify North America Corporation

## Prepared by:

AECOM 101 Research Drive Columbia, SC 29203 10 Patewood Drive, Bldg. 6, Ste. 500 Greenville, SC 29615 USA aecom.com

# Pilot Study Report

# **Table of Contents**

Section 1. Introduction 1					
1.1	Facilit	Facility and Site Setting			
1.2		Previous Investigations			
1.3		bility Study Work Plan			
1.4	Bench	Bench Scale Treatability Study			
Sect	tion 2.	Pilot Study Location, Design, and Implementation	2-1		
2.1	Pilot S	Study Locations	2-1		
2.2		Pilot Study Design			
	2.2.1	ISCO Pilot Study			
		2.2.1.1 RemOx®S ISCO Reagent	2-2		
	2.2.2	ISERD Pilot Study	2-2		
		2.2.2.1 ÅBC®+Olé			
		2.2.2.2 Magnesium Oxide			
		2.2.2.3 Guar			
		2.2.2.4 RTB-1			
0.0	Dilet				
2.3	Pilot Study Implementation				
	2.3.1	Access Agreements  Monitoring Well and Injection Well Permitting			
	2.3.3	Utility Clearance			
	2.3.4	Observation Well Installation and Development			
	2.3.5	Baseline Groundwater Sampling Event			
	2.0.0	2.3.5.1 ISCO Baseline Sampling Event Analytical Parameters			
		2.3.5.2 ISERD Baseline Sampling Event Analytical Parameters			
	2.3.6	Pilot Study Injection Event	2-7		
		2.3.6.1 ISCO Injection Details – Pilot Study			
		2.3.6.2 ISERD Injection Details – Pilot Study			
		2.3.6.3 ISERD Injection Details - Bioaugmentation Event	2-9		
	2.3.7	Post-Injection Performance Monitoring Program	2-10		
	2.3.8	Equipment Decontamination	2-10		
	2.3.9	IDW Management	2-10		
	2.3.10	Pilot Study Update Summary	2-11		
Sect	tion 3.	Pilot Study Results	3-1		
3.1		ydrogeology			
3.2		Pilot Study Performance Monitoring			

May 2023

	3.2.1	Field Parameter Results Summary	
		3.2.1.1 Baseline Field Parameters	
	2 2 2	<b>G</b>	
	3.2.2 3.2.3	•	
	0.2.0	3.2.3.1 ISCO PS Results	
		3.2.3.2 ERD PS Results	3-6
3.3	3.2.4 <b>Rem</b> e	Data Validationedial Action Derived Waste	
		Pilot Study Conclusions and	
		Actions	
4.1	_	Study Conclusions	
	4.1.1	ISCO PS Conclusions	
	4.1.2		
		4.1.2.1 Shallow Zone	
		4.1.2.3 Overall ISERD Conclusions	
4.2	Reco	mmendations and Next Step Actions	4-3
Secti	on 5.	References	5-1
Figu	res		
Figure 1-1		Site Location Map	
Figure 1	1-2	Site Plan	
Figure 1	1-3	Wells and Elevations in Shallow Zone	
Figure 1-4		Wells and Elevations in Intermediate Zone	
Figure 1-5		Wells and Elevations in Bedrock Zone	
Figure 1-6		TCE Concentrations in Shallow Zone	
Figure 1	1-7	TCE Concentrations in Intermediate Zone	
Figure 1	1-8	TCE Concentrations in Bedrock Zone	
Figure 2	2-1	ISCO Pilot Study Results – Shallow Zone	
Figure 2	2-2	Enhanced Reductive Dechlorination (ISB and ISCR) Pilot Study Results – Shallow Zo	ne
Figure 2	2-3	Enhanced Reductive Dechlorination (ISB and ISCR) Pilot Study Results – Intermedia	te Zone
Figure 2	2-4	Typical DPT Injection Point Detail – ISCO Pilot Study – Shallow Zone	
Figure 2	2-5	Typical DPT Injection Point Detail – ERD Pilot Study – Shallow Zone	
Figure 2-6		Typical DPT Injection Point Detail – ERD Pilot Study – Intermediate Zone	

May 2023 iii

# **Tables**

Table 2-1	Permanent Monitoring Well Construction Details
Table 2-2	Pilot Study Performance Monitoring Program
Table 2-3	Bioaugmentation Injection Event Details
Table 3-1	Sample Results- ISCO Pilot Study Wells
Table 3-2	Sample Results - ISERD Pilot Study Wells

# **Attachments**

Α	Monitoring Well Permit
В	UIC Permits
С	Boring Logs, As-built Construction Logs, Well Development Logs, and Survey Data for Pilot Study Observation Wells
D	Field Data Records and Equipment Calibration Logs for Groundwater Sampling Events
Е	Redox Tech Field Summary Report and DHEC 1903 Forms for ISCO and ERD Injections and Abandonment
F	Laboratory Reports of Analysis and Chain-of-Custody Records for Microbial Analysis
G	Laboratory Reports of Analysis and Chain-of-Custody Records for VOCs and Other Parameters
Н	Data Validation Reports
I	Lab Data and Bill of Lading/Material Manifest for Pilot Study Remedial Action Derived Waste

May 2023 iv

# **List of Acronyms**

ABC®-Olé Anaerobic Biochem® Olé

ABC®+Olé Anaerobic Biochem Plus® Olé

AECOM Technical Services, Inc.

bgs below ground surface

BSTS bench-scale treatability study

cells/mL cells per milliliter

cis-1,2-DCE cis-1,2-dichloroethene

CVOCs chlorinated volatile organic compounds

DHB Dehalobacter spp.

DHC Dehalococcoides

DO dissolved oxygen

DOT Department of Transportation

DPT direct push technology

ERD enhanced reductive dechlorination

EVO emulsified vegetable oil

FS feasibility study

ft feet or foot
ft/ft feet per foot
ft/day feet per day
ft/yr feet per year

g/kg grams per kilogram gpm gallons per minute

IDW investigation derived waste

ISB in situ bioremediation

ISERD in situ enhanced reductive dechlorination

ISCR in situ chemical reduction
ISCO in situ chemical oxidation
KMnO<sub>4</sub> potassium permanganate
MCL maximum contaminant level

mg/L milligrams per liter  $\mu g/L$  micrograms per liter

ml milliliter

May 2023 v

# List of Acronyms (cont'd.)

msl mean sea level

mV millivolt

ORP oxidation reduction potential

Pace Pace Analytical Services

PENAC Philips Electronics North America Corporation

PS Pilot Study

PSUS Pilot Study Update Summary

PSWP Pilot Study Work Plan

psig pounds per square inch gauge

PVC polyvinyl chloride

Redox Tech Redox Tech, LLC

RemOx®S RemOx®S ISCO reagent

RI remedial investigation

ROI radius of influence

RP-VCC responsible party-voluntary cleanup contract

SC specific conductance

SCDHEC South Carolina Department of Health and Environmental Control

Signify Signify North America, Inc.

SiREM SiREM Laboratories

SPDWS State Primary Drinking Water Standards

S.U. standard units (for pH)

SVOC semivolatile organic compound

TCE trichloroethene

TCL-VOC target compound list-volatile organic compound

TDS total dissolved solids

TOC total organic carbon

TOD total oxidant demand

UIC underground injection control

USEPA United States Environmental Protection Agency

VC vinyl chloride

VCC voluntary cleanup contract
VOCs volatile organic compounds

ZVI zero valent iron

May 2023 vi

# **Section 1. Introduction**

The Shakespeare Composite Structures Site (the "Site"), located in Newberry, South Carolina, is participating in a voluntary cleanup program with the South Carolina Department of Health and Environmental Control (SCDHEC). Signify North America Corporation (Signify) is currently listed as responsible party under voluntary cleanup contract (RP-VCC) number RP-VCC-14-6271-RP. As part of the RP-VCC process, the Site has undergone a Remedial Investigation (RI), which was completed in November 2018. The RI efforts resulted in the delineation of a plume of dissolved phase chlorinated volatile organic compounds (CVOCs) in Site groundwater. Based on the results of the RI, it is anticipated that an active groundwater treatment remedy will be required for at least a portion of Site groundwater.

Signify has conducted several activities that have provided information to be incorporated into a Feasibility Study (FS) for potential remedial altenatives to treat CVOC-impacted groundwater. Previously completed activities include a bench-scale treatability study (BSTS) that was conducted between September 2019 and January 2020. A BSTS Report was generated following the conclusion of the BSTS. That report contained a summary of the results of the laboratory-based evaluation of multiple in situ remediation options and also contained recommendations for the performance of a field-scale pilot study.

Based on the results of the BSTS, Signify and AECOM Technical Services, Inc. (AECOM) implemented a Pilot Study (PS) designed to evaluate multiple groundwater remediation technologies at the former Shakespeare Composite Structures site (Site). The PS included a field evaluation of in-situ chemical oxidation (ISCO) and in-situ enhanced reductive dechlorination (ISERD) treatment technologies for groundwater at specific locations on the Site. The PS addressed CVOCs in shallow and intermediate zone groundwater where the highest concentrations of CVOCs had been detected during previous Site investigations. CVOC impact in bedrock groundwater exists but at much lower concentrations and therefore was not addressed by this pilot study.

This pilot study report includes brief discussions of the site setting, previous investigations, the FS work plan, and BSTS activities in this Section 1. In Section 2, the field-scale pilot study location, design, and implementation are addressed. In Section 3, pilot study results are summarized. Conclusions, recommendations, and next step actions are presented in Section 4.

# 1.1 Facility and Site Setting

The Site is located on US Highway 76, approximately 1 mile northwest of Newberry, South Carolina (Figure 1-1). The Site is centered on the Valmont Composite Structures facility (the Facility, formerly known as Shakespeare Composite Structures) (Figure 1-2). The facility was originally opened to produce fiberglass products, and it has continued to be used for this manufacturing process. Operations at the facility include the design and manufacture of large fiberglass utility poles and cross arms and a variety of other fiberglass outdoor products such as posts, signs, sheet piling, and signposts. Manufacturing is conducted inside two separate buildings – the Main Building and the Pole Winder Building.

In addition to the Facility property, the Site includes several surrounding properties (**Figure 1-2**). General land use surrounding the facility consists of agricultural, residential, undeveloped, and commercial/light industrial properties.

Topography of the Site is generally flat or gently sloping. Land surface elevations generally decrease to the southwest, west, and north moving away from the Facility property. Surface elevations range from approximately 562 feet (ft) mean sea level (msl) on the east side of the Facility to less than 520 ft msl along an unnamed intermittent stream located to the north of the Facility.

A more detailed description of the facility's operation, surrounding property usage, and site topographic setting information is included in the RI Report (AECOM, 2018).

# 1.2 Previous Investigations

Several phases of investigative efforts have been performed at the Site, including multiple assessments prior to execution of the VCC. The pre-VCC investigative efforts that were conducted include:

- Phase II Environmental Site Assessment Collection of initial soil and groundwater samples from the Shakespeare facility (February through April 2014);
- Site Investigation Collection of additional soil and groundwater samples from the Shakespeare facility along with several groundwater samples from surrounding private parcels (May through August 2014); and
- Expanded Investigation Collection of additional shallow groundwater samples and evaluation of shallow bedrock for impacted groundwater on surrounding properties (August through September 2014).

An RP-VCC between the SCDHEC and Philips Electronics North America Corporation (PENAC) was executed in September 2014. Once this VCC was executed, additional investigative efforts were performed as part of the RI process. PENAC is the former name of Signify.

The RI was implemented in two phases, beginning in 2014 after execution of the VCC. The RI was conducted to further evaluate the vertical and/or horizontal extent of previously identified CVOCs in soil and groundwater; assess additional potential areas of interest for secondary sources of VOCs that could be contributing to soil and/or groundwater impacts; evaluate potential vapor intrusion pathways; determine risk to potential human and ecological receptors; and provide additional data needed to develop a remedial strategy for the Site.

RI efforts determined that the source areas for CVOCs present in groundwater originated from historical operational practices that impacted groundwater beneath the western portions of the Main and Pole Winder Buildings located on the Facility property. CVOCs subsequently migrated both horizontally and vertically within groundwater away from the identified source areas and impacted multiple aquifer depth intervals (shallow, intermediate, and bedrock) beyond the Facility property.

In general, the water table at the Site is encountered in the fine sands and silts and clays of the residuum. Groundwater is encountered at depths ranging from approximately two ft below ground surface (bgs) near the northern end of the Site and on the Dickert property to as deep as approximately 18 ft bgs on the former Shakespeare Composite Structures facility. Groundwater beneath the Site is mainly encountered under unconfined conditions.

As a result, the direction of groundwater flow beneath this Site, particularly in the shallow (water table) zone follows the local topography, with flow components to the west and northwest. CVOCs have migrated within the water

table and saprolite zones primarily through natural dispersion. Vertical migration downgradient of the source areas within the saprolite and into underlying granitic bedrock was influenced primarily by numerous privately-operated water supply wells located to the west and southwest of the Facility. Groundwater elevation and flow maps for the shallow, intermediate, and bedrock zones from the most recent comprehensive groundwater elevation measurement conducted in February 2022 are provided as **Figures 1-3**, **1-4**, **and 1-5**, respectively.

Based on the groundwater elevations determined during the most recent measurement event (February 2022), the average horizontal hydraulic gradients for the shallow and intermediate zones were determined to be 0.016 feet per foot (ft/ft) to the west-northwest and 0.015 ft/ft to the west-northwest, respectively. A downward gradient between the shallow and intermediate zones generally was observed across the Site during the February 2022 event, with some locations where an upward gradient was indicated. During Phase II of the RI, hydraulic conductivity tests (slug tests) were conducted on select shallow and intermediate zone monitoring wells. The results of the slug tests indicated an average hydraulic conductivity of 0.80 feet per day (ft/day) and 0.72 ft/day for the shallow and intermediate zone, respectively. Based on an assumed effective porosity of 0.25 and the use of the February 2022 depth to water data, the calculated ground velocity for the shallow groundwater zone is approximately 0.051 ft/day or 18.9 feet per year (ft/yr). Using an assumed effective porosity of 0.3, the calculated ground velocity for the intermediate groundwater zone is approximately 0.036 ft/day or 13.4 ft/yr.

The RI defined the extent of CVOC-impacted groundwater at multiple aquifer depth intervals. Analytical results were screened against United States Environmental Protection Agency (USEPA) maximum contaminant levels (MCLs) and the South Carolina Department of Health and Environmental Control's – State Primary Drinking Water Standards-(SPDWS) to identify compounds of interest in groundwater beneath the Site. Concentrations of trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC) exceeded their respective MCLs/SPDWSs in several groundwater samples collected from the Site. Of these, TCE was the most frequently detected chemical in groundwater samples collected at the Site. The elevated concentrations of CVOCs are most widespread in shallow zone groundwater (upper portion of the water table aquifer). TCE and cis-1,2-DCE also exceeded their respective MCLs in one or more samples collected in the intermediate (saprolite) zone.

Because TCE was detected most frequently and at the highest concentrations in Site groundwater, the results for this chemical constituent have been used to represent the extent of impact in the shallow and intermediate groundwater zones. **Figures 1-6**, **1-7**, **and 1-8** depict the extent of TCE in shallow zone, intermediate zone, and bedrock groundwater beneath the Site based on analytical results from the last site-wide monitoring event completed in February/March 2022.

A more detailed discussion of the results of the investigative efforts conducted at the Site to date is included in the RI Report (AECOM, 2018). The RI Report for the Site was submitted to the SCDHEC in November 2018 and subsequently approved by the Department in written correspondence dated February 4, 2019.

# 1.3 Feasibility Study Work Plan

Following approval of the RI Report, SCDHEC requested that Signify develop an FS Work Plan for the Site. The purpose of the FS Work Plan was to outline the proposed information that would be included in the Site FS. The cover letter for the FS Work Plan also proposed that a BSTS and subsequent pilot study should be completed prior to development of the FS. The FS Work Plan was submitted to SCDHEC on May 15, 2019 (AECOM, 2019). SCDHEC approved the FS Work Plan in correspondenc dated June 4, 2019.

In their June 4, 2019 approval letter, SCDHEC requested that Signify submit a BSTS Work Plan by July 31, 2019. The BSTS Work Plan was approved by SCDHEC on August 23, 2019. The BSTS was subsequently implemented in September 2019.

# 1.4 Bench Scale Treatability Study

In order to develop a more definitive remediation plan for Site groundwater, and prior to developing the FS for the Site, two potential in-situ technologies for groundwater were evaluated. The two potential remedies evaluated in the BSTS as possible treatment options for Site-related CVOCs consisted of ISCO and ISERD (AECOM, 2020). Both ISCO and ISERD are active groundwater remedial approachs that can degrade CVOCs via chemical oxidation or via biological reductive dechlorination. In this case, reductive dechlorination via in-situ bioremediation (ISB), was enhanced by including in situ chemical reduction (ISCR), which is an abiotic process, thus the term ISERD is used.

On September 19, 2019, soil was collected from an area between monitoring wells MW-10 and MW-10I, and groundwater was collected from MW-10 and MW-10I. This area and the two monitoring wells are located just north of the Facility property on the Dickert property (**Figures 1-6 and 1-7**). Soil and groundwater samples were shipped to Redox Tech, LLC (Redox Tech) in Cary, North Carolina for ISCO total oxidant demand (TOD) testing. Soil and groundwater samples were also submitted to SiREM Laboratories (SiREM) in Ontario, Canada for bench-scale evaluation of the various ERD treatments.

The TOD evaluation was conducted to determine if native Site groundwater and saturated aquifer material would be amenable to ISCO treatment. Aquifer materials targeted for ISCO treatment that contain high natural organic carbon, high naturally reduced inorganic minerals such as iron, and elevated CVOC concentrations require higher concentrations of oxidant to effectively treat the targeted contaminants. TOD values determined in the four microcosms used for ISCO testing indicated a limited oxidant demand exerted by Site groundwater and saturated soil. TOD values for the microcosms ranged from less than 0.3 grams per kilogram (g/kg) to 2.8 g/kg, which falls within the typical range for saprolitic soils found in the Piedmont region of South Carolina. Based on these results and a subsequent discussion with Redox Tech, a TOD value of 1 to 2 g/kg was considered adequate for ISCO design purposes. Because the Site TOD value is low, these results indicated that ISCO may be a suitable remedial option to treat CVOC-impacted Site groundwater.

The BSTS for ERD evaluated the effectiveness of multiple treatment amendments for CVOC-impacted Site media including EDS-ER™ (an emulsified vegetable oil [EVO]), which promotes ISB via reductive dechlorination, MicroEVO™ (a sulfidated zero valent iron [ZVI]), which promotes abiotic ISCR, and KB- 1® Plus (a chlorinated solvent bioaugmentation microbial culture). One of the EDS-ER™ amended treatment microcosms and one of the MicroEVO™ ISCR amended treatment microcosms were also buffered using sodium bicarbonate to maintain the pH within the optimal range (i.e., 6 to 8 standard units [S.U.]) for reductive dechlorination to occur.

Based on the results of the BSTS, it was determined that the microcosm with buffered EVO that was amended approximately 40 days after initiation of testing with KB- 1® Plus was able to completely degrade the TCE in Site groundwater. The microcosms containing sulfidated ZVI saw an immediate decrease in TCE to approximately half of its initial concentration; however, bioaugmentation was required to promote further reduction in the concentration of TCE. VC remained in this sulfidated ZVI microcosm at the conclusion of the BSTS in January 2020. It was subsequently surmised that sulfidation of the ZVI likely interfered with the complete reduction of TCE to ethene, and that non-sulfidated ZVI would likely be more effective.

Based on the results of the BSTS, both ISCO and ISERD (using a combination of ISB and ISCR) were determined to be potentially applicable remediation technologies that could be used to address CVOC contamination in Site groundwater. A field-based pilot study was recommended as the next logical step in order to evaluate effectiveness, implementability, and cost associated with full-scale implementation of one or both technologies.

In their approval letter, SCDHEC reviewed and concurred with the BSTS results and recommendation for the completion of a pilot study at the Site. SCDHEC requested that Signify submit a Pilot Study Work Plan (PSWP) by August 15, 2020. Signify subsequently requested an extension to complete the PSWP. A due date extension to October 2, 2020 was approved by SCDHEC on August 24, 2020. The PSWP was submitted to SCDHEC on October 1, 2020. SCDHEC approved the PSWP on October 16, 2020.

# Section 2. Pilot Study Location, Design, and Implementation

The following subsections describe the pilot study location, design, and implementation procedures.

# 2.1 Pilot Study Locations

Because both ISCO and ISERD were determined through the BSTS to be potentially applicable treatment technologies for CVOCs in Site groundwater, the pilot study consisted of separate pilot study areas so both technologies could be evaluated in the field. Based on the 2017 CVOC concentrations detected in shallow and intermediate zone groundwater, two areas were identified for the pilot study. One pilot study area was located within the eastern end of the Main Building near monitoring well TMW-31 and was used to conduct the ISCO pilot study. The ERD pilot study area was located north of the Pole Winder Building across the railroad tracks on the Dickert Property. The locations of the PS areas are shown on **Figures 2-1 2-2, and 2-3.** 

The objective of the proposed ISCO pilot study was to decrease the TCE concentration in the shallow groundwater zone within this area using a strong chemical oxidant. **Section 2.2** describes the injection design and the amendment that was used to achieve the ISCO pilot study objective. The amendment was injected through temporary well points using direct-push technology (DPT) to treat the targeted shallow groundwater. Flow direction in shallow zone groundwater near TMW-31 is to the west-northwest (**Figure 1-3**). Site monitoring well specifications are provided in **Table 2-1**.

**Figure 2-1** shows the ISCO pilot study area and the DPT injection locations. It should be noted that a source area located in the western end of the Main Building was initially identified for the ISCO pilot study; however, this location is in the middle of a production area with high traffic and limited access. Another potential location near MW-8 located outside of the western end of the Main Building was also identified; however, without treatment of the source area within the vicinity of TMW-21 and TMW-22, ongoing impact from the upgradient source to downgradient groundwater at MW-8 would likely occur, and the effectiveness of the pilot study would be difficult to accurately evaluate. As a result, the area near TMW-31 was selected for the ISCO portion of the pilot study.

The objective of the proposed ISERD pilot study was to decrease the concentration of TCE in the shallow and intermediate groundwater zones in the vicinity of monitoring wells MW-10 and MW-10I. The ISERD pilot study included the concurrent injection of an organic carbon substrate and ZVI into the targeted shallow and intermediate zone groundwater in order to create strongly anaerobic and reducing conditions suitable for reduction of the Site-related CVOCs in groundwater. Additional amendments including a pH buffer and a bioaugmentation culture were used to enhance the reduction of CVOCs. The ERD substrate and amendments were also delivered to the subsurface via targeted DPT injection.

**Figure 2-2** shows the ISERD pilot study area and the DPT injection locations for shallow zone groundwater treatment near MW-10. **Figure 2-3** shows the ISERD pilot study area and the DPT injection locations for intermediate zone groundwater treatment near MW-10I. Flow direction in shallow zone groundwater near MW-10 is to the north-northwest (**Figure 1-3**), and the flow direction in intermediate zone groundwater near MW-10I is to the west-northwest (**Figure 1-4**).

# 2.2 Pilot Study Design

The following subsections describe the injection design and amendments which were used to achieve the ISCO and ERD pilot study objectives.

#### 2.2.1 ISCO Pilot Study

For the ISCO injections using DPT, a radius of influence (ROI) of 8 ft was assumed, in order to obtain adequate coverage for the successful treatment of shallow zone groundwater with elevated TCE in the vicinity of monitoring well TMW-31. For this area, a potassium permanganate (KMnO<sub>4</sub>) solution (approximately 4% by weight) was injected into three locations via DPT using a Geoprobe® series 6600 rig. The vertical injection interval targeted for the three injection locations was from 10 ft bgs to 20 ft bgs. A typical DPT injection point detail for the ISCO pilot study is shown in **Figure 2-4.** The specific chemical oxidant product that was used is described in the following subsection.

#### 2.2.1.1 RemOx®S ISCO Reagent

For the ISCO field pilot study, the Carus Corporation KMnO<sub>4</sub> product denoted as RemOx®S ISCO reagent (RemOx®S), was used for the treatment of TCE in the shallow zone groundwater within the vicinity of TWM-31. RemOx®S is a strong chemical oxidant that has been used for the treatment of CVOCs in groundwater at numerous sites with varying lithologies including those similar to the Shakespeare Composite Structures Site. The use of RemOx®S does require activation like other chemical oxidants such as persulfate or hydrogen peroxide. Its use is applicable over a wide range of pH values, and it can easily be detected in monitoring wells several months following injection due to its natural deep purple color. RemOx®S is deep purple when it is chemically active and becomes brown once it is no longer active.

# 2.2.2 ISERD Pilot Study

For the ISERD DPT injections, an ROI of 10 feet was assumed for both the shallow and intermediate zone groundwater, in order to obtain adequate coverage for the successful treatment of groundwater with elevated TCE concentrations in the vicinity of MW-10 and MW-10I. Injections were conducted using a Geoprobe® series 7822 DPT rig. For the shallow zone, a barrier-type injection approach was utilized. Five ERD DPT injections were conducted upgradient of MW-10 and the associated observation well (ISERD-OSW-1S). The vertical injection interval for shallow zone groundwater treatment ranged from 20 ft bgs to 30 ft bgs. A typical DPT injection point detail for the shallow zone is shown in **Figure 2-5**.

The barrier-type injection pattern was also intended for use near intermediate monitoring well MW-10I; however, varying depths of impenetrable layers of either partially weathered rock or bedrock prevented the DPT rig from reaching the planned intermediate zone injection depth. As a result, the orientation of DPT injection points had to be altered since the targeted DPT injection depths could not be achieved. Injection points in the MW-10I area surrounded this well and the associated observation well (ISERD-OSW-1I). The vertical injection interval for

intermediate zone groundwater treatment ranged from 30 ft bgs to 36 ft bgs. A typical DPT injection point detail for the intermediate zone is shown in **Figure 2-6.** The five intermediate zone injections were conducted first, followed by the shallow zone injections.

The substrate used for the ISERD injections at the Site included a combination of biological and chemical amendments that included Anaerobic Biochem Plus® Olé (ABC®+Olé), which is a combination of Anaerobic Biochem® Olé (ABC®-Olé) and ZVI, magnesium oxide, guar, RTB-1 (microbial amendment consisting of *Dehalococcoides* [*DHC*] bacteria, and sodium sulfite). A description of each of these amendments is presented in the following subsections.

#### 2.2.2.1 ABC®+Olé

A combination organic carbon source/ZVI substrate known as ABC®+Olé was used for the ERD pilot study. ABC®+Olé is a combination bioremediation/chemical reductant product developed and patented by Redox Tech. The use of ABC®+Olé results in the creation of strong reducing conditions within the targeted shallow and intermediate groundwater zones, which ultimately is intended to enhance the reductive dechlorination of Site-related CVOCs via two mechanisms. First, ABC®+Olé contains a readily available carbon food source to indigenous microorganisms, which consists of a mixture of fast-release soluble lactic acids (glycerin) and slow-release fatty acids (oleic acid) along with a dipotassium phosphate buffer. This combination of products serves to promote the ISB of the targeted CVOCs. Second, ABC®+Olé contains added ZVI, which does not rely on microbial degradation to treat the targeted CVOCs but rather utilizes ISCR. ISCR by ZVI works via an abiotic degradation pathway (β-elimination) that occurs on the surface of the granular ZVI, with the ZVI primarily acting as an electron donor.

The addition of ZVI to the ABC®+Olé mixture provides a number of advantages over traditional ERD applications without ZVI. The ZVI provides an immediate reduction in existing groundwater conditions. ZVI also raises the pH in the targeted groundwater, and the corrosion of the ZVI produces small quantities of hydrogen gas, which is an energy source for a wide range of anaerobic bacteria. Finally, the  $\beta$ -elimination pathway accounts for the majority of the degradation that occurs when the targeted CVOCs come into contact with the ZVI. This pathway avoids the production of cis-1,2-DCE and VC and the potential "stall out" or accumulation of these constituents that may occur during microbially-induced reductive dechlorination.

For the proposed ERD injection event, the ABC®+Olé mixture consisted of 50% by weight ABC®-Olé and 50% by weight ZVI. In particular, the 50% by weight ABC®-Olé consisted of long chain fermentable carbon (C14 to C18 fatty acids), which is comprised of a mixture of fatty acid methyl ester, soybean oil, and an emulsifier, approximately 5% by weight glycerin, and 0.1% by weight dipotassium phosphate as a micronutrient and buffer.

#### 2.2.2.2 Magnesium Oxide

At the Site, the native pH of the targeted shallow and intermediate groundwater zones is generally between 4.5 and 6.5 S.U. As a result, magnesium oxide, which is transformed into magnesium hydroxide upon contact with water, was injected along with the ABC®+Olé to more aggressively raise and sustain the pH within the immediate vicinity of the DPT injection locations. The quantity of magnesium oxide injected was approximately 1% by weight of the injected solution.

#### 2.2.2.3 Guar

Guar is used as a stabilizing, thickening, and suspending agent for injection substrates. In this case, the added guar was used to achieve the hydraulic emplacement of the ABC®+Olé mixture at each ISERD DPT injection location.

#### 2.2.2.4 RTB-1

Bioaugmentation, by means of RTB-1, was also implemented for the ISERD portion of the pilot study to increase the effectiveness of the ABC®+Olé injection. Bioaugmentation is defined as the addition of high-performance microbial cultures capable of degrading targeted CVOCs. Bioaugmentation for the treatment of chlorinated ethenes entails the addition of a naturally occurring, non-pathogenic, microbial culture that contains *DHC* bacteria, which are capable of completely dechlorinating TCE and its daughter products to harmless ethene. Bioaugmentation is often used when there is incomplete dechlorination of TCE following biostimulation with an organic carbon source.

Not all *DHC* in nature dechlorinate VC efficiently due to the lack of necessary enzymes. RTB-1 offers an enriched dechlorinating culture that includes lactate as a carbon source and uses TCE as an electron acceptor. As such, RTB-1 offers an enriched dechlorinating culture capable of efficiently degrading TCE, cis-1,2-DCE, and VC to innocuous ethene. The *DHC* present in RTB-1 dechlorinate VC to ethene via halorespiration, and not via the less efficient cometabolic processes.

#### 2.2.2.5 Sodium Sulfite

A small quantity of sodium sulfite normally is used at each temporary ERD DPT injection location. The purpose of sodium sulfite addition was to precondition the targeted groundwater by deoxygenating it prior to the injection of the strictly anaerobic RTB-1 culture.

# 2.3 Pilot Study Implementation

Implementation activities which were conducted during the pilot study are described in the following subsections.

# 2.3.1 Access Agreements

An agreement for accessing the Dickert property was executed for the area of the proposed ISERD pilot study activities prior to conducting any of the pilot study field work.

# 2.3.2 Monitoring Well and Injection Well Permitting

A monitoring well permit application was submitted to SCDHEC Bureau of Land and Waste Management on July 8, 2021 for construction of observation wells for each pilot test area. SCDHEC issued Monitoring Well Approval # MW-12873 in written correspondence dated July 9, 2021. Also, a Class V.A. SCDHEC underground injection control (UIC) permit, to construct and operate the ISCO and ERD pilot study DPT injection wells, was obtained from SCDHEC prior to conducting any pilot study activities. Copies of the monitoring well permit and UIC permits are included as **Attachments A and B**, respectively.

# 2.3.3 Utility Clearance

Underground utility clearances were conducted prior to any subsurface work associated with the pilot study (i.e., installation of temporary monitoring wells and installation of DPT injection points). Two utility surveys were performed to identify all major above-grade and below-ground private and public utilities entering or crossing the Site; these surveys were performed using the South Carolina One Call Service and also through a private utility locator company. Subsurface utilities and other unknown anomalies within the ISCO and ERD pilot study areas were located and marked with high visibility flagging and/or paint by the private utility locating service.

#### 2.3.4 Observation Well Installation and Development

Three new observation wells (ISCO-OBSW-1S, ERD-OBSW-1S, ERD-OBSW-1I) were installed in August 2021 as part of pilot study activities. Based on the general Site groundwater flow direction to the west-northwest for both the shallow and intermediate groundwater zones and the calculated groundwater flow velocities of 18.25 ft/yr in the shallow zone and 10.95 ft/yr in the intermediate zone, ISCO-OBSW-1S was installed approximately 15 to 20 feet northwest of TMW-31 and outside of the Main Building. ERD-OBSW-1S was installed approximately 15 feet northwest of MW-10, and ERD-OBSW-1I was installed approximately 10 feet northwest of MW-10I based on the slower groundwater flow velocity associated with intermediate zone groundwater. **Figures 2-1, 2-2, and 2-3** show the locations of ISCO-OBSW-1S, ERD-OBSW-1S, and ERD-OBSW-1I, respectively.

The observation wells were installed using rotosonic drilling techniques. ISCO-OBSW-1S was installed to depth of 20 ft bgs and consisted of one-inch diameter Schedule 40 polyvinyl chloride (PVC) riser pipe attached to 10 ft of 0.010-inch circum-slotted Schedule 40 PVC well screen set from 10 to 20 ft bgs. ERD-OBSW-1S was installed to depth of 30 ft bgs and consisted of one-inch diameter Schedule 40 PVC riser pipe attached to 10 ft of 0.010-inch circum-slotted Schedule 40 PVC well screen set from 20 to 30 ft bgs. ERD-OBSW-1I was installed to depth of 35 ft bgs and consisted of one-inch diameter Schedule 40 PVC riser pipe attached to 10 ft of 0.010-inch circum-slotted Schedule 40 PVC well screen set from 30 to 35 ft bgs.

The screen for all new wells was placed at the bottom of the boring, and a washed silica sand filter pack was emplaced in the boring annulus around the outside of the screen from the bottom of the well to 2 or 2.5 ft above the top of the well screen. The sand filter pack was used to stabilize the formation and to help yield a less turbid groundwater sample. A 2 ft thick (minimum) bentonite seal was installed on top of the sand filter pack to seal the wells at the desired level. The well annulus was grouted to the existing ground surface with a cement/bentonite grout mixture. All wells were flush mount and set in two-ft by two-ft by six-inch thick concrete pads. Soil cuttings generated during the well boring advancement and well construction were contained in 55-gallon Department of Transportation (DOT)-approved drums. Boring logs and monitoring well installation details for ISCO-OBSW-1S, ERD-OBSW-1S, and ERD-OBSW-1I, along with the DHEC Form 1903 water well records, are included in Attachment C.

Following installation, the observation wells were allowed to equilibrate and maintain a steady water level. The wells subsequently were developed to remove gross sands and sediments generated during well installation activities and to allow the sand filter pack to settle and compact around the well screens. A submersible pump was used to develop each of the newly installed wells. The submersible pump was used to surge and purge the screened interval, removing gross sands and sediments that had accumulated in the well during installation. Development water from each well was collected in 55-gallon DOT-approved drums. Each drum was transported to a designated staging area on the Valmont property.

Water quality parameters including pH, specific conductance (SC), temperature, and turbidity were monitored and recorded during the development process. Well development was considered complete when visible gross materials had been removed from the well and water quality parameters had stabilized to within 10%. Following development, the locations and elevations of the wells were surveyed by a South Carolina licensed surveyor on August 26, 2021. Copies of the well development records and the survey data are included in **Attachment C**.

#### 2.3.5 Baseline Groundwater Sampling Event

Upon completion of observation well installation and development activities, a baseline groundwater sampling event was conducted on August 19 and 20, 2021. This baseline event was performed for both pilot study areas and prior to the planned DPT injection activities, to provide baseline CVOC and biogeochemical data. These data served as a baseline for subsequently monitoring the effectiveness of the pilot study injection events. Site monitoring well construction details, including existing pilot study area wells MW-10, MW-10I, and TMW-31 and background well MW-2, are provided in **Table 2-1**.

Low-flow purging and sampling of eight monitoring wells (MW-2 as background well, TMW-29, TWM-31, ISCO-OBSW-1S, MW-10, ERD-OBSW-1S, MW-10I, ERD-OBSW-1I) was conducted in accordance with applicable USEPA standard operating procedures using a peristaltic pump with Teflon®-lined polyethylene tubing. New tubing was used at each monitoring well to eliminate the potential for cross-contamination between monitoring locations. Purge rates ranged from 100 to 500 milliliters per minute to prevent excessive drawdown. Groundwater field indicator parameters were measured and recorded during well sampling. The groundwater field indicator parameters include pH, SC, dissolved oxygen (DO), oxidation reduction potential (ORP), temperature, and turbidity. The color of the collected groundwater sample also was recorded. Active ISCO product RemOx®S is deep purple in color in groundwater, and that color served as an indicator of the presence of residual amounts of the oxidant in post-injection sampling events. Water quality instrumentation was calibrated prior to the baseline sampling event. A copy of the groundwater sample collection record for the August 2021 baseline sampling event is included in **Attachment D**.

The baseline groundwater samples were submitted to a State of South Carolina-certified analytical laboratory, Pace Analytical Services (Pace) in West Columbia, SC and Microbial Insights, Inc. in Knoxville, Tennessee. Sample collection containers were labeled with appropriate identifying information including sample location, sample identification, collection date and time, laboratory analyses to be performed, sampler's initials, and type of preservative. Samples were placed on ice immediately after collection. Chain of custody forms and samples were packed in coolers with ice. Custody seals were affixed to the lid interface of each cooler to ensure that the samples had not been tampered with. Coolers were hand-delivered to the Pace facility on the same day that sampling was completed. Samples analyzed for microbial parameters were shipped to Microbial Insights the same day of collection for delivery the following day.

The requested laboratory analysis for the ISCO pilot study and ISERD pilot study are described in the following subsections.

#### 2.3.5.1 ISCO Baseline Sampling Event Analytical Parameters

The ISCO pilot study baseline groundwater samples were analyzed for VOCs utilizing USEPA Method SW-846 Method 8260D. Additionally, the groundwater samples were analyzed for total dissolved solids (TDS) via Method 2540C, and chloride by Method 9056A. **Table 2-2** specifies the baseline and ISCO groundwater monitoring program, and **Figure 2-1** shows the locations of the ISCO pilot study monitoring wells that were sampled during for the pilot study.

#### 2.3.5.2 ISERD Baseline Sampling Event Analytical Parameters

All ISERD pilot study baseline groundwater samples were analyzed for VOCs utilizing USEPA Method SW-846 Method 8260D. Additionally, biogeochemical parameters were collected for the ISERD groundwater samples and included nitrate, nitrite, sulfate, and chloride by USEPA Methods 300.0/353.2, dissolved (laboratory filtered) and total iron and dissolved and total manganese by USEPA Method 6010D, methane/ethane/ethane/ethene by USEPA Method RSK-175, alkalinity by SM 2320B, and total organic carbon (TOC) by SM 5310C. The collected ISERD groundwater samples also were analyzed for *Dehalobacter spp (DHB)*, *DHC* and specific enzymes (functional genes) responsible for reductive dechlorination of CVOCs using Census® analysis. Census® analysis uses a molecular biological tool called quantitative polymerase chain reaction for enumeration of specific microorganisms and/or genes encoding specific biological functions. *DHB* can degrade TCE to cis-1,2-DCE, whereas *DHC* can perform complete degradation (i.e., TCE to ethene). **Table 2-2** summarizes the baseline ERD groundwater monitoring program, and **Figures 2-2 and 2-3** show the locations of the ERD pilot study monitoring wells which were sampled for shallow and intermediate zone groundwater, respectively.

#### 2.3.6 Pilot Study Injection Event

The following subsections describe injection event details which were implemented for the ISCO and ERD pilot study.

#### 2.3.6.1 ISCO Injection Details - Pilot Study

The remediation firm Redox Tech was subcontracted to conduct the injection of RemOx®S via DPT with oversight provided by AECOM. As recommended by Redox Tech and verified by AECOM, a total of 827 pounds of RemOx®S was mixed with water to make 2,250 gallons of permanganate solution, resulting in an approximate 4% by weight RemOx®S treatment solution. This solution was subsequently injected into three temporary DPT points to treat shallow zone groundwater in the vicinity of well TMW-31. The targeted treatment area encompassed approximately 550 square ft and assumed an 8-ft ROI for each DPT injection point. At each of the three temporary DPT locations, the treatment solution containing approximately 276 pounds of RemOx®S and 750 gallons of water was injected using a chemical grout pump. Each DPT injection was conducted over a 10-ft vertical interval from 10 to 20 ft bgs. The RemOx®S solution was injected, in 2-ft intervals beginning at the bottom of the desired treatment interval. This bottom-up injection method equates to 5 vertical intervals per treatment point location and 15 injection intervals overall.

The RemOx®S was shipped to the site immediately prior to the ISCO injection event. To prepare the RemOx®S mixture, water was obtained from a fire hydrant owned by the City of Newberry, located in front of the Valmont property, after installation of a backflow preventer and water meter. The water was contained in a mobile trailer-mounted holding tank or similar apparatus and subsequently transported from the fire hydrant location to the location of the proposed ISCO DPT injections.

The RemOx®S was delivered to the site as a solid in 50-pound buckets. Prior to injection, the appropriate amount of RemOx®S was added to the water holding tank. A stainless-steel paddle mixer was then used to thoroughly mix the water and RemOx®S within the holding tank. Once the solution was fully mixed, a chemical grout pump was used to inject the required quantity of ISCO solution through the DPT rods. Injection was conducted in a bottom-to-top approach at each location.

ISCO injections were conducted on September 20 and 21, 2021. A Geoprobe® series 7822 rig was used to drive the DPT rods to the anticipated deepest injection interval (20 ft bgs). Injection occurred in two foot "lifts" starting at

the bottom of the desired treatment interval. This process was continued until all five intervals at the particular ISCO DPT injection location (total of 750 gallons of RemOx®S solution per injection location) had been delivered into the subsurface. The injection depth intervals for each DPT injection location were 18-20 ft bgs, 16-18 ft bgs, 14-16 ft bgs, 12-14 ft bgs, and 10-12 ft bgs. According to Redox Tech, the average injection pressure for each interval averaged 20.3 pounds per square inch gauge (psig) with a maximum anticipated injection pressure of 30 psig. The average calculated flow rate of the injected solution was 5.9 gallons per minute (gpm). There was no indication of daylighting or geoprobe refusal during the ISCO injections. All DPT injection points were abandoned using a Portland cement or Portland cement/bentonite grout. The concrete (where appropriate) was patched to match the pre-existing surface.

**Figure 2-1** shows the ISCO pilot study area and the associated DPT injection locations. The ISCO injection field report and completed DHEC 1903 forms are included in **Attachment E**.

#### 2.3.6.2 ISERD Injection Details – Pilot Study

Redox Tech was also subcontracted to conduct the injection of ABC®+Olé for the ISERD injection portion of the pilot study with oversight provided by AECOM. Five temporary shallow zone and five temporary intermediate zone groundwater DPT injection points were used to inject the ABC®+Olé solution in a barrier-type formation upgradient of monitoring well MW-10. As previously described, the DPT injections for MW-10I had to be modified to accommodate DPT refusal at the originally proposed injection locations. In total,10,000 pounds of ABC®+Olé in 5,000 gallons of water was injected.

The ISERD injectate chemicals were shipped to the site immediately prior to the injection event. At each of the ten targeted DPT locations, an approximate 19% by weight solution of ABC®+Olé was used. A 19% by weight solution equates to approximately 1,000 pounds of ABC®+Olé mixed with 500 gallons of water per DPT injection location. Each injection in the shallow zone was performed over a 10-ft vertical interval from 20 ft bgs to 30 ft bgs for the targeted shallow zone groundwater. Each injection in the intermediate zone was performed over a 6-ft vertical interval and from 30 ft bgs to 36 ft bgs for the targeted intermediate zone groundwater.

In addition, approximately 100 pounds of magnesium oxide was added per DPT injection location for pH buffering, and guar was used to achieve hydraulic emplacement of the ABC®+Olé mixture at each injection point.

In preparation for injection, the stock ingredients for ABC®+Olé were mixed together. Water was obtained from a fire hydrant located in front of the facility, after installation of a backflow preventer and water meter. The water was pumped into a mobile, trailer-mounted 2000-gallon polyethylene holding tank and then transported from the fire hydrant location to the site of the ISERD DPT injections. ABC®-Olé, delivered to the Site as a concentrated liquid in plastic totes, was staged near the DPT injection locations and gravity drained into the holding tank containing the water. A stainless-steel paddle mixer was used to thoroughly mix the water and ABC®-Olé within the holding tank.

Following thorough mixing, 100 gallons of the ABC®-Olé stock mixture were pumped using a double diaphragm pump from the 2000-gallon polyethylene holding tank into two 75-gallon feed hoppers located on an open trailer that was staged next to the ERD injection locations. Each feed hopper contained 50-gallons of ABC®-Olé solution. ZVI, which comes in 50-pound buckets, was staged next to the feed hopper trailer. One bucket of ZVI and five pounds of magnesium oxide were added to each 75-gallon feed hopper. These materials were thoroughly mixed with the ABC®-Olé stock solution using shear mixing arms located in each of the 75-gallon feed hoppers, thereby creating the ABC®+Olé solution to be injected. Once the solution was fully mixed and suspended, a chemical grout pump was used to inject all 100 gallons of the ABC®+Olé slurry through DPT rods set to the appropriate interval within the subsurface.

ISERD injections were conducted during the period of September 22 through 24, 2021. For each shallow injection point interval, 100 gallons of the ABC®+Olé solution were injected at each of the five intervals for the five injection locations. Injection was conducted in a bottom-to-top approach, for a total of 2,500 gallons injected into the shallow zone. For the intermediate zone, the target depth was 36 ft bgs. However, at two of the five injection locations, geoprobe refusal occurred before the 36-ft depth was reached. As a result, the volume of injectant solution varied among the intervals and injection points. The target volume was 167 gallons of solution per injection interval across each 6-foot target zone, but two intervals at injection location ERD-I2 received either 83 or 84 gallons, and two intervals at injection location ERD-I3 received 250 gallons.

A Geoprobe® Model 7822 track rig was used to drive the DPT rods to the specified injection intervals. Injections occurred in two foot "lifts" starting at the bottom of the desired treatment interval. The DPT rods were subsequently pulled upwards to each successive interval until all five intervals at the ISERD DPT injection location were completed (total of 500 gallons of ABC®+Olé solution per injection location). The intervals for each DPT injection location that targeted shallow zone groundwater treatment in the vicinity of MW-10 were 28-30 ft bgs, 26-28 ft bgs, 24-26 ft bgs, 22-24 ft bgs, and 20-22 ft bgs. The target intervals for each DPT injection location in intermediate zone groundwater in the vicinity of MW-10I were 34-36 ft bgs, 32-34 ft bgs, and 30-32 ft bgs. However, as previously mentioned, geoprobe refusal occurred at two locations (ERD-I2 at 34.5 ft bgs and ERD-I3 at 34 ft bgs). The five intermediate zone DPT injections were performed first, followed by the shallow zone DPT injections.

The same mixing and injection process was repeated for each of the ten temporary ISERD DPT injection points. According to Redox Tech, the average injection pressure for each interval was 66 psig with a maximum injection pressure of 100 psig. The average calculated flow rate of the injected solution was 14.5 gpm. There was no indication of daylighting or geoprobe refusal during the ISERD injections. All DPT injection points were abandoned using a Portland cement or Portland cement/bentonite grout.

**Figures 2-2 and 2-3** show the ISERD pilot study area and the associated DPT injection locations for shallow zone and intermediate zone groundwater, respectively. The ISERD injection field report and completed DHEC 1903 forms are included in **Attachment E**.

#### 2.3.6.3 ISERD Injection Details - Bioaugmentation Event

Based on the results of the BSTS described in **Section 1.4** of this PSWP, bioaugmentation was conducted on December 7 and 8, 2021, approximately 75 days after the initial ABC®+Olé injection event. The purpose of waiting 75 days for bioaugmentation was to allow enough time for the targeted shallow and intermediate zone groundwater near MW-10 and MW-10I to become sufficiently conditioned (i.e., achieve low DO and ORP and neutral pH) for the injection of the RTB-1 microbial culture to promote ISB. To assist with the bioaugmentation process, additional carbon source in the form of ABC®-Olé was injected concurrently with the RTB-1.

For the bioaugmentation event, water was again obtained from the fire hydrant in front of the main building. The water was filled into the mobile, trailer-mounted polyethylene holding tank and then transported from the fire hydrant location to the area of the previous ABC®+Olé DPT injections. ABC®-Olé was staged near the bioaugmentation DPT injection locations and gravity drained into the holding tank containing the water. The ratio of the mixture was 100 pounds of ABC®-Olé in 100 gallons of water per injection location. A stainless-steel paddle mixer was used to thoroughly mix the water and ABC®-Olé within the holding tank. Per a discussion with Redox Tech on December 1, 2021, no sodium sulfite or ZVI was added to the mixture for the bioaugmentation injection event. **Table 2-3** provides a summary of the quantity of ISERD and bioaugmentation materials injected during the December 2021 bioaugmentation event.

Once the solution was fully mixed, a chemical grout pump was used to inject the ISERD solution through DPT rods set to the appropriate interval within the subsurface. Halfway through injection at each depth interval, 0.4 liters of RTB-1 was "slipstreamed" into the DPT rod to promote bioaugmentation. Subsequently, the remaining ABC®-Olé solution was injected within the same interval.

A Geoprobe® Model 7822 track rig was used to drive the DPT rods to the specified injection interval. The five shallow zone injection points were advanced to total depths ranging from 26 to 30 ft bgs; four of the borings encountered refusal before reaching the targeted depth of 30 ft target. The bioaugmentation mixture volume for each location was injected from the total boring depth up to 20 ft bgs. The five intermediate zone injection points were advanced to total depths ranging from 37 to 32 feet bgs. Four of the five borings encountered refusal before reaching the targeted depth of 37 ft. The shallow zone injections were performed first, followed by the five intermediate zone injections. Several of the borings were repeated due to Geoprobe refusal prior to reaching the target depths. Daylighting of the injectant was observed at one of the intermediate zone borings. All DPT injection points were abandoned using a Portland cement or Portland cement/bentonite grout.

### 2.3.7 Post-Injection Performance Monitoring Program

Post-injection performance monitoring was conducted on a quarterly basis for one year to evaluate the effectiveness of the pilot study. **Table 2-2** contains a summary of the post-injection performance monitoring program as originally designed. Monitoring events actually occurred at the end of October 2021, in early-March 2022, in mid-July 2022, and mid-December 2022. The first post-injection performance monitoring event was conducted approximately 30 days after completion of the ISCO and ISERD injection events. The primary purpose of this initial monitoring event was to verify that groundwater has been sufficiently conditioned (i.e., achieved low DO and ORP and neutral pH) in the ERD pilot study area prior to the injection of RTB-1, which occurred in early-December 2021. Subsequent performance monitoring events were used to track changes in groundwater quality following injection, to assess the effectiveness of the ISCO and ISERD injection events, and to evaluate progress towards reducing the TCE concentrations in groundwater within the pilot study areas.

# 2.3.8 Equipment Decontamination

Equipment decontamination activities were conducted on field equipment that contacted site media to prevent cross-contamination. Pressure washing and/or steam cleaning activities were conducted on non-sampling equipment (e.g., drill rods, DPT rods) using a portable pressure/steam washer.

New groundwater sample tubing was used for sampling each monitoring well. Water level measurement tapes were rinsed with distilled water between collecting water level elevations at the various wells.

# 2.3.9 IDW Management

Investigation-Derived Waste (IDW) generated as part of the pilot study consisted of soil cuttings, well development water, and decontamination water as well as purge water generated during monitoring well sampling events. IDW was containerized in 55-gallon DOT-approved drums. The drums were labeled to indicate the type of material contained, site location, investigation point of origin, and date on which materials were initially placed into the drum. Drums filled were secured at the end of each day in the designated area on site. Grab samples of IDW soil and water from well installation, equipment decontamination, and well development were collected on August 26, 2021 from the drums and analyzed for waste characterization parameters. Soil and aqueous IDW was analyzed for VOCs by USEPA SW-846, Method 8260D, semivolatile organic compounds (SVOCs) by USEPASW-846, Method 8270E, and metals by USEPA SW-846, Methods 6010D and 7471A. The drums were staged at the facility pending

characterization, profiling, manifesting, and off-Site disposal. The lab data indicated that the IDW was not a hazardous waste; therefore, the wastes were maintained on site until January 2023, when the IDW from 2021 and all other purge water IDW from sampling events was manifested and shipped off site (see **Section 3.3**). Other non-hazardous IDW (e.g., personal protective equipment, paper towels, trash) was bagged and transported off-Site for disposal as municipal waste.

### 2.3.10 Pilot Study Update Summary

The Pilot Study Update Summary (PSUS) was prepared and submitted to SCDHEC in December 2022. This summary report included a description of temporary observation well installation and development, pilot study injection event activities, baseline and post-injection performance monitoring activities, associated analytical results through July 2022, and preliminary conclusions. The December 2022 monitoring event had not been conducted at the time the PSUS (AECOM, 2022) was submitted.

# Section 3. Pilot Study Results

The following subsections discuss the site hydrology with the study areas, post-injection pilot study monitoring results, and remedial action derived waste disposal.

# 3.1 Site Hydrogeology

The sitewide groundwater monitoring event data from February 2022 were used to evaluate site groundwater flow directions and groundwater velocity. Section 3.1 of the Sitewide Groundwater Monitoring Report addressed those calculations and makes a comparison with previous data. Groundwater flow directions in February 2022 were to the west-northwest in the shallow zone (**Figure 1-3**), to the west-northwest in the intermediate zone (**Figure 1-4**), and to the west in the bedrock zone (**Figure 1-5**). The average groundwater flow velocities in the shallow and intermediate zones were 18.9 feet per year (ft/yr) and 13.1 ft/yr, respectively. The values determined in February 2022 are of similar magnitude compared with calculated values for the previous groundwater elevation measurement events. Groundwater flow velocities within each interval have varied historically based on temporal variations in water levels.

# 3.2 Pilot Study Performance Monitoring

The baseline groundwater monitoring event was conducted on August 19 and 20, 2021, one month prior to the pilot study injection event conducted September 20-24, 2021. As discussed in Section 2.3.5, the baseline event was performed to provide baseline CVOC and biogeochemical data. Monitoring wells in both pilot study areas were sampled. Groundwater performance monitoring of both pilot study areas subsequently occurred in late-October 2021, early-March 2022, mid-July 2022, and mid-December 2022. Field and analytical results are discussed in this section.

# 3.2.1 Field Parameter Results Summary

The following field analytical parameters were measured in monitoring wells sampled for VOCs: temperature, pH, SC, DO, ORP, and turbidity. Field parameters were measured for the baseline monitoring event and for each performance monitoring event. Field data were recorded on the groundwater sample collection records. Copies of those records for the baseline and performance monitoring events are included in **Attachment E.** Laboratory analytical data from the PS are summarized in **Tables 3-1 and 3-2**.

DO is the most preferred terminal electron acceptor relative to others (nitrate, ferric iron, sulfate) that can be used by microorganisms for the biodegradation of organic carbon. Organic carbon includes naturally occurring and anthropogenic sources. If DO is present in groundwater at concentrations above 0.5 milligrams per liter (mg/L), aerobic biodegradation is the predominant microbial process. During this process, microorganisms naturally present in groundwater couple the oxidation of an electron donor (usually organic carbon) with the reduction of an electron acceptor (AFCEE et al., 2004).

Reductive dechlorination is the primary process by which chlorinated solvents such as TCE are biologically degraded. This is an anaerobic process. Anaerobic bacteria generally cannot function at DO concentrations greater than 0.5 mg/L. After depletion of DO, anaerobic microorganisms will use nitrate as an electron acceptor, followed by ferric iron, sulfate, and carbon dioxide (methanogenesis). Each sequential reaction drives the ORP of the groundwater further downward and into the range within which reductive dechlorination can occur.

ORP is a measure of the oxidation-reduction (redox) state of the aquifer, and it is an indicator of the relative tendency of the groundwater to accept or transfer electrons. ORP values in groundwater can vary from as low as -400 millivolts (mV) to as high as 800 mV. As terminal electron acceptors and nutrients are depleted, the ORP of the groundwater decreases (i.e., becomes more negative). Reductive dechlorination is possible at less than 50 mV and is more likely at less than -100 mV.

The pH of groundwater influences the presence and activity of the microbial population in groundwater. Historical investigations and current groundwater monitoring conducted at the Site generally confirm that a lowered pH and oxidative conditions dominate the shallow and intermediate zone aquifers. Microorganisms capable of degrading TCE and its daughter products generally prefer pH values between 6 and 8 S.U. A pH below 5.5 is generally considered inhibitory to degradation by *DHC*. The pH can be an issue in ERD applications when the targeted ambient aquifer pH is either above or below this preferred range. As a result, a neutralization agent (magnesium oxide) was injected concurrently with the organic carbon source during the ISERD pilot study injections.

Field measurements of DO, ORP, and pH obtained during purging efforts in the performance monitoring well network were evaluated to determine if oxidative conditions remained present in the ISCO PS area and if reducing (anaerobic) conditions remained present within the ISERD PS area during the 15 month period following the completion of the PS injection event that occurred in September 2021. Field results are summarized below.

#### 3.2.1.1 Baseline Field Parameters

A copy of the groundwater sample collection record for the baseline monitoring event is included in **Attachment D**. The stabilized DO values measured during the August 2021 baseline monitoring event ranged from 3.64 to 4.53 mg/L at the three monitoring points (TMW-29, TMW-31, and ISCO-OBSW-1S) located in the ISCO PS area. DO values were 1.72 and 2.68 mg/L at the two monitoring points (MW-10 and ERD-OBSW-1S) located in the shallow zone groundwater ISERD PS area, and DO values were 1.73 and 2.50 mg/L at the two points (MW-10I and ERD-OBSW-1I) located in the intermediate zone groundwater ISERD PS area. These concentrations indicate aerobic conditions were present in both PS areas; however, the DO concentrations were low enough (<3.0 mg/L) that following the injection of the ISERD amendments in September 2021, the DO concentrations were able to be lowered in the ISERD PS area.

The stabilized ORP values measured during the baseline sampling event ranged from -119.6 to +185.7 mV at the three monitoring points in the ISCO PS area. ORP values were +150 and +153 mV at the two monitoring points in the shallow zone groundwater ISERD PS area, and +82.7 and +158 mV at the two points in the intermediate groundwater zone ISERD PS area. The negative ORP occurred at the newly installed observation well in the ISCO PS area. The naturally occurring positive ORP values at most locations indicate that while the site groundwater was generally conducive for chemical oxidation, it was not generally conducive to reductive dechlorination without some form of field enhancement(s).

The pH values observed during the September 2021 baseline monitoring event ranged from 4.5 to 5.72 S.U. at the three monitoring points in the ISCO PS area. Measured pH values were 5.17 and 5.21 S.U. at the two monitoring points in the shallow groundwater zone ISERD PS area; recorded pH values were 5.35 and 5.41 S.U. at the two points in the intermediate zone groundwater ISERD PS area. The baseline pH data indicated that the ISERD performance monitoring wells would all need to receive pH buffering (to adjust the pH range to between 6 and 8 S.U.) during the September 2021 pilot study injection event.

#### 3.2.1.2 Performance Monitoring Field Parameters

Copies of the groundwater sample collection records for the performance monitoring events are included in **Attachment D**. The stabilized DO values measured during the March 2022 October 2021 through December 2022 performance monitoring period ranged from 4.14 to 8.01 mg/L at the three monitoring points in the ISCO PS area. The DO values measured are not as important for ISCO as for ERD but are listed because increased DO values in comparison to background indicate the presence of active chemical oxidant. Stabilized DO values ranged from 0.10 to 0.87 mg/L at the two monitoring points in the shallow zone groundwater ISERD PS area. The December 2022 DO concentrations in the shallow zone groundwater, 15 months after the injection event, remained low at 0.27 mg/L and 0.71 mg/L in MW-10 and ERD-OBSW-1S, respectively. DO concentrations ranged from 0.08 to 0.48 mg/L at the two points in the intermediate zone groundwater ISERD PS area. The December 2022 DO concentrations in the intermediate zone groundwater, 15 months after the injection event, remained low at 0.25 mg/L and 0.0.08 mg/L. The DO concentrations measured for both the shallow and intermediate zones indicate that groundwater conditions remain favorable for anaerobic biodegradation to occur 15 months after completion of the injection event.

The stabilized ORP values measured during the March 2022 through December 2022 performance monitoring period ranged from +223 to +869 mV at the three monitoring points in the ISCO PS area. The ORP values are not as important for ISCO as for ERD but are listed because increased ORP values in comparison to background indicate the presence of active chemical oxidant. Stabilized ORP values ranged from -211 to +198 mV at the two monitoring points in the shallow zone groundwater ISERD PS area, and ORP ranged from -580 to +59 mV at the two points in the intermediate zone groundwater ISERD PS area. For all wells in the ISERD PS area, the ORP was initially reduced, and negative ORP was achieved at three of the four wells. The ability to maintain lowered ORP values that are conducive for reductive dechlorination to occur was observed at two of the wells (MW-10 and ERD-OBSW-1I). In general, the results of the ISERD PS indicate that conditions remained favorable for reductive dechlorination of CVOCs to occur with the exception of ERD-OBSW-1S.

The stabilized pH values observed during the October 2021 through December 2022 performance monitoring period ranged from 4.49 to 6.09 S.U. at the thee monitoring points in the ISCO PS area. The pH values are not as critical for ISCO as for ERD but are listed for comparison. Stabilized pH values ranged from 5.47 to 10.03 S.U. at the two monitoring points in the shallow zone groundwater ISERD PS area. The December 2022 pH concentrations, 15 months after the PS injection, were 6.86 S.U. and 5.47 S.U., the first pH reading being above the lower limit of acceptable range of greater than 5.5 S.U. for favorable conditions for anaerobic biodegradation to occur. The pH value of 5.47 S.U. indicates that additional buffering is necessary in the vicinity of this well in order to maintain more ideal conditions for reductive dechlorination to occur. Stabilized pH values ranged from 5.66 to 9.76 S.U. at the two points in the intermediate zone groundwater ISERD PS area. The December 2022 pH concentrations, 15 months after the PS injection event, were 6.06 and 7.50 S.U., both above the lower limit of greater than 5.5 S.U. for reductive dechlorination to occur. The ISERD PS data indicates that with proper amendments, the pH can be raised to within the optimal range for anaerobic degradation; however, to maintain the pH above the lower limit of the optimal range for reductive dechlorination, periodic injection of pH buffer may be required. Also, the elevated pH values observed in MW-10 and ERD-OBSW-1I indicate that too much pH buffer can be added, which is also detrimental to reductive dechlorination. It should be noted that the ZVI injected for the ISERD PS, which promotes abiotic degradation, is not affected by the pH.

# 3.2.2 Microbial Data Summary

Microbial data were collected periodically from the ISERD pilot study area monitoring wells during the period of August 2021 to December 2022, for Census® analysis and evaluation. Census® analysis uses a molecular biological tool called quantitative polymerase chain reaction for enumeration of specific microorganisms and/or genes encoding specific biological functions. For this pilot study, Census® quantification was used to look for a

key group of dechlorinating bacteria, *DHC*. In addition, *Dehalobacter spp* (*DHB*) and key functional genes were also analyzed, including tceA reductase and vinyl chloride reductase. *DHB* can degrade TCE to cis-1,2-DCE, whereas *DHC* can perform complete degradation (i.e., TCE to ethene). Proliferation of DHC occurs most readily in an aquifer pH between 6 and 8 S.U. Groundwater samples collected from the four ISERD performance monitoring wells were analyzed for *DHB*, *DHC*, and specific functional genes, during the baseline monitoring event of August 20, 2021, approximately one month prior to the ISERD injections. During the performance monitoring period after the injection event, three more microbial monitoring events were conducted (October 2021, March 2022, and December 2022). The bioaugmentation event was conducted December 7-8, 2021. Cell density results for the four ISERD monitoring wells are shown in **Table 3.2**. Data reports containing the Census® results are included in **Attachment F**.

For the baseline event in August 2021, *DHB* were observed in three of the four wells (all but ERD-OBSW-1S). The cell density occurred at relatively low concentrations (i.e., between 1.7 and 130 cells per milliliter [cells/mL]). Only groundwater at MW-10I contained detectable *DHC*, at 3.2 cells/mL, during the baseline sampling event. In the October 29, 2021 samples, collected approximately five weeks after the ISERD injection event, *DHB* was reported in the groundwater samples from all four ISERD PS wells, and *DHC* was present at low concentrations in all but ERD-OBSW-1S. The cell density increased for both *DHB* and *DHC* at wells MW-10 and ERD-OBSW-1I, with *DHB* and *DHC* counts of 28,500 and 6,260 cells/mL at MW-10, respectively. At ERD-OBSW-1I, *DHB* and *DHC* counts of 11,300 and 105 cells/mL were detected, respectively. At ERD-OBSW-1S, no *DHC* was reported, but the *DHB* count was reported at 20,700 cells/mL. At MW-10I, *DHB* was detected at 521 cells/mL, and *DHC* was detected at 1 cell/mL. These results indicate that stimulation of *DHB* within the vicinity of the four ISERD PS wells was caused by the injection of the ABC®+Olé in September 2021. Some stimulation of DHC was also created by the September 2021 injection event.

During the March 2022 and December 2022 performance monitoring events, the cell counts were lower or non-detect for both *DHB* and *DHC*, when compared with the October 2021 post-injection monitoring with two exceptions. In December 2022, *DHB* increased to 11,700 cells/mL, compared with the 130 cells/mL reported in March 2022 at ERD-OBSW-1S. At MW-10I, the DHB was detected at 1,240 cells/mL in December 2022, compared to 391 cells/mL detected in March 2022. These results indicate that the bioaugmentation event conducted in December 2021 was not successful at increasing the *DHC* population in the vicinity of any of the ISERD monitoring wells. One potential reason is that pH near two of the targeted wells (MW-10 and ERD-OBSW-1I) was above 8 S.U., which is not conducive for *DHC* to flourish. Furthermore, stimulation of *DHB* near all four of these wells occurred following the September 2021 but has declined over time possibly due to the lack of available TOC. TOC is currently low at ERD-OBSW-1S and MW-10I.

The only functional gene (vinyl chloride reductase) detected during the ISERD PS occurred in October 2021 when vinyl chloride reductase was detected in groundwater collected at ERD-OBSW-1I at 13.7 cells/mL (**Table 3-2**).

# 3.2.3 VOC and Other Parameter Data Summary

Baseline VOC samples were collected in August 2021. Groundwater monitoring occurred in late-October 2021, early-March 2022, mid-July 2022, and mid-December 2022 for post-injection performance monitoring. Samples were analyzed for Target Compound List-Volatile Organic Compounds (TCL-VOCs) using SW-846 Method 8260D. Samples from wells located within the ISCO PS area were also analyzed for chloride and TDS. Groundwater samples collected from the ISERD study area were analyzed for electron acceptors, electron donors, TOC, alkalinity, dissolved gases, and biological parameters (discussed in Section 3.2.2). Samples were sent to Pace in West Columbia, South Carolina for analysis. Results are summarized in **Tables 3-1 and 3-2**, for the ISCO and ISERD pilot tests, respectively. The associated laboratory analytical reports are contained in **Attachment G**.

#### 3.2.3.1 ISCO PS Results

The analytical data for the Site background well (MW-2) and for samples collected from the three monitoring wells in the ISCO treatment area (TMW-29, TMW-31, and ISCO OBSW-1) are contained in **Table 3-1**. Field observations, regarding the color of the groundwater when sampled, are also included in discussion of the ISCO PS results. As indicated in the PSWP, the ISCO injectate (KMnO<sub>4</sub>) when activated has a deep purple color. That color, when present in a groundwater sample, indicates that some of the oxidant is still remaining in the sample. In the following paragraphs, the VOC and other analytical results are discussed for each ISCO PS monitoring well, for both the baseline event and the post-injection performance monitoring events.

<u>Background monitoring well MW-2:</u> MW-2 is located approximately 400 feet upgradient (east) of the ISCO injection area and outside the main and pole winder buildings (**Figure 1-3**). Groundwater from this well was sampled in August 2021 (baseline), and in March, July, and December 2022 (performance monitoring).

- Other than a low detection of styrene in the March 2022 sample, no Site-related CVOCs were detected in samples collected from this background well.
- Chloride was detected in MW-2 during the baseline sampling event at a concentration of 2.3 mg/L and in March and December 2022, at 2.2 mg/L for both events.
- TDS was reported in MW-2 as less than the reporting limit of 25 mg/L in August 2021 and then detected at 34 and 26 mg/L in the March and December 2022 samples, respectively.

<u>Sidegradient monitoring well TMW-29:</u> TMW-29 is located approximately 60 feet side gradient of the ISCO treatment area (**Figure 2-1**). It was sampled during the baseline event and in March 2022; however, the water level was too low to allow collection of samples in July or December 2022.

- TCE was detected above its MCL of 5 micrograms per liter (μg/L) in both samples: 12 μg/L during the baseline event and 9.3 μg/L in March 2022. Those concentrations were too low for chemical oxidant injections.
- Chloride was detected in both samples collected from TMW-29: 3.1 mg/L during the baseline event and 2.8 mg/L in March 2022.
- TDS was reported in TMW-29 as less than the reporting limit of 25 mg/L in August 2021 and then was detected at 51 mg/L in the March 2022 sample.

<u>Hot spot monitoring well TMW-31</u>: This well is located just inside the building (**Figure 2-1**) and is the "hot spot" well where the ISCO injection treatment effort was primarily focused.

- The color of groundwater samples collected as the monitoring efforts progressed has ranged from clear (baseline August 2021) to pink-purple in March 2022, and back to clear in July and December 2022.
- TCE was detected at 920 μg/L in the baseline sample collected from this well.
- During the first sampling event after treatment (March 2022), the TCE concentration in this well was lower (480 μg/L) than the baseline result. During the July 2022 sampling event, the TCE concentration rebounded to 860 μg/L (and to 1,200 μg/L in its duplicate sample). In the December 2022 sample, TCE increased to 3,600 μg/L. This increase could be related to matrix back diffusion of TCE within the treatment zone of influence and/or flushing effects from groundwater elevation fluctuations over the time that performance monitoring was conducted.
- Chloride concentrations have been relatively consistent in the samples collected from TMW-31, ranging between 5.6 and 6.1 mg/L.
- TDS concentrations increased from 41 mg/L in the baseline sample to 65, 62, and 55 mg/L in March, July, and December 2022, respectively.
- Nitrate was only analyzed in July 2022 and was present at 1.3 mg/L.

<u>Downgradient observation well ISCO-OBSW-1:</u> This well was installed downgradient and in close proximity to TMW-31 and the injection area. It is located outside of the building (**Figure 2-1**).

- The color of groundwater samples collected from this well changed from clear (baseline event August 2021) to purple (July 2022) and then to light purple (December 2022). This indicates that some active chemical oxidant is still present in the vicinity of this well.
- TCE was detected in the baseline sample at a concentration of 960 μg/L, but it was not detected in any of the three samples collected from this well since the ISCO injection event was conducted in September 2021. The TCE degradation compound, cis-1,2-DCE, was detected in the baseline sample collected from this well at 6.7 μg/L. It has not been detected in any of the three samples collected from this well since the baseline event. The presence of a purple color coupled with the reduction of TCE from 960 μg/L to non-detect indicates that ISCO chemically oxidized the TCE.
- Chloride was detected in the baseline sample collected from this well at 5.7 mg/L and again in the March and December 2022 samples at 7 and 6.1 µg/L, respectively.
- TDS values increased from 67 mg/L in the baseline sample to 260 mg/L and then 340 mg/L in the March and July 2022 samples, respectively. In December 2022, TDS was detected at 110 mg/L. TDS is an indication of the presence of the oxidant. The decreasing TDS concentration and change to a light purple color in December 2022 indicates that the residual oxidant present in the ISCO PS area has decreased when compared with prior monitoring events.

#### 3.2.3.2 ERD PS Results

VOC results along with field parameters, and various indicator parameters including TOC, electron acceptors (nitrate, manganese, dissolved iron, sulfate), degradation indicators (chloride), degradation end products (dissolved gases), and biological parameters were used to evaluate the effectiveness of ISERD. As shown in **Table 3-2**, several VOCs were detected in groundwater samples collected from the four wells in the ISERD PS study area (MW-10, MW-10I, ERD-OBSW-1S and ERD-OBSW-1I) during the PS. Only three of the VOCs – TCE and its degradation compounds cis-1,2-DCE and VC – were detected above their respective MCLs. In the following paragraphs, the VOC and other analytical results are discussed for each ISERD PS monitoring well, for both the baseline event and the performance monitoring events.

Background well MW-2: See the summary presented in Section 3.2.3.1.

<u>Shallow zone monitoring well MW-10:</u> This well is located on private property north of the Valmont facility (**Figure 2-2**).

- During the ISERD portion of the PS, TCE was detected in groundwater from MW-10 at 740 μg/L (790 μg/L in the duplicate sample) during the baseline event. The detected concentrations were 600 μg/L and 590 μg/L in October 2021 and March 2022. In July 2022, the TCE concentration rebounded to 760 μg/L and then decreased to 500 μg/L in December 2022.
- Neither cis-1,2-DCE nor VC were detected in samples collected from well MW-10 through July 2022. In December 2022, when the pH had decreased to 6.86, cis-1,2-DCE and VC were both detected at low concentrations of 15 μg/L and 4.3 μg/L, respectively.
- Review of field parameters, particularly pH, indicate that the pH buffer associated with the in-situ treatment
  efforts is still present near MW-10. The pH values measured during each post injection monitoring effort
  (ranging from 10.03 to 9.85 through July 2022 and then 6.86 in December 2022) are well above the baseline
  value of 5.17.
- TOC values initially increased (4,800 mg/L in October 2021, which indicates the presence of the injected substrate), but TOC concentrations since then have declined during each subsequent monitoring event

- (250 mg/L in December 2022). The TOC, which is still above the baseline of <1 in August 2021, indicates that substrate was still present in groundwater in December 2022.
- After the injection event, the electron acceptors nitrate, iron, and sulfate increased slightly through July 2022 and then showed a decrease in December 2022 except for an increase in iron concentration. The concentrations for each of these parameters were still above their respective baseline values except for nitrate and iron. The increase in iron may be the result of the ZVI that was injected.
- The degradation indicator chloride was below the baseline value in MW-10 in all four performance monitoring events.
- Methane values continued to increase following the in-situ treatment event through July 2022, with a decline
  detected in December 2022. Ethane has not been detected in MW-10 to date. Ethene was detected in
  March and July 2022 at J-flagged estimated concentrations.
- DHC and DHB increased initially after the ISERD event was conducted in September 2021, but they have since decreased to pre-treatment values. No increase in DHC or DHB were detected following the December 2021 bioaugmentation event. None of the reductase enzymes were detected in any samples collected from MW-10 during the study. It is suspected that the elevated pH values in the vicinity of MW-10 may have had an adverse effect on the bacteria added during the December 2021 bioaugmentation injection.

<u>Shallow zone observation monitoring well ERD-OBSW-1S:</u> This observation well was installed as a shallow zone groundwater ISERD observation well approximately 15 feet downgradient (northwest) of MW-10 (**Figure 2-2**).

- TCE was detected in samples collected from this well ranging from 240 μg/L during the August 2021 baseline event, up to 410 μg/L 30 days after the injection event, and down to 150 ug/L during the July 2022 sampling event. The detected December 2022 TCE concentration was 240 μg/L. Cis-1,2-DCE values increased from 0.7 μg/L during baseline sampling event, to 86 μg/L in March 2022, and to 110 μg/L in both July and December 2022. These results are above the MCL of 70 μg/L, but it is an indication of reductive dechlorination of TCE. VC was not detected in any samples collected from ERD-OBSW-1S.
- Review of the associated field parameters, particularly the rise in pH following the ISERD injection event, indicates the pH buffering efforts had an initial effect on the targeted injection area near this well. However, the pH decreased to 5.47 in December 2022.
- TOC values initially increased in ERD-OBSW-1S but returned to near baseline conditions in July and December 2022. The electron acceptor iron increased slightly since treatment potentially from the injection of the ZVI. However, concentrations of other acceptors (nitrate and sulfate) did not noticeably change from the baseline values.
- The concentrations for the degradation compound chloride increased from its baseline value of 69 mg/L to 110 mg/L during the July 2022 sampling event and then declined to 87 mg/L in December 2022.
- Methane values continued to increase in ERD-OBSW-1S from the time of the ISERD injection event through July 2022 but decreased in December 2022. No other dissolved gases were detected in ERD-OBSW-1S during the PS.
- DHB was reported for this well following the ISERD injection event in September 2021. DHB initially increased, but they subsequently decreased in March 2022 and then rebounded in December 2022. DHC and reductase enzymes were not detected in ERD-OBSW-1 following ISERD injection in September 2021 and bioaugmentation in December 2021.

<u>Intermediate zone monitoring well MW-10I:</u> MW-10I is located on private property north of the Valmont facility (**Figure 2-3**).

The baseline TCE concentration detected was 870 μg/L. TCE was detected during post-injection performance monitoring at concentrations ranging from 1,100 μg/L in October 2021 (one month post injection), to 50 μg/L in March 2022, 57 μg/L in July 2022, and 55 μg/L in December 2022. Cis-1,2-DCE

values increased since from non-detect at the baseline event, to 690  $\mu$ g/L, 570  $\mu$ g/L, and 550  $\mu$ g/L in March, July, and December 2022, respectively. VC, which had not been detected in any previous sampling events, was detected at an estimated concentration of 0.49  $\mu$ g/L (J-flagged estimated concentration) in July 2022 and was not detected in December 2022.

- TOC values initially increased in MW-10I in October 2021 and March 2022 after the injection event but have
  declined during each subsequent monitoring event. The increase in TOC detected is likely the result of the
  September 2021 ISERD injection event and its subsequent decrease is due to the movement of the injected
  TOC away from the point of injection over time with groundwater flow.
- Dissolved and total iron values increased in MW-10I through July 2022, which suggests the influence of ZVI from the injection event. The iron concentration either declined or was unchanged in December 2022.
   Other electron acceptors including nitrate and sulfate had very low or non-detect values detected in samples collected from this well.
- The detected chloride in MW-10I increased in October 2021 with subsequent detections remaining similar to the baseline concentration.
- Methane values increased in MW-10I in the March through December 2022 samples. Ethene and ethane
  were not detected in MW-10I during any of the monitoring events.
- DHB increased initially in October 2021 after injection near MW-10I but declined in July 2022 and then
  increased in December 2022. DHC and the reductase enzymes were not observed following the ISERD
  injection event in September 2021 or the bioaugmentation event in December 2021.

<u>Intermediate zone observation monitoring well ERD-OBSW-11:</u> This well was installed as an intermediate zone groundwater ISERD observation well approximately 15 feet downgradient (northwest) of MW-10I.

- TCE was detected at 1,000 µg/L during the baseline event, and steadily declined to 83 µg/L in December 2022. TCE degradation compound concentrations for cis-1,2-DCE and VC showed an increasing trend beginning in March 2022. The cis-1,2-DCE and VC concentrations in the December 2022 sample collected from this well were 340 µg/L and 4.6 µg/L, respectively. Both constituents exceeded their respective MCLs of 70 µg/L and 2 µg/L.
- The TOC concentration initially increased in ERD-OBSW-1I after the ISERD injection event but subsequently declined during the March and July 2022 monitoring events. TOC increased to 150  $\mu$ g/L in December 2022.
- Total iron concentrations have increased in samples collected from this well since the ISERD injection event, which suggests the influence of ZVI from the injection event. Dissolved iron concentrations remained below 3 µg/L throughout the PS. Other electron acceptors including nitrate and sulfate continue to have very low or non-detect values detected in samples collected from this well.
- Chloride detections remained similar to the baseline value throughout the PS.
- Methane values continued to increase to a relatively steady concentration of 8,300 μg/L in December 2022. Ethene and ethane concentrations remained low or non-detect in samples collected during the PS.
- DHC and DHB increased initially in October 2021 after the ISERD injection event occurred, but decreased
  in March 2022 and were not detected in the December 2022 sample. A low concentration of vinyl chloride
  reductase was also detected in October 2021, but this enzyme was not detected during the subsequent
  sampling events.

#### 3.2.4 Data Validation

General validation was performed on the analytical laboratory deliverables for the PS. The general and complete validation process was performed in accordance with the USEPA Region 4 Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services in association with the USEPA's Contract Laboratory Program, National Functional Guidelines for Organic Data Review (USEPA, 1999), Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review (USEPA, 2002), and the approved Quality

Assurance Project Plan for the project. The USEPA data validation protocols were used in conjunction with the SW-846 analytical methodologies to determine if data should be accepted without qualification, rejected, or qualified. Data flags, if applied, were consistent with the USEPA validation guidelines cited above. Similar procedures have been used to validate data collected since the RI and prior analytical data. A detailed description of the data validation activities is provided in the Phase II RI Work Plan (AECOM, 2017).

Information for the groundwater samples collected during the ISCO and ERD pilot studies are shown in **Tables 3-1 and 3-2**, including the sample location identification numbers, date collected, and analytical parameters for each sample. The analytical results for the samples collected from the PS are presented as validated data by analyte. The summary tables also include human health screening values (USEPA MCLs) that allow for comparison with the sample results.

As indicated in **Tables 3-1 and 3-2**, the following data flags were added to a few samples as part of the data validation process: B (detected in the method blank), H (out of holding time), and J (estimated result less than the limit of quantitation and greater than or equal to the detection limit). The flagged data were evaluated, and it was determined that all of the flagged data could be used for their intended purpose.

Analytical reports for the PS data are included in **Attachments F and G** on compact disc. Data validation reports for samples collected during the PS are included in **Attachment H**.

#### 3.3 Remedial Action Derived Waste

Soil cuttings, well development water, equipment decontamination water, and groundwater sampling purge water were contained in 55-gallon steel drums and staged at the on-Site designated staging area. Soil and groundwater samples were collected on September 26, 2021 for soil and groundwater media. The laboratory analytical report containing those data is included in **Attachment I**. Those data, along with groundwater sampling data from October 2021 through December 2022, were used to indicate that the remedial action derived waste was not a hazardous waste. Therefore, there was no maximum holding time for the waste containers. Purge water from the October 2021 through December 2022 sampling events was also contained in 55-gallon drums, awaiting off-site transport and disposal.

In January 2023, AECOM subcontracted to Green Rock Strategies to mobilize to the Site, load and transport drums of remedial action derived waste, and dispose of the non-hazardous wastes through A&D Environmental Services. **Attachment I** contains a copy of the bill of lading / material manifest for eight drums of liquid, three drums of solids, and two empty used drums. The wastes were picked up on January 10 and January 24, 2023 and transported to the A&D Environmental Services facility in Archdale, North Carolina for treatment and subsequent disposal.

# Section 4. Pilot Study Conclusions and Next Step Actions

# 4.1 Pilot Study Conclusions

Three PS observation monitoring wells were installed on August 5 and 6, 2021. The baseline groundwater monitoring event occurred on August 19 and 20, 2021. The ISCO and ISERD injection events occurred during the period of September 19 through 24, 2021. A supplemental bioaugmentation injection event was conducted in the ISERD treatment area on December 7-8, 2021. Four post-injection performance monitoring events (October 2021, March 2022, July 2022, and December 2022) were conducted during the PS. Based on these field activities and the data collected during the monitoring events, the following conclusions have been drawn for the ISCO and ISERD pilot tests.

#### 4.1.1 ISCO PS Conclusions

The ISCO treatment efforts were focused on a CVOC groundwater "hot spot," located in the area of existing monitoring well (TMW-31), inside the eastern portion of the Valmont facility main building. Overall, the ISCO treatment efforts initially appear to have reduced CVOC concentrations in the groundwater from wells TMW-31 and ISCO-OBSW-1; however, continuing reduction of VOC concentrations through December 2022 appears only to have occurred at ISCO-OBSW-1. ISCO treatment using the oxidant KMnO<sub>4</sub>, resulted in the decrease in the TCE concentration at well ISCO-OBSW-1 from 960  $\mu$ g/L to non-detect concentrations (<25  $\mu$ g/L) in December 2022, approximately 15 months after the ISCO injection event. Less impact was observed at TMW-31 because access around this well was limited due to interference by overhead structures within that portion of the building. Those obstructions required an alteration to the orientation of the injection points initially planned near TMW-31.

Review of field observations and measurements in conjunction with the associated analytical results from the ISCO study area monitoring wells indicate the following ISCO PS conclusions:

- Treatment using KMnO<sub>4</sub> oxidant was effective in decreasing the TCE concentrations to non-detect levels
  in the area where obstructions did not limit access to the DPT injection equipment.
- The December 2022 TCE concentration of 3,600 µg/L in groundwater at "hot spot" well TMW-31 indicates that a TCE source still exists in groundwater underneath and potentially immediately next to the building in that area. A decrease in TCE concentration was observed March 2022 when a light purple color was observed in the sample, which indicated that some chemical oxidant remained in the vicinity of the well. Following the March 2022 sampling event, the concentration of TCE continued to increase, and the presence of the chemical oxidant was no longer observed. Matrix back diffusion of TCE from shallow aquifer materials in this area likely contributed to the increasing TCE concentrations in that well.
- Because of overhead obstructions inside the eastern end of the building, another approach to accessing appropriate injection locations in the TMW-31 CVOC groundwater source area may need to be identified.

An ROI of at most 10 feet was confirmed during the pilot study.

#### 4.1.2 ISERD PS Conclusions

The ISERD treatment efforts were focused on one CVOC groundwater source area, located in the vicinity of shallow zone groundwater well (MW-10) and intermediate zone groundwater well (MW-10I), a well pair located on a privately-owned parcel to the north of the Valmont property.

CVOC concentrations and biogeochemical parameters were evaluated during the post-injection performance monitoring events. The CVOC concentrations and range of biogeochemical parameter concentrations indicate various degrees of constituent degradation within the targeted shallow and intermediate zone treatment areas.

#### 4.1.2.1 Shallow Zone

At shallow groundwater monitoring well MW-10, the TCE concentration in groundwater decreased from 740  $\mu$ g/L during the baseline event to 500  $\mu$ g/L in December 2022, approximately 15 months after the injection event. A TCE spike to 760  $\mu$ g/L occurred in July 2022, so these results indicate that ISERD was not as effective as desired for groundwater in this area. In December 2022, the degradation products cis-1,2-DCE and VC were detected for the first time during the PS at low concentrations of 15  $\mu$ g/L and 4.3  $\mu$ g/L, respectively. The pH in the groundwater from this well was buffered using magnesium oxide during the September 2021 shallow zone injection event, increasing from 5.17 S.U. at the baseline event to an elevated 9.85 to 10.03 S.U. during the period of October 2021 to July 2022. As previously described, the elevated pH values observed during the majority of 2022 at this well were likely the result of using too much magnesium oxide buffer. This elevated pH appears to have limited the effectiveness of reductive dechlorination in this area until the December 2022 monitoring event.. During that event, the pH in MW-10 was reported as 6.86 S.U., the detected TCE concentration was 500  $\mu$ g/L, the DO remained low (0.27  $\mu$ g/L), the ORP remained negative (-119  $\mu$ g/L), and the detected TOC was 250  $\mu$ g/L. These conditions are conducive for reductive dechlorination to occur, and the elevated concentration of dissolved iron is conducive for abiotic degradation to occur. Based on the December 2022 results, it is possible that additional positive effects of the ISERD injection will still occur at this location.

At shallow observation well ERD-OBSW-1, the treatment results were similar to the results for MW-10. The TCE decreased from 240 µg/L detected during the baseline sampling event in September 2021, to 180 µg/L in March 2022, to 150 µg/L in July 2022, and then rebounded to 240 µg/L in December 2022. Degradation product cis-1,2-DCE was present at 110 µg/L in both July and December 2022; VC was present for the first time in December 2022 at a detected concentration of 0.43 µg/L. The pH in the shallow zone groundwater from this well was buffered using magnesium oxide during the September 2021 injection event, increasing from 5.21 S.U. at the baseline event in August 2021 to between 5.82 S.U. and 7.95 S.U. during the period of October 2021 to July 2022. The December 2022 pH value for this well was 5.47 S.U., which is below the favorable range for reductive dechlorination to occur. Other observations during the post-injection performance monitoring period indicate that ORP remained positive, dissolved iron concentrations remained low, and TOC and methane never greatly increased. These results combined with the CVOC results indicate that influence from the September 2021 ISERD injection event never fully impacted the shallow groundwater in the vicinity of this well. Also, these results indicate that the shallow zone groundwater aquifer lithology in this area is tight and that the predicted ROI of 10 feet or less for the injection locations is correct as ISERD influence was seen at MW-10, which was located approximately 10 feet away from the DPT injection points. However, observation well ERD-OBSW-1S was located between 15 and 20 feet away from the DPT injection points, which was outside of the optimal ROI of 10 feet

#### 4.1.2.2 Intermediate Zone

CVOC reductions observed during the ISERD PS for intermediate zone groundwater indicate that the September 2021 injection event was more successful than for shallow zone groundwater. At MW-10I, the TCE concentration in groundwater was 870 µg/L during the baseline event, spiked to 1,100 µg/L in October 2021, and then decreased

to the 50 to 57  $\mu$ g/L range in March to December 2022. Similar results were observed in observation well ERD-OBSW-1I, with TCE detected at 1,000  $\mu$ g/L during the baseline event, and then decreasing to 520, 590, 180, and 83  $\mu$ g/L during the four post-injection performance monitoring events. Degradation product cis-1,2-DCE was present in groundwater from both wells during the March to December 2022 period, and VC was detected in ERD-OBSW-1I at low concentrations during the same time period. A noted increase in methane was detected in both wells beginning in March 2022. At MW-10I, the dissolved iron concentration increased while this same increase was not observed for ERD-OBSW-1I. This is expected since the injected ZVI stays in place where it is injected and does not travel with groundwater flow. TOC increased in both wells but the increase was much greater in the observation well. Because of the presence of obstructions encountered during the injection event for the intermediate groundwater zone, the DPT injection points ended up being installed in a rough circle around ERD-OBSW-1I. Because of this change from the original injection locations, an observation regarding ROI for the injection points cannot be made.

#### 4.1.2.3 Overall ISERD Conclusions

Review of field observations and measurements along with analytical results from the ISERD study area monitoring wells indicates the following PS conclusions:

- CVOC and the biogeochemical concentrations indicate that overall conditions, with enhancement, in the
  treatment areas remain favorable for continued degradation to occur in the vicinity of MW-10, MW-10I, and
  ERD-OBSW-1I. The distance of ERD-OBSW-1S from the injection locations prevented treatment at this
  well due to the tight lithology associated with the shallow zone groundwater aquifer.
- An increase in other parameters such as dissolved iron, TOC, and methane also support the conclusion that conditions still could be favorable for continued degradation of CVOCs.
- The ERD technology worked favorably for the intermediate zone, as evidenced by the decline in TCE concentrations and increase in cis-1,2-DCE. The pH may have been a limiting factor for success in the shallow zone.
- The bioaugmentation injection event conducted in December 2021 did not result in a significant increase in *DHC* and associated reductase enzymes, which indicates limited effectiveness of this procedure.
- If ISERD is conducted in the future, buffering to increase the targeted groundwater pH will need to be
  closely controlled in order to avoid increasing the pH to above 8 S.U., which is outside the favorable range
  for reductive dechlorination to occur.
- An ROI of at most 10 feet was confirmed during the pilot study.

# 4.2 Recommendations and Next Step Actions

The following recommendations are presented and summarized as next step actions:

- Signify requests that the PS results, as summarized in this report, be accepted by SCDHEC.
- Signify plans to begin the FS Report within the next several weeks.
- Both ISCO and ISERD should be retained as potential treatment technologies and for remedial alternative development in the FS.
- Data contained in the Sitewide Groundwater Monitoring Report (still in progress at the time this PS Report is being submitted), for monitoring conducted in 2022, will also be used during FS development.
   Due to an unexpected increase in the trichloroethene (TCE) concentration (to greater than 3 mg/L) in the final PS monitoring event (December 2022) groundwater sample from monitoring well MW-31, it is recommended that a limited additional assessment of groundwater quality, including installation of up to six additional monitoring wells, be performed in the vicinity of monitoring this well, A work plan and monitoring well request will be submitted to SCDHEC within the next week.

# Section 5. References

AECOM, 2017. Phase II Remedial Investigation Work Plan, Shakespeare Composite Structures, Newberry, South Carolina. Revised April 2017.

AECOM, 2018. Remedial Investigation Report, Shakespeare Composite Structures, Newberry, South Carolina. November 2018.

AECOM, 2019. Feasibility Study Work Plan, Shakespeare Composite Structures, Newberry, South Carolina. May 2019

AECOM, 2020. Bench Scale Treatability Study Report, Shakespeare Composite Structures, Newberry, South Carolina. May 2020.

AECOM, 2022. Pilot Study Update Summary, Shakespeare Composite Structures, Newberry, South Carolina. December 2022.

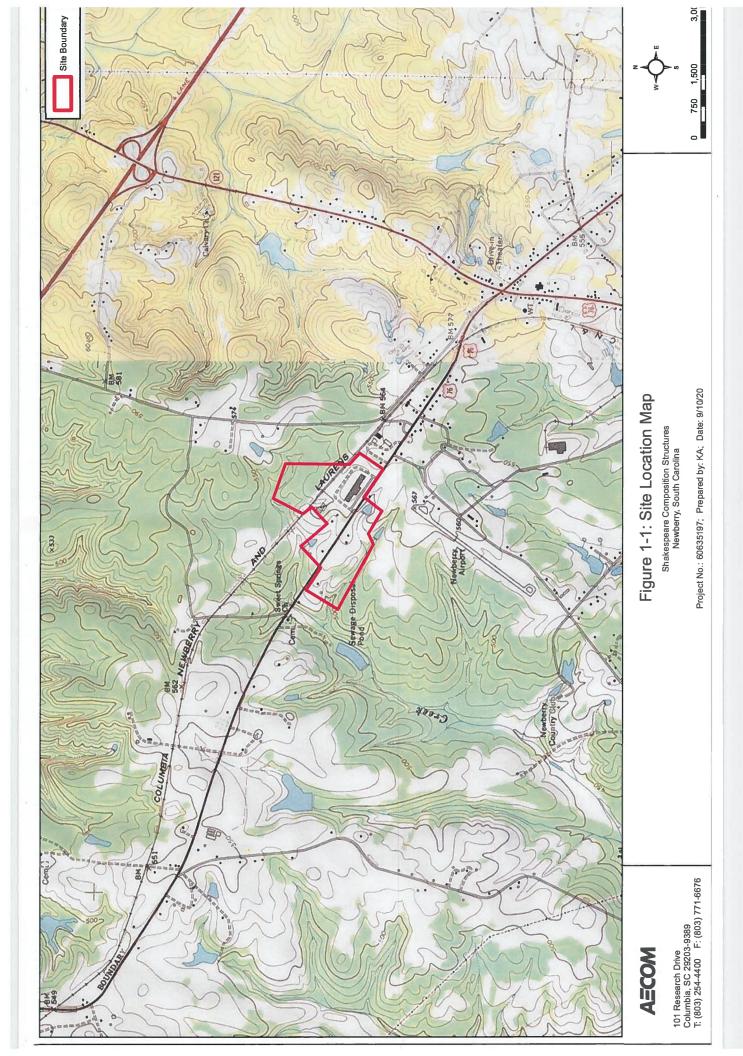
AFCEE et al., 2004. Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents. Prepared by Parsons Corporation. August 2004.

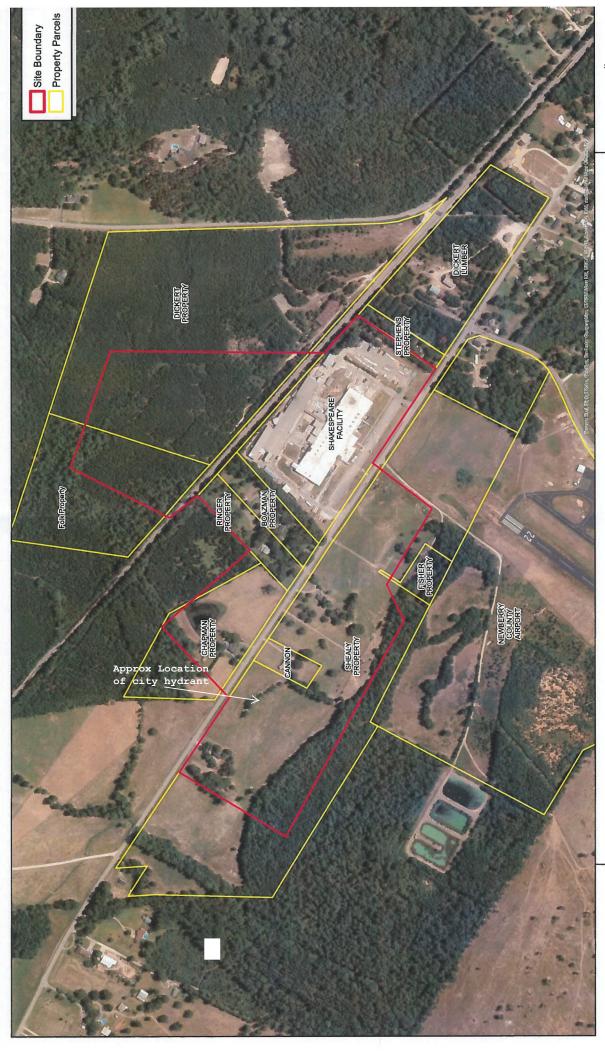
USEPA, 1999. Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services in association with the USEPA's Contract Laboratory Program, National Functional Guidelines for Organic Data Review. USEPA Region 4. 1999.

USEPA, 2002. Contract Laboratory Program, National Functional Guidelines for Inorganic Data Review. USEPA, 2002.

.May 2023 5-1

**FIGURES** 

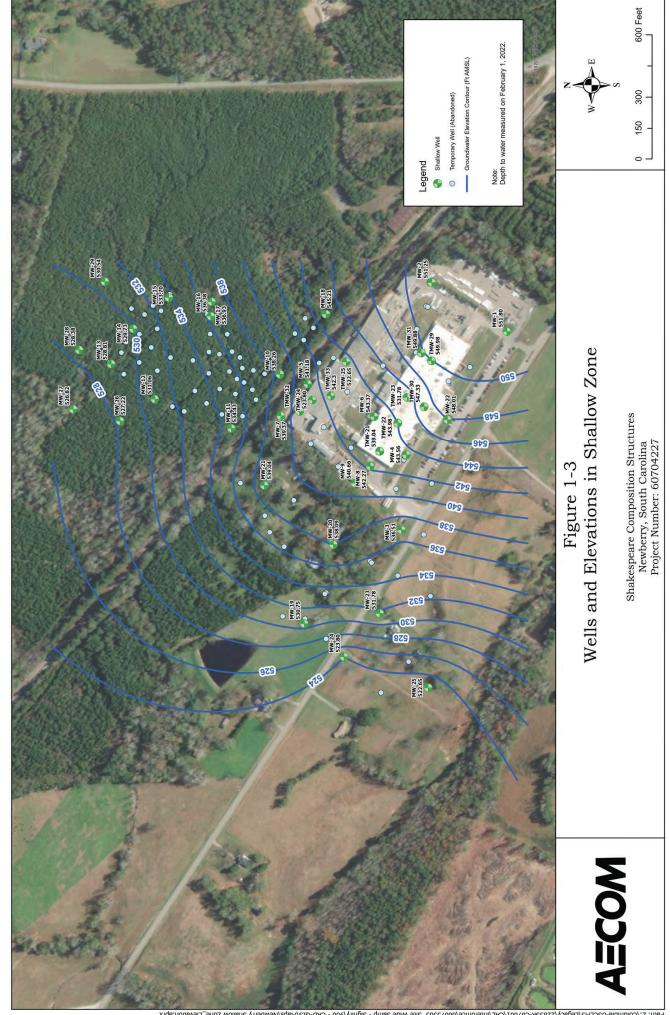


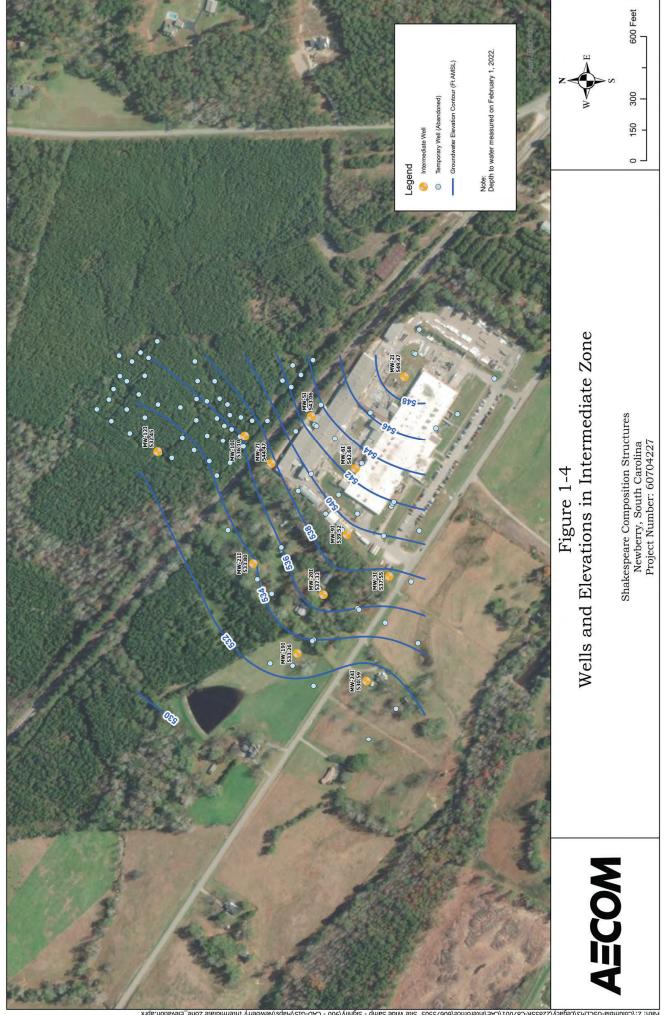


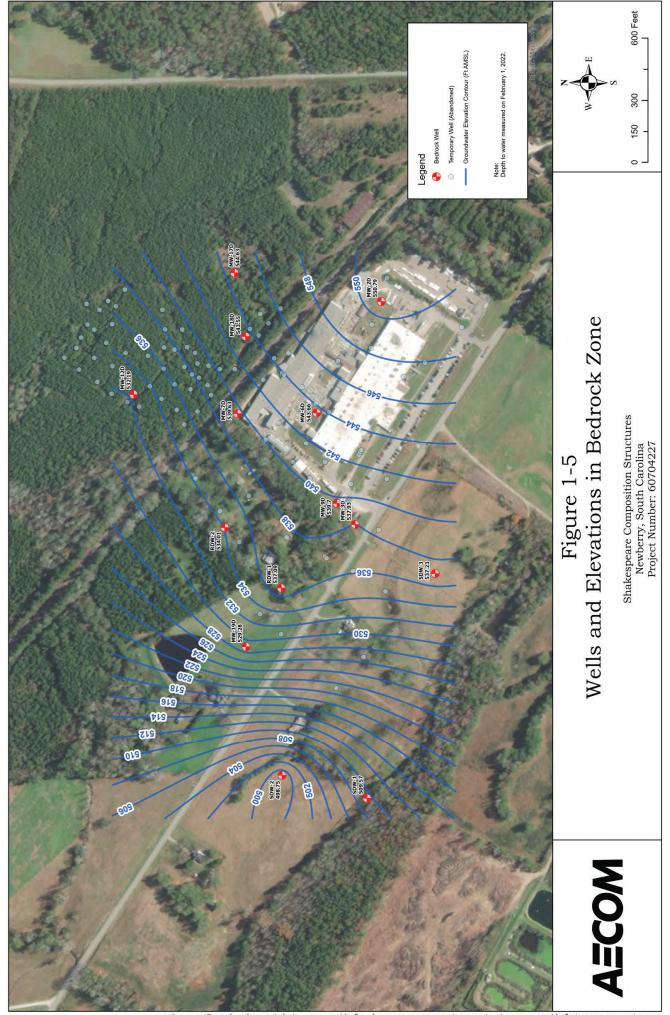
# Figure 1-2: Site Plan

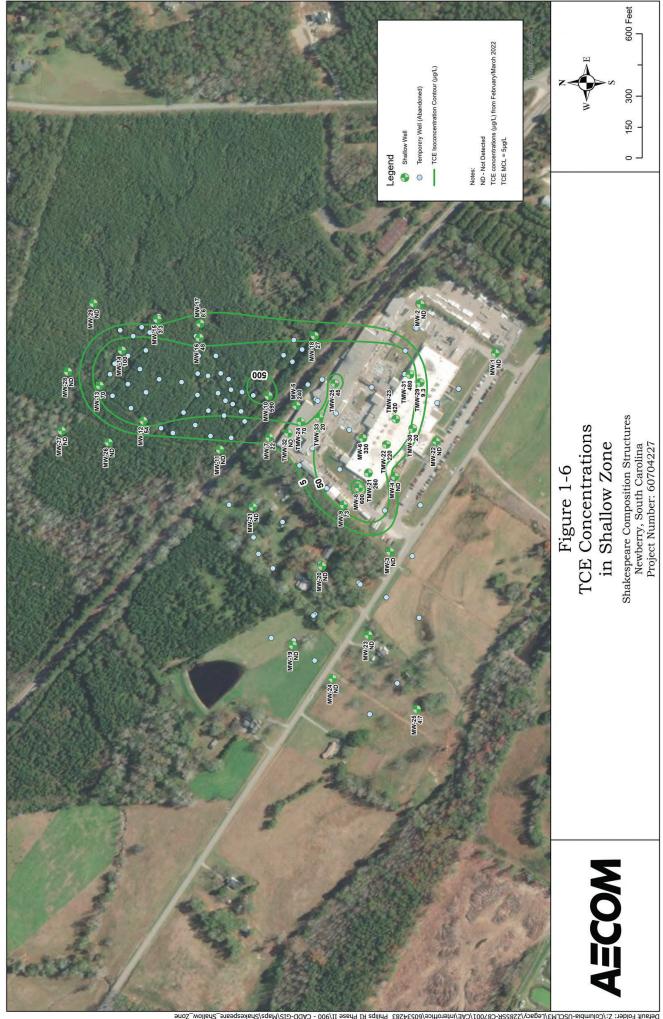
Shakespeare Composition Structures Newberry, South Carolina Project No.: 60635197; Prepared by: KA; Date: 09/10/20

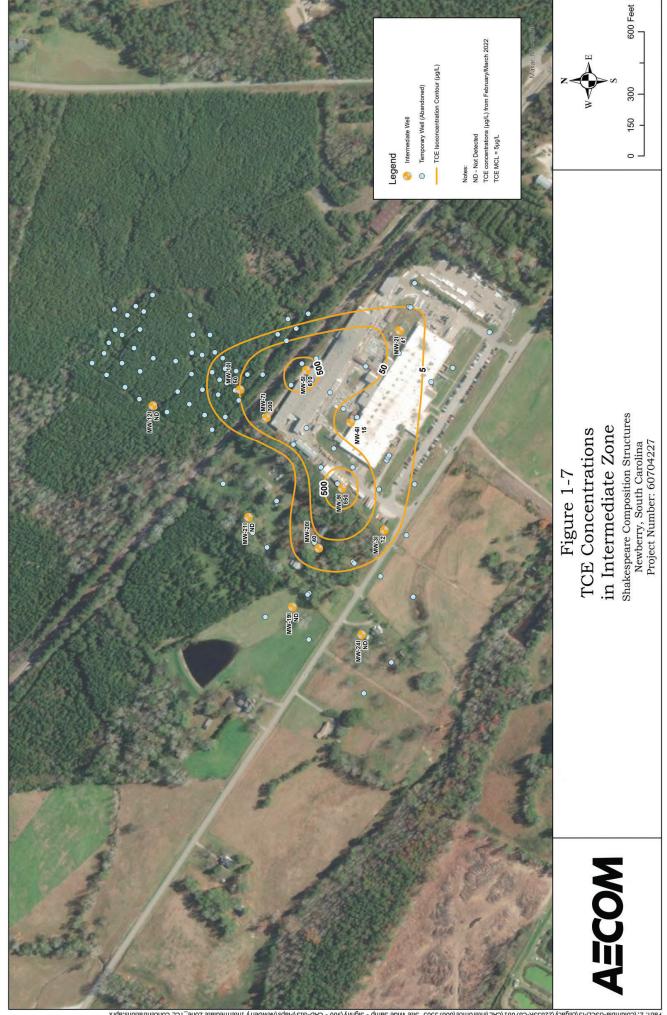


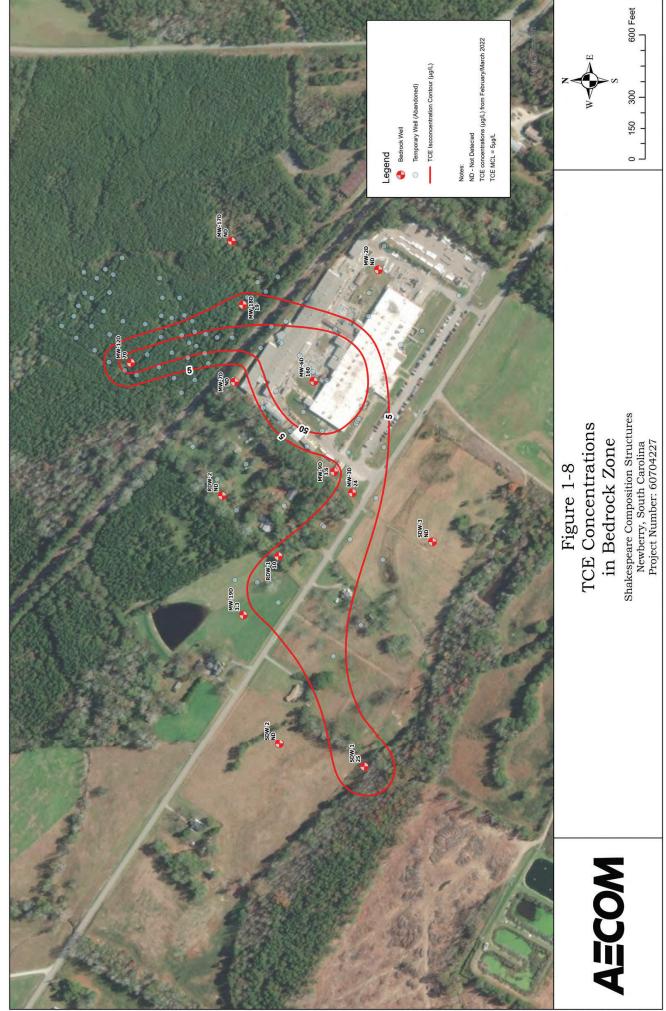


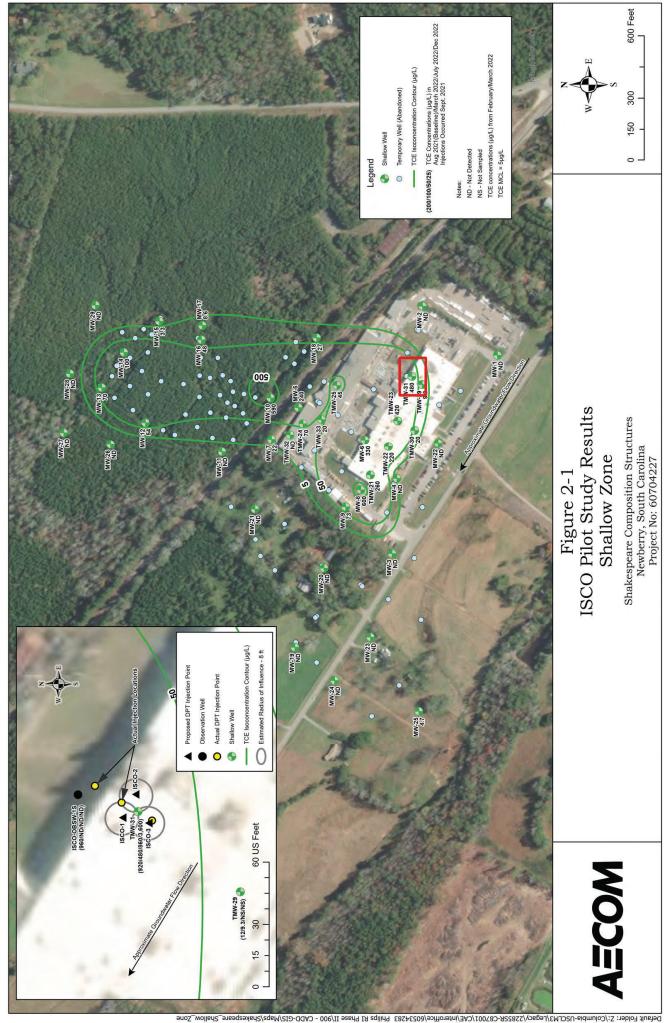


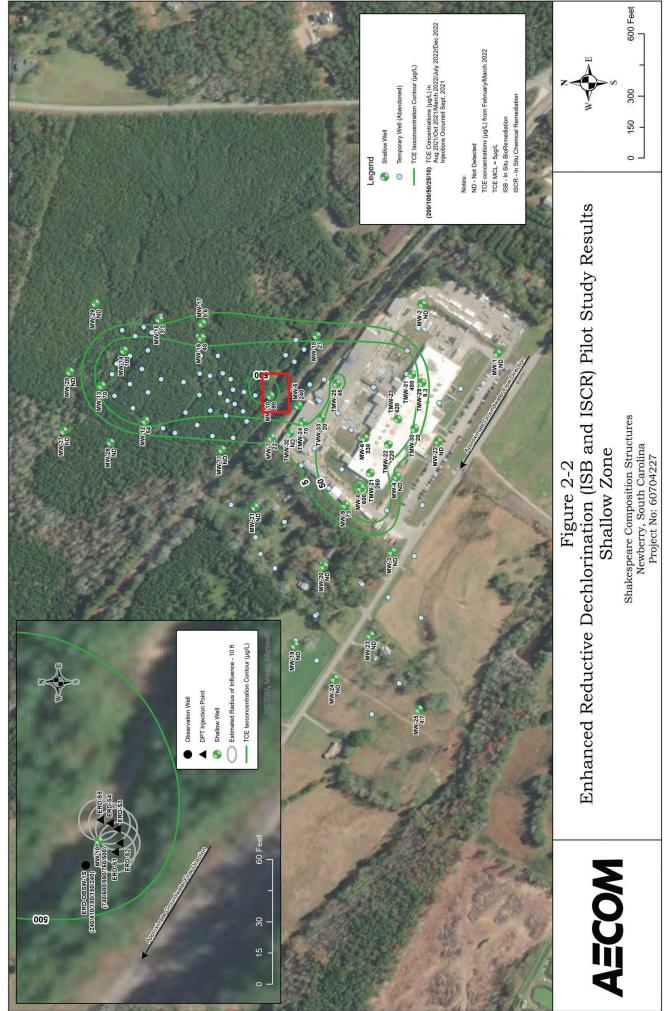


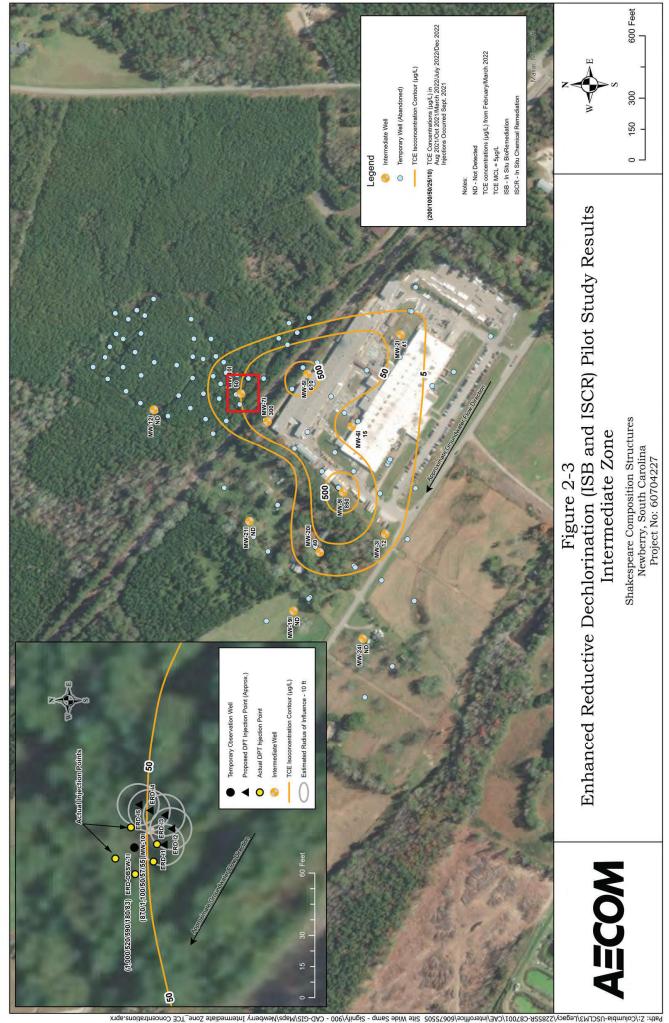


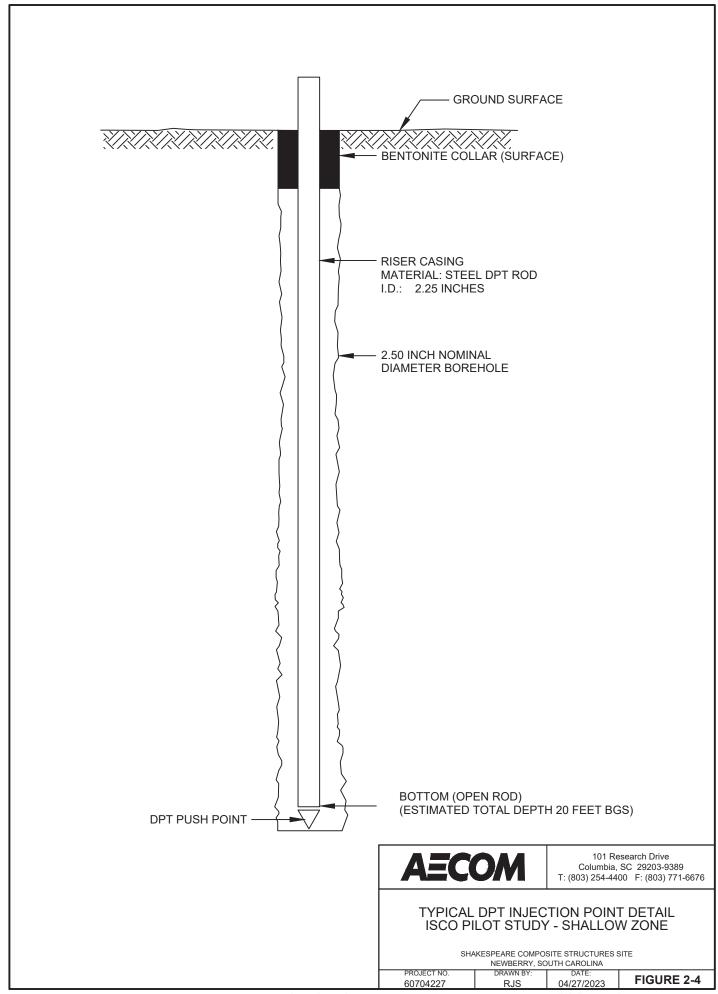


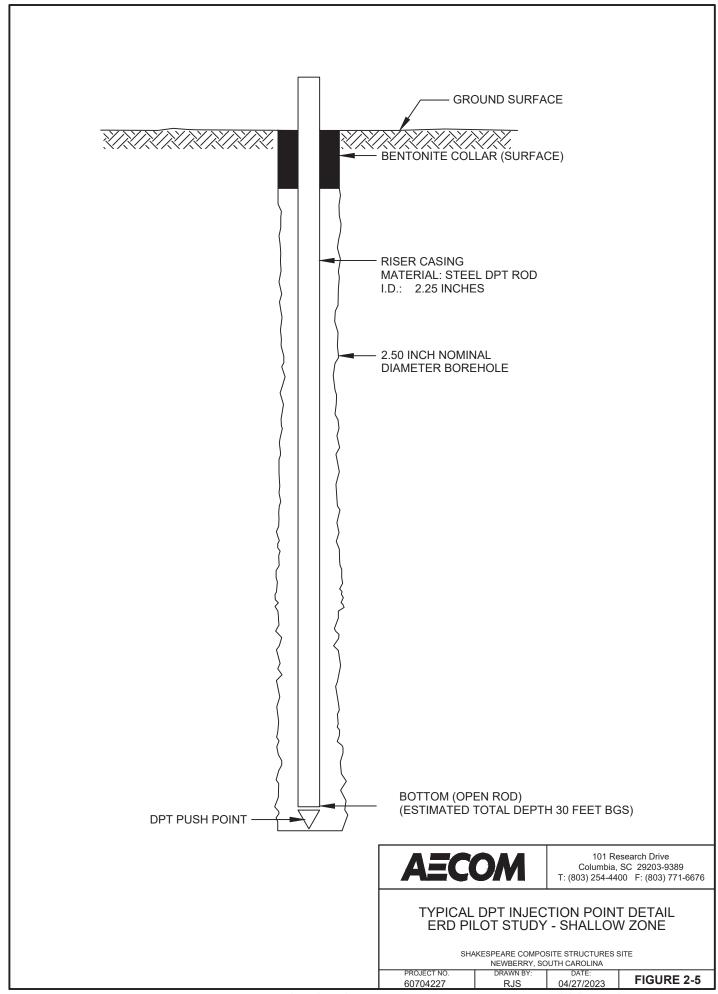


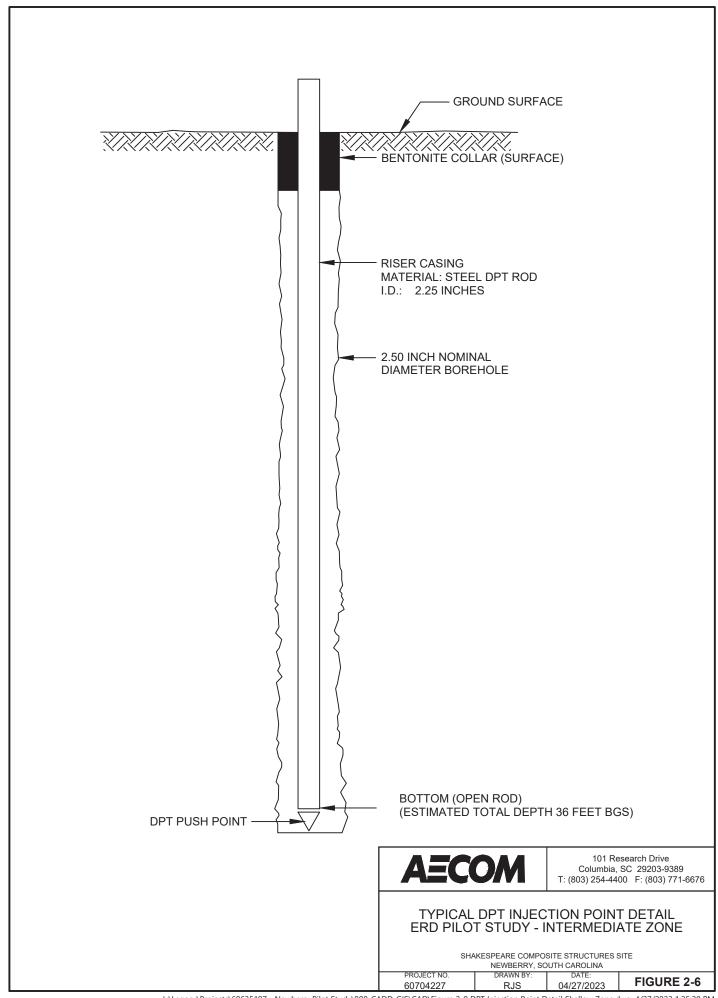












**TABLES** 

Table 2.1
Permanent Monitoring Well Construction Details
Shakespeare Composite Structures Site
Newberry, South Carolina

	Date of			Screen Interval			TOC Elevation	Ground	Depth to Bedrock	Top of Bedrock Elevation	TD Elevation
Well ID	Installation	Location and Purpose	₽	(feet)	Diameter	Material	(ft amsl)	(ft amsl)	(feet)	-1	(ft amsl)
		Shallow Wells								٠	
MW-1	4/10/2014	Former Shakespeare property. Permanent well installed at former location of TMW-8	14.2	4.2 - 14.2	2 inch	Sch 40 PVC	561.85	561.85	15	546.85	547.65
MW-2	4/10/2014	Former Shakespeare property. Permanent well installed at former location of TMW-7	24.7	14.7-24.7			558.42	558.42	1	1	533.72
NAMA 4	4/10/2014	FOUTIEI STRAKES/PERFE FIGURIS (1) Upterlis – SOUTIWES CONTRET OF INTERPRETATION CONTROL OF THE SOUTIES OF THE S	96	1.42-1.41	=	=	560 13	560 13			524.42
WW-5	4/14/2014	Troning stakespage property. — entire the well installed at former location of TMW.13  Fromer Stakespage property. — entire tellal at former location of TMW.14	07 92	15.8-25.8	-		557 74	557.74			531.74
9-MW	4/14/2014	Former disreptions properly : Institution and institution of the control of the c	26	15.7-25.7	=	=	561.32	561.32			535.32
MW-7	4/15/2014	Former Shakespeare property. Permament well installed at former location of TMW-16	56	14.8-24.8	-	=	554.72	554.72	-	1	528.72
MW-8	4/15/2014	Former Shakespeare property. Permament well installed at former location of TMW-13	26	15.5-25.5	-	=	558.27	558.27	1	1	532.27
6-WW	4/16/2014	Former Shakespeare property. Permament well installed at former location of TMW-17	26	15.8-25.8	=	=	556.36	556.36	1	1	530.36
TMW-21	5/21/2014	Former Shakespeare property - west end of main building. Temporary well converted to permanent well.	23.5	13.5-23.5	1 inch	=	96.099	96.059	1	-	527.46
TMW-22	5/21/2014	Former Shakespeare property - west end of main building. Temporary well converted to permanent well.	25	15-25			548.23	548.23			523.23
TMW-23	5/27/2014	Former Shakespeare property - central portion of main building. Temporary wel onverted to permanent well.	25	15-25			537.03	537.03			512.03
TMW-24	5/29/2014	Former Shakespeare property - west end of pole winder building. Temporary well converted to permanent well.	25	15-25	=		531.12	531.12	-	-	506.12
TMW-25	5/29/2014	Temporary well conver	25	15-25	=		532.07	532.07		-	507.07
TMW-29	6/3/2014	Former Shakespeare property - east central portion of main building. Temporary well converted to permanent well.	13	8-13	=		536.41	536.41		-	523.41
TMW-30	6/3/2014	Forner Shakespeare property - Inside south central portion of main building. Temporary well converted to permanent well.	25	15-25	=		543.34	543.34		-	518.34
TMW-31	6/3/2014	Former Shake speare property - Inside north portion of main building. Temporary well converted to permanent well.	21	11-21	=		542.24	542.24			521.24
ISCO OSW-1	8/6/2021	Former Shakespeare property - outside north portion of main building.	20	10 - 20	2 inch	=	548.19	548.33	1		528.33
TMW-32	6/4/2014		25	15-25	=	=	551.59	551.59	1	1	526.59
TMW-33	6/4/2014	Former Shakespeare property - Inside west central portion of pole winder building. Temporary well converted to permanent well.	25	15-25	=		531.58	531.58	1	-	506.58
MW-10	8/4/2015	Dickert property - Former Location of TMW-42	30.32	20.3 - 30.3	2 inch	Sch 40 PVC	550.96	550.96	42	508.96	520.64
ISERD OSW-1	8/5/2021	Dickert property - West of MW-10	30	20 - 30	=		560.72	560.71			530.71
MW-11	-	Dickert property - Former Location of TMW-87	30.32	20.3 - 30.3	=		548.24	548.24		-	517.92
MW-12	=	Dickert property - Former Location of TMW-73	31.37	20.37 - 30.37		н	537.03	537.31			505.94
MW-13	=	Dickert property - Former Location of TMW-89	25.29	15.29 - 25.29		н	531.19	531.16	14	517.16	505.87
MW-14	8/5/2015	Dickert property - Former Location of TMW-95	20.22	10.22 - 20.22	=		532.07	531.97	-	-	511.75
MW-15	=	<ul> <li>Former Location of TMV</li> </ul>	11.63	1.63 - 11.63	=	=	536.41	536.32	!	1	524.69
MW-16	=	Dickert property - Forner Location of TMW-39	20.29	10.29 - 20.29	=	=	543.35	543.23			522.94
MW-17	=	Dickert property - east of MW16	30.27	10.59 - 20.59	=	=	542.37	542.36	1	1	512.09
MW-18	8/3/2015	Dickert property - Former Location of TMW 72	23.67	13.67 - 23.67			551.58	551.6	18	533.60	527.93
MW-19	8/6/2015	Chapman property - Former Location of TMW+105.	14.77	4.77 - 14.77			531.58	531.59	11	520.59	516.82
MW-20	1400141	Boazman property - Former Location or 1 MW -38/10.2	35.3	25.3 - 35.3	:   =	:	541.92	541.86	1	1	506.56
MW-21	8/7/2015	Kinger property - South of 1 MW-39	24.17	14.17 - 24.17	: :	: :	548.24	548.28		-	524.11
MW-22	8/26/2015	Former Shakespeare property - South of entrance to main building	7.97	7.97 - 7.91	:	: :	560.01	2.096		1	534
MW-23	12/15/2015	Shealy property - former Location of IMW-107	25	10-20	: :	: :	543.48	543.75		-	518.75
47-VVIVI	2/10/2013	Sheaty property. Continued to AMM221 and MAM22	30	06 - 02	=	=	535.60	341.33		505 50	505.5
MW-26	3/26/2018	oneary property - control of MW-13	24.5	145-245	1 inch	Sch 40 PVC	533.67	533.88	8 1	0000	509.38
MW-27	3/27/2018	Control property - north of MW-14	30	20 - 30	=	=	530.65	530,62		-	500.62
MW-28	3/27/2018	Folk property - west-northwest of MW-12	23.5	13.5 - 23.5	=	=	532.43	532.23	1	1	508.73
MW-29	3/27/2018	Folk property - northwest of MW-12	24	14 - 24	-		539.53	539.79			515.79
		Intermediate Wells									
MW-2I	8/18/2015		46.5	36.5 - 46.5	2 inch		559.97	560.19	20	510.19	513.69
MW-3I	8/11/2015	Former Shakespeare property - adjacent to MW-3	54.73	44.7 - 54.7	=		548.84	548.96	-	-	494.23
MW-5I	8/19/2015	Forner Shakespeare property - east of MW-5	22	47 - 57	=		559.70	559.6	56	503.60	502.6
I9-WW	8/21/2015	Former Shakespeare property - adjacent to MW-6	20	40 - 50	=	=	560.28	560.19	!	1	510.19
MW-71	8/20/2015	Forner Shakespeare property - adjacent to MW-7	47.1	37.1 - 47.1	=	=	560.07	555.3			508.2
IMW-9I	8/21/2015	Former Shakespeare property - adjacent to MW-9	47.6	37.6 - 47.6	=	=	556.07	556.08		-	508.48
MW-10I	8/24/2015	Dickert property - northwest of MW-10	41	31 - 41		= :	548.4	548.5	-	-	507.5
ERD OBSW-11	8/5/2021	Dickert property - northwest of MW-10	36	26-36	2 inch		551.2	551.42	1	1	515.42
MW-12I	6/12/2017	Dickert property - south of MW-12	47	36.8 - 46.8			536.6	536.44	!	-	489.44
IBL-WW	5/6/2017	Unaphran property - east of NWV-19 Decrement accorded to AMM 70 femoral condition of TMM 20	23	17.6 - 22.6	-	=	535.4	536.51	!	1	513.51
MW-21	8/10/2015	Vogazinari pitypetry = argiacent to www-zzy, romei Excatori or riww-so Rinner nnoent, = ariacent to MM,21	54.83	43.1 - 33.1		=	552.82	552.9	49	503.90	498.07
MW241	2/18/2016	Shealy property - southwest of MW/23	35	35 - 30		=	544.99	545.06	31	514.06	510.06
NI-A-CA											

Notes: ft amsl - feet above mean sea level

# Table 2-2

# Pilot Study Performance Monitoring Program Shakespeare Composite Structures Site Newberry, South Carolina

	Monitoring Well Details				Monitoring Event	,	
<u></u>	Location	Screen Depth (ft bgs)	Baseline	30 Days*	4 Months*	8 Months*	12 Months**
Background Well							
MW-2	Upgradient well	14-27	1,2,3,4	1	1,2,3,4	1	1,2,3,4
ISCO Pilot Study	ISCO Pilot Study Perfomance Monitoring Well Network - Shallow Groundwater Zone	ork - Shallow Grou	ındwater Zone				
TMW-29	Sidegradient of injection area	8-13	1,2,3	1	1,2,3	1,2,3	1,2,3
TMW-31	Within injection area	11-21	1,2,3	1	1,2,3	1,2,3	1,2,3
ISCO-OBSW-1S	SCO-OBSW-1S Downgradient from injection area	10-20	1,2,3	1	1,2,3	1,2,3	1,2,3
<b>ERD Pilot Study</b>	ERD Pilot Study Perfomance Monitoring Well Network - Shallow Groundwater Zone	ork - Shallow Groun	ndwater Zone				
MW-10	Within injection area	20.3-30.3	1,2,4,5	1,2,4,5	1,2,4,5	1,2,4	1,2,4,5
ERD-OBSW-1S	Downgradient of injection area	20-30	1,2,4,5	1,2,4,5	1,2,4,5	1,2,4	1,2,4,5
<b>ERD Pilot Study</b>	ERD Pilot Study Perfomance Monitoring Well Network - Intermediate Groundwater Zone	ork - Intermediate (	<b>Groundwater Zo</b>	ne			
MW-10	Within injection area	31-41	1,2,4,5	1,2,4,5	1,2,4,5	1,2,4	1,2,4,5
ERD-OBSW-11	Downgradient of injection area	25-35	1,2,4,5	1,2,4,5	1,2,4,5	1,2,4	1,2,4,5

# Field and Analytical Laboratory Parameter Monitoring Legend:

\*Post-injection monitoring events

1 = Field indicator parameters (color, turbidity, temperature, specific conductivity, pH, DO, ORP, and groundwater elevation).

2 = VOCs by SW 846, Method 8260B.

3 = Additional ISCO parameters (TDS by SW-846, Method 2540C and Chloride by SW 9056A)

4 = Biogeochemical parameters (Nitrate/Nitrite/Sulfate/Chloride by SW 9056A, Dissolved [lab filtered] and Total Iron by SW 6020A, Methane/Ethane/Ethene by RSK-175,

Alkalinity by SM 2320B, and TOC by SW 9060A). 5 = dehalococcoides, dehalococcoides, dehalobacter spp., vinyl chloride reductases via CENSUS qPCR analysis.

# Abbreviations:

DO - Dissolved Oxygen

ERD - Enhanced Re

ft bgs - Feet Below Ground Surface

SCO - In Situ Chemical Oxidation ID - Monitoring Well Identification

OBSW - observation well

ORP - Oxidation/Reduction Potential

qPCR - Quantitative Polymerase Chain Reaction

TDS - Total Dissolved Solids TOC - Total Organic Carbon

VOC - Volatile Organic Compound

# Table 2-3 **Bioaugmentation Injection Event Details Shakespeare Composite Structures Site** Newberry, South Carolina

	Shallow Zone GW (MW-10 Area)	Intermediate Zone GW (MW-10I Area)
Tourstand Transforment Areas and DDT Injustion Daint Dataila	(WWV-10 Area)	(IVIVV-101 Area)
Targeted Treatment Areas and DPT Injection Point Details	4.500	4.500
Area (square feet)	1,500	1,500
Shallow Groundwater Zone Depth (20 to 30 ft bgs)	10	
Shallow Groundwater Zone Depth (31 to 41 ft bgs)	45.000	10
Aquifer Volume (cubic feet)	15,000	15,000
Estimated Radius of Influence	10	10
Number of Injection Points	5	5
Average Horizontal Hydraulic Gradient (ft/ft)	0.016	0.014
Average Hydraulic Conductivity (ft/day)	0.80	0.72
Estimated Effective Porosity (unitless)	0.25	0.3
Groundwater Seepage Velocity (ft/day)	0.05	0.03
Estimated Injection Duration (days)	0.5	0.5
Total Quantities of ISERD Injection Substrate Chemicals and Bioaugment	ation Product Per I	DPT Injection
Location		
No. of Injection Intervals - <b>ERD-S1</b> (30-28, 28-26, 26-24, 24-22, 22-20 ft bgs)	5	
No. of Injection Intervals - <b>ERD-S2</b> (28-26, 26-24, 24-22, 22-20 ft bgs)	4	
No. of Injection Intervals - <b>ERD-S3</b> (26-24, 24-22, 22-20 ft bgs)	3	
No. of Injection Intervals - <b>ERD-S4</b> (30-28, 28-26, 26-24, 24-22, 22-20 ft bgs)	3	
No. of Injection Intervals - <b>ERD-S5</b> (29-28, 28-26, 26-24, 24-22, 22-20 ft bgs)	5	
No. of Injection Intervals - ERD-I1 (35-33, 33-31 ft bgs)		2
No. of Injection Intervals - <b>ERD-I2</b> (37-35, 35-33, 33-31 ft bgs)		3
No. of Injection Intervals - ERD-I3 (34-33, 33-31 ft bgs)		1
No. of Injection Intervals - <b>ERD-I4</b> (32-31 ft bgs)		1
No. of Injection Intervals - <b>ERD-I5</b> (33-31 ft bgs)		1
ABC -Ole (pounds)	100	100
Water (gallons)	100	100
RTB-1 (liters)	2	2
Total Quantities of ISERD Injection Substrate Chemicals and Bioaugment	ation Product Injec	ted
ABC -Ole (pounds)	500	500
Water (gallons)	500	500
RTB-1 (liters)	10	10
Notes:		
Refer to bioaugmentation injection logs in Attachment E for additional details.		
DPT - direct push technology		

DPT - direct push technology
ERD - enhanced reductive dechlorination

ft bgs - feet below ground surface ft/day - feet per day ft/ft - feet per foot

Table 3-1 Sample Results - ISCO Pilot Study Wells Shakespeare Composite Structures Site RP-VCC-14-6271-RP Newberry, SC									
Sample ID					MW-2			TM	TMW-29
Laboratory ID	USEPA	WH20094-001	4-001	XC01066-006	XG20043-007	-007	XL28017-003	WH20094-003	XC01066-003
Date Collected	MCL 1	08/19/2	.21	03/01/22	07/20/22	22	12/28/22	08/20/21	03/01/22
Volatile Organic Compounds by USEPA Me	A Method 8260D (µg/L)	ng/L)							
Acetone	SN	> 10		< 10	> 10		11	24	//f 6.7
cis-1,2-Dichloroethene	70	< 0.5	15	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5
Styrene	100	< 0.5	16	5.1	< 0.5		< 0.5	20	120
Trichloroethene (TCE)	5	< 0.5	16	< 0.5	< 0.5		< 0.5	12	9.3
Chloride by USEPA Method 300.0 (mg/L)									
Chloride	2503	2.3	_	2.2	NA		2.2	3.1	2.8
Nitrate	10	0.07	/8 B//	NA	NA		0.074	NA	NA
TDS by USEPA Method SM 2540C-2011, -2	11, -2015 (mg/L)								
Total Dissolved Solids	500 <sup>3</sup>	< 25		34	NA		26	< 25	51
Field Parameters									
Color/Odor	NS	NA	_	clear/no	clear		clear	NA	lt. tan/no
Dissolved oxygen (mg/L)	NS	7.2,	9	8.30	68.9		6.78	4.53	8.01
ORP (mV)	NS	187.	4.	821.6	627.3		330.2	185.7	539.1
hd	NS	4.9	_	4.63	5.36		5.36	4.5	4.49
Specific Conductivity (uS/cm)	NS	0.02	2	21.74	20		24	0.035	37.75
Temperature (Celsius)	NS	22		19.61	22.2		19.3	23.5	21.31
Turbidity (NTU)	NS	6.9	8	0.05	3.79		4.51	4.43	276.76

Notes:
-a - Indicates a field duplicate sample.
- United States Environmental Protection Agency
- United States Environmental Level (USEPA, March 2022).
- 1998 Final Rule for Disinfectants and Disinfection
By-Products: The total for trihalomethanes is 80 µg/L.
3 - Secondary MCL.

J - Estimated result less than the limit of quantitation and greater than or equal to the detection limit.

B - Detected in the method blank.

Result Data Qualifiers

Laboratory Data Qualifiers H - Out of holding time.

None added.

Analysis Data Qualifiers
h - Holding time exceeded by less than two times.

NA - Not Analyzed NS - No Standard Bold font indicates the analyte was detected.

Bold outline indicates an exceedance of the

USEPA MCL.

Data Qualifiers

Separates the aboratory added data qualifiers from the validation data qualifiers. The laboratory added data qualifiers precede the first "/". The result qualifiers

follow the first

"?", and the analysis qualifiers follow the second "?". The result qualifiers are a product of the data validation process, and the analysis qualifier defines the type of

Page 1 of 2

Shakespeare Composite Structures Site RP-VCC-14-6271-RP Newberry, SC										
Sample ID			T	TMW-31		TMW-31 (Dup)		OOSI	ISCO-OBWS-1S	
Laboratory ID	USEPA	WH20094-002	XC01066-004	XG20043-006	XL28017-001	XG20043-008	WH20094-009	XC01066-005	XG20043-005	XL28017-002
Date Collected	MCL 1	08/20/21	03/01/22	07/20/22	12/28/22	07/20/22	08/20/21	03/01/22	07/20/22	12/28/22
Volatile Organic Compounds by USEPA Method 8260D	) O0928 pou									
Acetone	SN	> 100	> 50	< 100	> 500	> 50	> 100		> 500	> 500
cis-1,2-Dichloroethene	70	8.5	3	9.6	32	9.5	6.7	> 10	< 25	< 25
Styrene	100	> 5	< 2.5	7.5 /J/A	< 25	5 /J/A	> 5		< 25	< 25
Trichloroethene (TCE)	5	920	480	098	3600	1200	096	> 10	< 25	
Chloride by USEPA Method 300.0 (mg/L)										
Chloride	250 3	6.1	9	5.6	3.2	NA	5.7	< 100	7	6.1
Nitrate	10	NA	NA	1.3	NA	NA	NA	NA	2.4	NA
TDS by USEPA Method SM 2540C-2011, -2015 (mg/L)	15 (mg/L)									
Total Dissolved Solids	500 3	41	99	62	55	NA	29	260	340	110
Field Parameters										
Color/Odor	NS	NA	lt. purple	clear	clear	NA	NA	NA	purple	lt purple
Dissolved oxygen (mg/L)	NS	4.43	5.17	4.14	4.84	NA	3.64	NA	6.85	4.85
ORP (mV)	NS	169.6	869.1	640.3	222.8	NA	-119.6	NA	720.1	631.4
Hd	NS	4.71	4.62	5.28	5.62	NA	5.72	NA	6.01	60.9
Specific Conductivity (uS/cm)	NS	0.048	63.22	58	29	NA	0.094	NA	219	160
Temperature (Celsius)	NS	23.6	24.25	23.7	24.4	NA	23.8	NA	22.2	18.7
Turkidity (NTII)	O.L.	12.01	0	000	0.70	V. I.V.	V.V.	N.T.A.	700	210

-a - Indicates a field duplicate sample.

<sup>1</sup> - United States Environmental Protection Agency Maximum Contaminant Level (USEPA, March 2022).

 $^2$  - 1998 Final Rule for Disinfectants and Disinfection By-Products: The total for trihalomethanes is  $80~\mu g/L.$ 

3 - Secondary MCL.

NA - Not Analyzed NS - No Standard Bold font indicates the analyte was detected.

Bold outline indicates an exceedance of the

# USEPA MCL. Data Qualifiers

data qualifiers precede the first "/". The result qualifiers Separates the laboratory added data qualifiers from the validation data qualifiers. The laboratory added follow the first

"/", and the analysis qualifiers follow the second "/".

The result qualifiers are a product of the data validation process, and the analysis qualifier defines the type of

Notes:
-a - Indicates a field duplicate sample.
- United States Environmental Protection Agency
Maximum Contaminant Level (USEPA, March 2022).

J - Estimated result less than the limit of quantitation

Laboratory Data Qualifiers H - Out of holding time. and greater than or equal to the detection limit. B - Detected in the method blank.

Result Data Qualifiers None added.

Analysis Data Qualifiers
h - Holding time exceeded by less than two times.

 $^2$  - 1998 Final Rule for Disinfectants and Disinfection By-Products: The total for trihalomethanes is 80  $\mu g L.$ 

3 - Secondary MCL.

NA - Not Analyzed NS - No Standard Bold font indicates the analyte was detected.

Bold outline indicates an exceedance of the

data qualifiers precede the first "/". The result qualifiers USEPA MCL.

Data Qualifiers
Separates the laboratory added data qualifiers from the validation data qualifiers. The laboratory added follow the first

"/", and the analysis qualifiers follow the second "/".

The result qualifiers are a product of the data validation process, and the analysis qualifier defines the type of

Table 3-2 Sample Results - ISERD Pilot Study Wells Shakespeare Composite Structures Site RP-VCC-14-6271-RP Newberry, SC	udy Wells ures Site																	
Sample ID		MW-10	MW-10-DUP			-MW	V-10		Sample ID					ERD-OBSW-1S				
Laboratory ID	USEPA	WH20094-006	WH20094-007	WJ29086-003	2-003	XC08061-004	XG20043-001	XL19029-001	Laboratory ID	USEPA	WH20094-008	WJ29086-004	104	XC08061-003	XG20043-002		XL19029-002	
Date Collected	MCL '	08/20/21	08/20/21	10/29/21	21	03/08/22	07/19/22	12/19/22	Date Collected	MCL 1	08/20/21	10/29/21		03/08/22	07/19/22		12/19/22	
ompounds by U	SEPA Method 8260D (µg/L)	\$260D (ug/L)							ompounds by l	SEPA Method 826	θD (μg/L)							
1,1-Dichloroethene	7	< 2.5	< 2.5	> 20	ı	> 10	> 25	>	1,1-Dichloroethene	7	< 0.5	>	//H	< 0.5	< 0.5	v	0.5	
1,2-Dichloroethane	5	3.6	3.5	> 50	H//h	> 10	< 25	5.7	1,2-Dichloroethane	2	0.51	v 5	//H	0.82	0.92		1.2	
1,4-Dichlorobenzene	7.5	< 2.5	< 2.5	> 50		01 >	< 25	> >	1,4-Dichlorobenzene	75	0.45 J/	v 25	//H	< 0.5	> 0.5	V	0.5	
2-Butanone (MEK)	NS	> 20		> 1000		> 200	> 200			SN		oo1 ×	//H	01 >	v 10	V	10	
2-Hexanone	NS		> 20	_	H/W	> 200	> 200	78 II/		SN		v V	/H	10	v 10	V		
Acetone	SN	> 20		_		> 200	> 200		Acetone	SN		00 v	/H	5.7 J/BJ/TC	5.8	J/J/C		//[
Benzene	so s	< 2.5	> 2.5	> 20	H/h	0 9	> 25		Benzene	5	> 0.5	v .	Ĥ;	> 0.5	> 0.5	V '	0.5	
Chlorophono	8 %		6.6			0 9 v v	V V	o •	Chloropenzene	00 N	900	o •	//		V V	V \	0.0	
cited Deblomethens	202	200	3.6			0 9 / V	3 %	. 4	ciioloculale	S (F		, v		. 78	/ 110	′	0.7	Ī
Methyl agetate	NS	v	· ·			> 20	· v		Methyl agetate	NS	-	0.00	<u> </u>	//F 9'0	· ·	V	-	Ī
Styrene	100	< 2.5	< 2.5	> 50		v 10	> 25	v	Styrene	100	< 0.5	v .	//Н	< 0.5	0.45	//r		J//
Toluene	1000	< 2.5	< 2.5	> 50		> 10	< 25		Toluene	1000	< 0.5	v >	//H	< 0.5	< 0.5	V	0.5	
trans-1,2-Dichloroethene	100	< 2.5	< 2.5	< 50		< 10	< 25	< 5	trans-1,2-Dichloroethene	100	< 0.5	> 5	//H	< 0.5	< 0.5	V	0.5	
Trichloroethene (TCE)	2	740	190	009	H//h	200	100	200	Trichloroethene (TCE)	2	240	410	//H	180	150		240	
Vinyl chloride	2	< 2.5	< 2.5	> 20		> 10	< 25			2	> 0.5	>	//H		> 0.5	٧	0.5	;
Aylenes (total)	1,000	o v		7	H//II		000 <	4.0	Aylenes (total)	1000	- v	01	1	-	- V	1	0.43	//6
70700 10011111	0.03			0			:		do con no manufactura de company	0.23		07.0	ŀ			-	00 0	
Dissolved Iron	0.3	0.1	NA	0.46	Ţ	6.1	11	14	Dissolved Iron	0.3	0.13	8970	1	< 0.1	5.1	1	96.0	1
Dissolved Manganese	0.05	NA	NA	NA	1	0.052	NA	NA	Dissolved Manganese	0.05	NA	NA	1	0.064	NA		NA	Ī
Iron	0.3	0.087 J	NA	1.2		5.9	31	43	Iron	0.3	0.21	1.1		3.4	1.8		1.2	
Manganese	0.05 3	NA	NA	NA		0.18	NA	NA	Manganese	0.05 3	NA	NA		90'0	NA		NA	
Alkalinity by USEPA Method SM 2320B-2011	320B-2011 (mg/L)	(T)							Alkalinity by USEPA Method SM 2320B-2011 (mg/L)	\$20B-2011 (mg/L								
Alkalinity	NS		NA.	190		V.	330	110	Alkalinity	SN	21	¥		NA	33	_	54	
Bicarbonate Alkalinity	S N	v v	X X	160		Z Z	K K	X Z	Bicarbonate Alkalinity	S N	2 %	<b>3</b> , 5		¥ Z	X X		Y X	
Chloride, Sulfate, Nitrate, and Nitrite by USEPA Method 300.0/353.2 (mg/L	e by USEPAN	tethod 3 00.0/3 53.2 (m	_	3		WW	WW	Visit	Chloride, Sulfate, Nitrate, and Nitrite by USEPA Method 300,0353.2 (mg/L.	e by USEPA Mes	hod 300.0/3 53.2 (mg/L)	,		CO.	Vot		VIV.	
Chloride	2603	37		00		30	30	00	Chloride	2603	07		l	PO	110	L	6	
Ciloriae	250	1 30 0		67	-		3 2	07	Cilibria	250	6 3	3 6		ŧ -	- T		è -	
Nitrate - N	10	0.25 J	ŽŽ	v	,	0.17	v 0.02		Nitrate - N	007	. S.	0.026	,			_	12.0	
Nitrie - N	-	< 0.02	NA	· -			J// 0.72	< 0.02	Nitrite - N	-		< 0.02		0.012 J//	0.053		0.022	7/1
Dissolved Gases by USEPA Method	od RSK-175 (µg	(T)							Dissolved Gases by USEPA Method	1 RSK-175 (µg/L								
Ethane	NS		NA				> 10	V	Ethane	SN				> 10	> 10	V	10	
Ethene	S N	0 9 V V	Š ž	0 <b>0</b>	•	2.8	/f 8 //f	J// v 10	Ethene	SN	0 :	v v		0 9	v 10	V	2 2	/0
TOC his USEP4 Method SM 5310C	110		IAA	2.1	-	0.007	2100	nnc)	TOC hy USEP4 Mathad SW 5310C	-2011 -2014 (mg/	1.			OCT	0/7	-		DA.
Total Organic Carbon	:	/ × /	NA	4800		920	390 H	H// 250	Total Organic Carbon	ч		12	l	21	63	H//	3.1	
Microbial (cells/mL)									Microbial (cells/mL)									
Dehalo cocco ides	SN	< 0.5	NA	6260		<2.5	NA	> 1.4	Dehalococoides	SN	< 0.5	6.1 >	F	> 0.5	VV	v	0.5	Ι
Dehalo bacter spp	NS		NA			2.5	NA		Dehalobacter spp	SN					NA		11700	
BAVI Vinyl Chloride Reductase	SN	> 0.5	V.		_	<2.5	V.	× 1.4	BAVI Vinyl Chloride Reductase	SZ	> 0.5	> 1.9	_	> 0.5	¥.	V	0.5	
teeA Reductase	SN S	> 0.5	Y X	0000	_	5.5	V X	V 1	teeA Reductase	SZ	× 0 0 ×	6.7 × 1		0.5	Y X	V 1	0.5	
Vinyl chloride Reductase	S		N/A			677	INA	ŧ. /	Vinyl on kinde Reductase	CN.	C:0 /			60	N/A	1	0.0	
Color Odor	NIC	VIV	VIV	district conditions	- Andrew	white MA	and Householde	Allendar	Colon/Odos	Ne	V.N.	olombo	ŀ	olombio(MA	apple		oloos/MA	T
Dissolved oxveen (mg/L)	S S	2.68	2.68	0.65	fond	030	O.3	0.27	Dissolved oxygen (mg/L)	2 22	22	O.1		0.87	0.8		0.71	
ORP (mV)	NS	152.8	152.8	-127.3	3	-100.4	-2111	-119.1	ORP (mV)	NS	149.9	26.1		52.3	138.2		97.61	
Hd	SN	5.17	5.17	10.0.		9.85	166	6.86	Hd.	NS	521	622		5.82	7.95	_	5.47	
Specific Conductivity (uS/cm) Temperature (Celsius)	S S	0.165	0.165	0.418		0.488	65	15.0	Specific Conductivity (uS/cm) Temperature (Celsius)	s s	0.292	0.389		0.352	20.3	_	369	
Turbidity (NTU)	NS	13.81	13.81	63.72		>1100	388.3	>1100	Turbidity (NTU)	NS	11.56	178.4	٦	150	16.22	+	7.73	٦
Notes:	ي ا																	

Notes:

- Influences at field deplicate sample.

- Influence and the state of the s

wewberry, so	Newberry, SC													
Sample ID				MW-10I			Sample ID					ERD-OBSW-11		
Laboratory ID	USEPA	WH2 0094-004	WJ29086-001	XC08061-002	XG20043-003	XL19029-003	Laboratory ID	USEPA	WH20094-005	WJ29086-002		XC08061-001	XG20043-004	XL 19029-004
olatile Organic Compounds by USEPA Method 8260D (112/L)	SEPA Method 820	08/20/21 60D (ug/L)	10/53/21	03/08/22	07/19/27	12/19/22	Volatile Organic Compounds by U	12	08/20/21 hod 8260D (µg/L)	17/67/01		03/08/22	07/19/22	12/19/22
1-Dichloroethene	7	< 5	< 0.5	< 2.5	1.4	1.3	1,1-Dichloroethene	7	< 5	< 0.5		2.5	1.7	0.93
,2-Dichloroethane	5	v >	0.95	< 2.5	1.1	1.1	1,2-Dich lo roethane	5	v >	19'0		2.5	0.94	0.7
,4-Dichlorobenzene	7.5	v >	< 0.5		< 0.5	< 0.5	1,4-Dichlorobenzene	7.5	> 2		v		< 0.5	
2-Butanone (MEK)	NS	001			0 >	01 >	2-Butanone (MEK)	NS	001			75 P//		
2-Hexanone	SN			v			2-Hexanone	SN	00 : v	0 T	v	50		
Acetone	SN		8.9				Acetone	NS				50		v 10
Benzene	v i	v ·	× 0.5				Benzene	9	v :	_	V	2.5		
Chlorobenzene	001	v '		× 7.5	> 0.5	< 0.5	Chlorobenzene	001		J/ 0.5		2.5	0.5	\$ 0° 5
Chloroethane	SS	o •	CO .	C7 >	ľ	-	Chloroethane	N S	o •			C7 1	C0 ×	0.42
cis-1,2-Dichloroethene	0/			069	970	n//H Occ	cis-1, 2-Dichloroethene	0/		0.1	_		4.20	340
Methyl acetate	SZ	0 ,		v :			Methyl acetate	SN S	00 ,			3.7	5.7	3.5
Styrene	001	o v					Styrene	001	o v	< 0.5	v	5.5		C0 v
Toluene	1000	v v	> 0.5	< 2.5	< 0.5	< 0.5	Toluene	1000	v v	< 0.5		2.5	< 0.5	0.45
trans-1,2-Dichloroethene	001	>	< 0.5	< 2.5	< 0.5	< 0.5	trans-1,2-Dichloroethene	100	>	< 0.5		3.1	3.1	-
Trichloro ethene (TCE)	2	820	1100	E// 20	57	55	Trichloroethene (TCE)	2	1000	520	E//	590	180	83
/inyl chloride	2	> 2	< 0.5	< 2.5	0.49 J//	< 0.5	Vinyl chloride	2	< 2	< 0.5		2.5	4.5	4.6
Xylenes (total)	10000	> 10	~	< >	~		Xylenes (total)		> 10	· ·	~	5		0.55
Wetals by USEPA Method 6010D (n	mg/L)						Metals by USEPA Method 6010D	(mg/L)						
Dissolved Iron	0.3 3	> 0.1	62.0	111	12	12	Dissolved Iron	0.3 3	> 0.1	0.7	~	0.1	//T 6700	5.6
Dissolved Memorrane	0.053	ž	×	-	Ň	N	Dissolved Menomen	0.053	V	· N		89 0		VN
ved ividing during	0.03		VVI	- :	Val.	VIV.	Dissolved intaligation	993	VAI 0	VVI		-	UNI	VIV.
	0.3	0.1	6.4	12	15	12	Iron	. 50	0.48	1.2		2	11	14
Manganese	0.05	NA	NA	0.98	NA	NA	Manganese	0.05	NA	NA		1.7	NA	NA
4lkalinity by USEPA Method SM 2320B-2011 (mg/L)	320B-2011 (mg/s						Alkalinity by USEPA Method SM	2326	_					
Mkalinity	SN SN	54	9, 7	V.	96	4 ;	Alkalınıty	S N	3 2	180	- /	NA:	320	780
Sicarbonale Alkalimity	S 2	# 7°	9 6	N N	N N	K Z	Stearbonate Alkalinity	S N	<b>4</b> 6	0.7		NA NA	N N	N N
Calculate Saffate Situate and Situite by USEP 4 Medical 300 0/353 2 (mail.)	to he I'CEP 4 Mo	4od 300 0/253 2 (may		VVV	VAI	WW	Trate and	15	53				VAI	W
ie, Surjuie, Miraie, and Mir	ne oy corra m	mon soo.wsss.z.mp						mie by Carra R	9					
Chloride	250 3	9.5	39	8.2	5.7		Chloride	250 °	8.1	6		10	9.8	4.9
Sulfate	250 3				- v		Sulfate	250 3		V			<del>-</del>	 v
Vitrate - N	0.1	1.1 B		< 0.02	0.07	0.078	Nitrate - N	01 -	86'0	B < 0.1	v '	0.02 H//	0.21	0.59
Nimic - N	1001	П	> 0.02	П	0.025	> 0.02	Nimic - N	1 DOL 175 (	0.0038			ı	0.02	0.022
then a	N KSK-1/3 UIIV	01	01			01 >	Dissolved Gases by USEFA Method RSK-	MSN-1-ACM DON	10			1/1 1/2	01	01
Ethene	S	· v	0.00	v v	10	· v	Ethene	NS	01	v v		14	=	9'6
fethane		> 10	> 10	1400	1700	1500 B//	Methane	NS	2.9	J 15	4	200	8700	8300
OC by USEPA Method SM 5310C	7-2011, -2014 (mg	(T)					TOC by USEPA Method SM 5310	C-2011, -2014 (m.	(mg/L)					
otal Organic Carbon	SN	~	13	91	//H 01	3.7	Total Organic Carbon	NS	-	460		140	//H 96	150
dicrobial (cells/mL)							Microbial (cells/mL)							
Xehalococoides	SN	3.2	-	<1.3	NA	< 0.7	Dehalococcoides	NS	< 0.5	105		1	NA	L'L >
Dehalobacterspp	SN			391	NA		Dehalobacterspp	SN			9	920	NA	
3AVI Vinyl Chloride Reductase	SN		V	m ⊽	NA		BAV1 Vinyl Chloride Reductas	NS		> 313	*	:0.5	NA.	
toe A Reductase	SN S	0.1	< 0.5	₹ ₹	NA.	< 0.7	teeAReductase	SN	> 0.5	> 31.3		<0.5	NA:	> 7.7
Thyl chloride Keducuse	S	0.1		6.17	INA	, O./	Vinyl enionde Reductise	S		13./		C'0-	INA	//
Salar Curameters	Ne	VIX	o/osigno/o	A I William Manual	a lane	Alton MA	rieur unumeters	NIC	V N	malita /alam		A IV	asillo udito	Modifica
Dissolved exveen (ma/L)	S S	2 5			0.48	0.25	Dissolved oxvaem (mad.)	SN	Z Z	wine/cloud		0.17	0.25	0.08
ORP (mV)	SN	158.3	28.1	-70.9	-103	58.9	ORP (mV)	NS	82.7	-191.4		7.67	-570.1	-118.8
	SN	5.35	99'9	80'9	6.16		Hd.	NS	5.41	9.76		. 26	8.95	7.50
Specific Conductivity (uS/cm)	NS	0.088	0.132	0.120	133		Consider Conductivity (118/cm)	NIC	2000	0.377	_		09	000
	!	20010	V-L-Um	V-1.4V	771		specific Conductivity (usem)	2	0.000	U.3 rrt		272	99	900

Notes:

- Indicates a field deplicate sample.

- Indicates the deplicate for the field of the field for trihalemethanes is 80 µg/L.

- Secondary MCL.

- Deplication of the field for the field field field for trihalemethanes is 80 µg/L.

- Separate the behaviory abded death of the field f

# Attachment A

**Monitoring Well Permit** 



July 9, 2021

Mr. Dean Weeks Phillips Lighting 200 Franklin Square Drive Somerset, NJ 08873

Re: Monitoring Well Approval Letter

Former Shakespeare Composite Structures Site

Monitoring Well Installation Permit Request dated July 8, 2021

Newberry County

Voluntary Cleanup Contract 14-6271-RP

File # 51025

Dear Mr. Weeks:

The Department has reviewed and approves the monitoring well installation request. Please submit the monitoring well boring logs with the next pilot study report, to my attention, on or before October 30, 2021. Please feel free to contact me with any questions or comments at (803) 898-0722 or at kuhnkm@dhec.sc.gov.

Sincerely,

Kimberly Kuhn, Project Manager State Voluntary Cleanup Section

Bureau of Land and Waste Management

Enc: Monitoring Well Approval Form (MW-12873)

CC: Lucas Berresford, BLWM

Veronica Barringer, Midlands BEHS Office

Scott Ross, AECOM, 101 Research Drive, Columbia, SC 29203

File # 51025



# **Monitoring Well Approval**

Date of Issuance: July 9, 2021 Expires: July 9, 2022 **Approval #: MW-12873** 

Approval is hereby granted to: **AECOM** 

> 101 Research Drive Columbia, SC 29223

**Facility:** Former Shakespeare Composition Structures

19845 US Highway 76

Newberry, South Carolina, Newberry County

This approval is for the installation of up to seven (7) permanent monitoring wells. The monitoring wells are to be installed at the locations identified and per the proposed construction details provided in the July 8, 2021 monitoring well installation permit applications. These monitoring wells are to be installed following all the applicable requirements of R.61-71.

# Please note that R.61-71 requires the following:

- 1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
- 2. All wells shall be properly developed per R.61-71.H.2.d. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
- 3. All analytical data and water levels obtained from each monitoring well shall be submitted to the author of this approval within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.
- 4. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
- 5. If any of the information provided to the Department changes, including the proposed drilling date, Kimberly Kuhn (803-898-0722) shall be notified at least twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards, dated June 24, 2016.

Kimberly Kuhn, Project Manager State Voluntary Cleanup Program Site Assessment, Remediation & Revitalization Division Bureau of Land and Waste Management

**Attachment B** 

**UIC Permits** 



November 24, 2020

Mr. Dean Weeks Signify North America Corporation 200 Frnaklin Square Drive Somerset, NJ 8873

Underground Injection Control Permit #SCHE03020600 Re:

Shakespeare Composite Structures Site

**Newberry County** 

Dear Mr. Weeks:

Enclosed is a Permit to Construct twenty-three (23) DPT Class VA-I wells at the Shakespeare Composite Structure Site, Newberry County as requested in the permit application received November 6, 2020. Other permits maybe necessary for the intended activities. Please ensure all permits have been obtained before proceeding.

> **South Carolina Board of Health and Environmental Control Guide to Board Review** Pursuant to S.C. Code Ann. § 44-1-60 Effective May 8, 2014

The decision of the South Carolina Department of Health and Environmental Control (Department) becomes the final agency decision fifteen (15) calendar days after notice of the decision has been mailed to the applicant, permittee, licensee and affected persons who have requested in writing to be notified, unless a written request for final review accompanied by a filing fee in the amount of \$100 is filed with Department by the applicant, permittee, licensee or affected person.

Applicants, permittees, licensees, and affected parties are encouraged to engage in mediation during the final review process.

If the Board declines in writing to schedule a final review conference, the Department's decision becomes the final agency decision and an applicant, permittee, licensee, or affected person may request a contested case hearing before the Administrative Law Court within thirty (30) calendar days after notice is mailed that the Board declined to hold a final review conference.

### T. Filing of Request for Final Review

- 1. A written Request for Final Review (RFR)and the required filing fee of one hundred dollars (\$100) must be received by Clerk of the Board within fifteen (15)calendar days after notice of the staff decision has been mailed to the applicant, permittee, licensee, or affected persons. If the 15th day occurs on a weekend or State holiday, the RFR must be received by the Clerk on the next working day. RFRs will not be accepted after 5:00 p.m.
- 2. RFRs shall be in writing and should include, at a minimum, the following information:
  - The grounds for amending, modifying, or rescinding the staff decision;
  - a statement of any significant issues or factors the Board should consider in deciding how to handle the matter;
  - the relief requested; and
  - a copy of the decision for which review is requested.

3. RFRs should be filed in person or by mail at the following address:

South Carolina Board of Health and Environmental Control

Attention: Clerk of the Board

2600 Bull Street

Columbia, South Carolina 29201

Alternatively, RFR's may be filed with the Clerk by facsimile (803-898-3393) or by electronic mail (boardclerk@dhec.sc.gov).

- 4. The filing fee maybe paid by cash, certified check or credit card. If a RFR is filed by facsimile or electronic mail, the filing fee may be mailed to the Clerk of the Board and the envelope must be postmarked within the time allowed for filing a RFR.
- 5. If there is any perceived discrepancy in compliance with this RFR filing procedure, the Clerk should consult with the Chairman or, if the Chairman is unavailable, the Vice-Chairman. The Chairman or the Vice-Chairman will determine whether the RFR is timely and properly filed and direct the Clerk to (1) process the RFR for consideration by the Board or (2) return the RFR and filing fee to the requestor with a cover letter explaining why the RFR was not timely or properly filed. Processing an RFR for consideration by the Board shall not be interpreted as a waiver of any claim or defense by the agency in subsequent proceedings concerning the RFR.
- 6. If the RFR will be processed for Board consideration, the Clerk will send an Acknowledgement of RFR to the Requestor and the applicant, permittee, or licensee, if other than the Requestor.
- 7. The Clerk will email the RFR to all Board members for review, and all Board members will confirm receipt of the RFR to the Clerk by email. If a Board member does not confirm receipt of the RFR within twenty-four (24) hour period, the Clerk will contact the Board member and confirm receipt. If a Board member believes the RFR should be considered by the RFR Committee, he or she will respond to the Clerk's email within forty-eight (48) hours and will request further review. If no Board member requests further review of the RFR within the forty-eight (48) hour period, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Final Review Conference. A copy of the Notice of Appeal Procedure will be included with the letter.

NOTE: If the time periods described above end on a weekend or State holiday, the time is automatically extended to 5:00 p.m. on the next business day.

8. If the RFR is to be considered by the RFR Committee, the Clerk will forward a copy of the RFR to Department staff and Office of General Counsel. A Department response to the RFR should be provided by Department staff to the Clerk within eight (8) working days after the RFR is forwarded.

# II. Final Review Conference Scheduling

- 1. If a Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, informing the Requestor of the determination.
- 2. The Clerk will request Department staff provide the Administrative Record.
- 3. The Clerk will send Notice of Final Review Conference to the parties at least ten (10) days before the Conference. The Conference will be publicly noticed and should:
  - include the place, date and time of the Conference;
  - state the presentation times allowed in the Conference;
  - state evidence may be presented at the Conference;
  - if the conference will be held by committee, include a copy of the Chairman's order appointing the committee;
     and
  - inform the Requestor of his or her right to request a transcript of the proceedings of the Conference prepared at Requestor's expense.

4. If a party requests a transcript of the proceedings of the Conference and agrees to pay all related costs in writing, including costs for the transcript, the Clerk will schedule a court reporter for the Conference.

### III. Final Review Conference and Decision

- 1. The order of presentation in the Conference will, subject to the presiding officer's discretion, be as follows:
  - Department staff will provide an overview of the staff decision and the applicable law to include [10 minutes]:
    - Type of decision (permit, enforcement, etc.) and description of the program.
    - Parties
    - Description of facility/site
    - Applicable statutes and regulations
    - Decision and materials relied upon in the administrative record to support the staff decision.
  - Requestor(s) will state the reasons for protesting the staff decision and may provide evidence to support amending, modifying, or rescinding the staff decision. [15 minutes] NOTE: The burden of proof is on the Requestor(s)
  - Rebuttal by Department staff[15 minutes]
  - Rebuttal by Requestor(s)[10 minutes]

Note: Times noted in brackets are for information only and are superseded by times stated in the Notice of Final Review Conference or by the presiding officer.

- 2. Parties may present evidence during the conference; however, the rules of evidence do not apply.
- 3. At any time during the conference, the officers conducting the conference may request additional information and may question the Requestor, the staff, and anyone else providing information at the conference.
- 4. The presiding officer, in his or her sole discretion, may allow additional time for presentations and may impose time limits on the Conference.
- 5. All Conferences are open to the public.
- 6. The officers may deliberate in closed session.
- 7. The officers may announce the decision at conclusion of the Conference or it may be reserved for consideration.
- 8. The Clerk will mail the written final agency decision (FAD) to parties within 30 days after the Conference. The written decision must explain the basis for the decision and inform the parties of their right to request a contested case hearing before the Administrative Law Court. The FAD will be sent by certified mail, return receipt requested.
- 9. Communications may also be sent by electronic mail, in addition to the forms stated herein, when electronic mail addresses are provided to the Clerk.

The above information is provided as a courtesy; parties are responsible for complying with all applicable legal requirements.

Please submit all of the well logs for the installed wells to schedule a well inspection. An inspection of the UIC System must be conducted prior to issuance of the Permit to Operate. If you have any questions, please call Bruce Crawford at (803) 898-4177.

Sincerely,

Alex Butler, Manager Water Monitoring Assessment and Protection Division SCDHEC - Bureau of Water



### WATER MONITORING ASSESSMENT & PROTECTION DIVISION

Injection Well Construction Permit for Class II, III, and V.A. Injection Well(s)

Permit #SCHE03020600 Date Issued: November 24, 2020

Date Expired: November 24, 2023

For (Operator): Signify North America Corporation

In accordance with R.61-72 this permit will become final unless it is appealed within fifteen (15) days of the issuance date.

In accordance with provisions of Title 48, Chapter 1, South Carolina Code of Laws, 1976, as amended, permission is granted for construction of twenty-three (23) Class VA-I injection wells with a true diameter of one (1) to three (3) inches, and a total depth of approximately eleven (11) to thirty (30) feet located at Shakespeare Composite Structure, Newberry County, SC with the following provisions:

- The Department's UIC Permitting Program shall be notified by Email at least 24 hours prior to 1) installing injection wells at crawfobd@dhec.sc.gov or by calling (803) 898-4177.
- The operator shall submit completed SCDHEC well record forms to the Department's Water Monitoring, 2) Assessment & Protection Division after completion of the injection wells.
- All Constructed wells for underground injection that require grouting are to have the well annulus 3) grouted within 24 hours of screen installation.
- 4) All wells remaining more than 24 hours from installation are to have water tight capped casings, lockable vaults and/or protective covers and surface pads. All Direct Push Technology (DPT) wells are to be abandoned upon completion of injection activities at each location.
- Upon completion of construction, injection activities shall not commence prior to receiving approval from the 5) Department to operate the injection wells. This provision also applies to injection during cycle testing.
- 6) When the injection wells are no longer in use, or upon request by the Department, within sixty (60) days all injection wells must be permanently abandoned in accordance with the South Carolina Well Standards and Regulations (R.61-71).

Alex Butler, Manager Water Monitoring Assessment and Protection Division SCDHEC - Bureau of Water

## STATEMENT OF BASIS - UIC DRAFT PERMIT #SCHE03020600

In accordance with the South Carolina Underground Injection Control Regulations, Section R61-87.13(J), this Statement of Basis has been prepared for the Shakespeare Composite Structure Site Underground Injection Control permit application received November 6, 2020.

Ownership of the proposed injection well is Signify North America Corporation, 200 Frnaklin Square Drive, Somerset, NJ 8873. The permit (UIC SCHE03020600) is for the construction of twenty-three (23) injection wells at the Shakespeare Composite Structure Site. The intent of the injection wells is to inject potassium oermanganate- ZVI (zero valent iron)- with bioaugmentation - magnesium oxide and guar for the remediation of groundwater quality as described in the plan dated September 29, 2020. The final permit for the underground injection proposal has been prepared based on staff review and the application of the Pollution Control Act of South Carolina and the Underground Injection Control Regulations of South Carolina.

Conditions of the permit issuance include the submittal of well records for all injection wells installed and the inspection of well construction by the Department prior to injection.



November 25, 2020

Mr Dean Weeks Signify North America Corporatin 200 Franklin Square Drive Somerset, NJ 08873

Re: Underground Injection Control Permit #SCHE03020600

Shakespeare Composite Structures, 19845 US Hwy 76, Newberry, SC Site

Dear Mr. Weeks:

Enclosed is a Permit to Operate twenty-three (23) as Class VA-I (Aquifer Remediation) injection wells at the Shakespeare Composite Structures, 19845 US Hwy 76, Newberry, SC Site, Newberry County, SC. Other permits maybe necessary for the intended activities. Please ensure all permits have been obtained before proceeding.

# South Carolina Board of Health and Environmental Control **Guide to Board Review** Pursuant to S.C. Code Ann. § 44-1-60 Effective May 8, 2014

The decision of the South Carolina Department of Health and Environmental Control (Department) becomes the final agency decision fifteen (15) calendar days after notice of the decision has been mailed to the applicant, permittee, licensee and affected persons who have requested in writing to be notified, unless a written request for final review accompanied by a filing fee in the amount of \$100 is filed with Department by the applicant, permittee, licensee or affected person.

Applicants, permittees, licensees, and affected parties are encouraged to engage in mediation during the final review process.

If the Board declines in writing to schedule a final review conference, the Department's decision becomes the final agency decision and an applicant, permittee, licensee, or affected person may request a contested case hearing before the Administrative Law Court within thirty (30) calendar days after notice is mailed that the Board declined to hold a final review conference.

### I. Filing of Request for Final Review

- 1. A written Request for Final Review (RFR)and the required filing fee of one hundred dollars (\$100) must be received by Clerk of the Board within fifteen (15)calendar days after notice of the staff decision has been mailed to the applicant, permittee, licensee, or affected persons. If the 15th day occurs on a weekend or State holiday, the RFR must be received by the Clerk on the next working day. RFRs will not be accepted after 5:00 p.m.
- 2. RFRs shall be in writing and should include, at a minimum, the following information:
  - The grounds for amending, modifying, or rescinding the staff decision;
  - a statement of any significant issues or factors the Board should consider in deciding how to handle the matter:
  - the relief requested; and
  - a copy of the decision for which review is requested.

3. RFRs should be filed in person or by mail at the following address:

South Carolina Board of Health and Environmental Control

Attention: Clerk of the Board

2600 Bull Street

Columbia, South Carolina 29201

Alternatively, RFR's may be filed with the Clerk by facsimile (803-898-3393) or by electronic mail (boardclerk@dhec.sc.gov).

- 4. The filing fee maybe paid by cash, certified check or credit card. If a RFR is filed by facsimile or electronic mail, the filing fee may be mailed to the Clerk of the Board and the envelope must be postmarked within the time allowed for filing a RFR.
- 5. If there is any perceived discrepancy in compliance with this RFR filing procedure, the Clerk should consult with the Chairman or, if the Chairman is unavailable, the Vice-Chairman. The Chairman or the Vice-Chairman will determine whether the RFR is timely and properly filed and direct the Clerk to (1) process the RFR for consideration by the Board or (2) return the RFR and filing fee to the requestor with a cover letter explaining why the RFR was not timely or properly filed. Processing an RFR for consideration by the Board shall not be interpreted as a waiver of any claim or defense by the agency in subsequent proceedings concerning the RFR.
- 6. If the RFR will be processed for Board consideration, the Clerk will send an Acknowledgement of RFR to the Requestor and the applicant, permittee, or licensee, if other than the Requestor.
- 7. The Clerk will email the RFR to all Board members for review, and all Board members will confirm receipt of the RFR to the Clerk by email. If a Board member does not confirm receipt of the RFR within twenty-four (24) hour period, the Clerk will contact the Board member and confirm receipt. If a Board member believes the RFR should be considered by the RFR Committee, he or she will respond to the Clerk's email within forty-eight (48) hours and will request further review. If no Board member requests further review of the RFR within the forty-eight (48) hour period, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Final Review Conference. A copy of the Notice of Appeal Procedure will be included with the letter.

NOTE: If the time periods described above end on a weekend or State holiday, the time is automatically extended to 5:00 p.m. on the next business day.

8. If the RFR is to be considered by the RFR Committee, the Clerk will forward a copy of the RFR to Department staff and Office of General Counsel. A Department response to the RFR should be provided by Department staff to the Clerk within eight (8) working days after the RFR is forwarded.

## II. Final Review Conference Scheduling

- 1. If a Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, informing the Requestor of the determination.
- 2. The Clerk will request Department staff provide the Administrative Record.
- 3. The Clerk will send Notice of Final Review Conference to the parties at least ten (10) days before the Conference. The Conference will be publicly noticed and should:
  - include the place, date and time of the Conference;
  - state the presentation times allowed in the Conference;
  - state evidence may be presented at the Conference;
  - if the conference will be held by committee, include a copy of the Chairman's order appointing the committee;
     and
  - inform the Requestor of his or her right to request a transcript of the proceedings of the Conference prepared at Requestor's expense.

4. If a party requests a transcript of the proceedings of the Conference and agrees to pay all related costs in writing, including costs for the transcript, the Clerk will schedule a court reporter for the Conference.

## III. Final Review Conference and Decision

- 1. The order of presentation in the Conference will, subject to the presiding officer's discretion, be as follows:
  - Department staff will provide an overview of the staff decision and the applicable law to include [10 minutes]:
    - Type of decision (permit, enforcement, etc.) and description of the program.
    - Parties
    - Description of facility/site
    - Applicable statutes and regulations
    - Decision and materials relied upon in the administrative record to support the staff decision.
  - Requestor(s) will state the reasons for protesting the staff decision and may provide evidence to support amending, modifying, or rescinding the staff decision. [15 minutes] NOTE: The burden of proof is on the Requestor(s)
  - Rebuttal by Department staff[15 minutes]
  - Rebuttal by Requestor(s)[10 minutes]

Note: Times noted in brackets are for information only and are superseded by times stated in the Notice of Final Review Conference or by the presiding officer.

- 2. Parties may present evidence during the conference; however, the rules of evidence do not apply.
- 3. At any time during the conference, the officers conducting the conference may request additional information and may question the Requestor, the staff, and anyone else providing information at the conference.
- 4. The presiding officer, in his or her sole discretion, may allow additional time for presentations and may impose time limits on the Conference.
- 5. All Conferences are open to the public.
- 6. The officers may deliberate in closed session.
- 7. The officers may announce the decision at conclusion of the Conference or it may be reserved for consideration.
- 8. The Clerk will mail the written final agency decision (FAD) to parties within 30 days after the Conference. The written decision must explain the basis for the decision and inform the parties of their right to request a contested case hearing before the Administrative Law Court. The FAD will be sent by certified mail, return receipt requested.
- 9. Communications may also be sent by electronic mail, in addition to the forms stated herein, when electronic mail addresses are provided to the Clerk.

The above information is provided as a courtesy; parties are responsible for complying with all applicable legal requirements.

If you have any questions, please call Bruce Crawford at (803) 898-4177.

Sincerely,

Alex Butler, Manager

Water Monitoring Assessment and Protection Division

SCDHEC - Bureau of Water

CC:



## WATER MONITORING ASSESSMENT & PROTECTION DIVISION

Injection Well Operating Approval

for

Class II, III, and V.A. Injection Well(s)

Permit #SCHE03020600

Date of Issue: November 25, 2020

In accordance with R.61-72 this permit will become final unless it is appealed within fifteen (15) days of the issuance date.

In accordance with the provisions of Title 48, Chapter 1, South Carolina Code of Laws, 1976, as amended, and pursuant to receiving a Permit to Operate twenty-three (23) Class VA-I (Aquifer Remediation) injection wells, authorization is granted to Signify North America Corporation to operate twenty-three (23) Class VA-I (Aquifer Remediation) injection wells located at the Shakespeare Composite Structures, 19845 US Hwy 76, Newberry, SC Site, Newberry County, SC, and are subject to the attached provisos noted for the operator.

The Class VA-I injection wells are one (1) to three (3) inches in diameter and approximately eleven (11) to thirty (30) feet deep.

Pursuant to Title 48, Chapter 1, South Carolina Code of Laws, 1976, as amended, this authorization may be rescinded if these injection wells should, at any time, contaminate, pollute, or otherwise adversely affect other water in the vicinity or for any other conditions contained in R61-87, Title 48, Chapter 1, South Carolina Code of Laws, 1976, as amended.

Expires: November 24, 2023

Alex Butler, Manager

Water Monitoring Assessment and Protection Division

SCDHEC - Bureau of Water

Date November 25, 2020

Provisions to the Injection Well Operating Approval for
Underground Injection Well Permit #SCHE03020600
Shakespeare Composite Structures, 19845 US Hwy 76, Newberry, SC Newberry County, S.C.
November 25, 2020

- 1) Construction of new or abandonment of existing wells must be reported to the Department within thirty (30) days of completion.
- Only potassium permanganate- ZVI (zero valent iron)- with bioaugmentation magnesium oxide guar as described in the corrective action plan may be injected into the subsurface at the twenty-three (23) Class VA-I (Aquifer Remediation) injection wells. Any changes in the system operation other than as presented in the UIC Permit Application must be reported to the Department prior to implementation.
- Permit must be maintained as an active Permit to Operate. Failure to renew a Permit within 30 days of expiration will result in automatic closure of the Permit to Operate. Reactivation of an expired Permit to Operate will be considered after a letter of request to reactivate UIC Permit #SCHE03020600 is received and reviewed.



## **Attachment C**

Boring Logs, As-built Construction Logs, Well Development Logs, and Survey Data for Pilot Study Observation Wells

	AE	CO	М		Tes	st Bori	ng l	Repor	t			0BSW-1 OF 2
PRO	JECT:	PS-	Meul	02554						PROJEC	T NO:	60035197
CLIE	NT:	5,5	pti							LOCATION	ON: <u>//</u>	rekert flog.
CON	ITRACTOR	t	SAED.							ELEVAT	ION:	
	IPMENT:		Geop	robe	8140	>				NORTHI	NG:	
GRO	UNDWAT	ER	,		DRIL	LING INFORMA				EASTIN	G:	
DATE	HRS	WATER	METHOD	Soric		CASING	6"	TEMP / PERM	Toyo	DATE S	TART:	3/5/21
			HOLE DIA.	6"		CASING DIA		CASING TYPE	-/	DATE FI		10/2/21
	-(		DEPTH	1/0		CASING DEPTH	- //	GROUT TYPE		DRILLER		Lylan Fierss
	ORGANIC	SAMPLER	SAMPLING	NA		HAMMER WT	4/4	HAMMER FALL	11/4	OVERSI	GHT:	3,Charr
DEPTH IN FEET	VAPOR SCREENING (PPM)	BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE		FIELD C	LASSIF	ICATION A	ND REM		1 ACCIEI	CATION: USCS
-	(11111)	O IIVO II LO				1	5. 14	- (m)		3012.0	LAJJII N	OATION: USCS
						layer	2177	[110]	11		,	(at in
		74 - 3			Dr.	1 to ~	10.81	reda	ish	yelle	اسا	(% 7.5 762),
		7			Me	ostly 311	14, 5	one	clay,	trac	C e.	(4 7.5 TR),
					MI	ca, sligh	+ hy	plastic	, mo	7/10	\$	
- 5,0												
		11 1										
	-				500	y SAND	(SM	}				
10.0					-	1 1 14	ر ا	law wh	bro	WI	161.	10 yr), mostly
- 10,0					190	15t 13ph	9	1000.001	= 41	14 4	679	e NICO, non-
1							oud	1 30.00		') /	Jar	, ,
	3		1		Plas	stil						
- 15,0						. (	- (	1				
					3100	ilar to	4000	ے د				
					500	yish to	ligh	t promi	ush .	200	7 (	6/2 10 YR), wet,
		12.T			form	+ relie	+ =	tructur.	0			6/2 10 YR), wet,
					11							
2.0												
			1									
BLOW:	VERY LO	DENSITY	BLOWS/F	VERY SO	SISTENCY	SAMPL SS SPLITS			CRIPTIONS		10/7	NOTES
5-10 11-30 31-50	LOOSE MEDIUM I DENSE		0-2 3-4 5-8 9-15	SOFT MEDIUM STIFF		SS SPLITS ST SHELBY G GRABS MC MACRO	TUBE AMPLE	MOSTLY SOME LITTLE FEW	30- 15-	100% -45% -25% -10%	WD NE UR NR	WHILE DRILLING NOT ENCOUNTERED NOT READ NO RECOVERY
50+	VERY DE	NSE	16-30 31+	VERY ST	IFF		_	TRACE		:5%		

-			
473	parents of		
	-		
		•	

## **Soil Boring Report**

BORING NO. OBSU-15 PAGE 2 OF 2

											1.10		
	ORGANIC	SAMPLER	711										
DEPTH	VAPOR	BLOWS	SAMPLE	SAMPLE									
IN FEET	SCREENING	PER	NUMBER	DEPTH RANGE				FIELD CLASSIFI	CATION AND	REMARKS			
20.0	(РРм)	6 INCHES											
-													
			1										
			1					1					
			1		SILTY	54	NO (SI	4					
				-	1				-1	. 1	H	,	
			1		MOILT	hight	- plive	= brown (8	16 2.5	4/14,	40 5/1	7	med,
					, · · · · ·	. )		^					
					sond.	1.4	1/2 511	t, for.	MICQ,	nan -	- po/2:	stro	-, reliet
25.0			1		,	, , ,,		, ,	,		U		<i>'</i>
			1		Stone	.1							
			1		STANK	Tue	2						
			]										
11.5													
_ 30.0													
						Bac	. 1	ermina fed	C -	30,			
			-			2011	^> ^	27 72(1	_				
			-										
			-										
			-										
			-										
			-										
			1										
35.0			1										
- 33 0													
		-1.02	1										
			1										
			]										
40.0													
	15		-										
			-										
			-										
1			-										
	<u> </u>		-										
			-										
- <sup>45 0</sup>			-										
BLOW	S/FT F	ENSITY	BLOWS/F	T ^	ONSISTENCY	Т	CAL	PLER ID	T	DESCRIPTIONS			NOTES
0-4	VERYL		0-2	VERY S		SS	SPLIT SPOO		MOSTLY	DESCRIPTIONS	50-100%	WD	WHILE DRILLING
5-10	LOOSE		3-4	SOFT		ST	SHELBY TUE		SOME		30-45%	NE	NOT ENCOUNTERED
11-30		A DENSE	5-8		M STIFF	G	GRAB SAMP		LITTLE		15-25%	UR	NOT READ
31-50	DENSE		9-15	STIFF		мс	MACRO-COF		FEW		5-10%	NR	NO RECOVERY
50+	VERY D	ENSE	16-30	VERY S	STIFF				TRACE		<5%	,,	

AECOM							Soil Boring Report					BORING NO. 085- EN0 - ) I PAGE / OF 2				
PRO	JECT:	P3-	Newb	esc.							PROJECT	NO:	6063519	7		
CLIE	NT:	5190	1. Fu	7							LOCATION	12 D	release For			
CON	TRACTOR		SAFDA	000				W			ELEVATIO					
EQU	IPMENT:		Geopeo	be 81	40 So	AIC					NORTHING	G:				
GRO	UNDWATE	R	·	· ·	DRIL	LLING IN	FORMATION				EASTING:					
DATE	HRS	WATER	METHOD	Songe	CA	SING	6"	TEMP	/ PERM	TEP	DATE STA	RT:	8/5/21			
			HOLE DIA.	6"	CA	SING DIA.		CASIN	G TYPE	Steel	DATE FINI	SH:		_		
<u> </u>			DEPTH	211 1	CA	SING DEP	тн	_	T TYPE	<del>                                     </del>	DRILLER:		Oykou Fiers	.5		
	0704140		SAMPLING	NA	HA	MMER WI	WA	HAMN	ER FALL	NA	OVERSIG	HT:	5,4025	_		
DEPTH IN FEET	ORGANIC  VAPOR  SCREENING	BLOWS PER	SAMPLE NUMBER	SAMPLE DEPTH RANGE	=	FIE	ELD CLASSIFICA	ATION A	AND REM	ARKS			*			
	(PPM)	6 INCHES					14.6	4			so	L CLASSI	FICATION USCS			
					Pole Be Few :	s. 14	SAND (	msey		~			to fine som			
<b>–</b> 5.0				5	dense	, me	orst, mos	stly	sist,	ラグラ	yo ye	110 w 40	time sand	(ed)		
					tince											
l				5	Simi)	h= >	to above	es	acet	- pale	· yello	د د د	h red to 19	344		
1					gray						0					
					7.7	(1										
			ļ	-												
_ 10.0					1 1					_			At the second	.		
													thes the			
ı	<u> </u>		-		alte	run	fins layer	13 (I	- 2 m	m th	ick) =	+ 1	pale brown ?			
l					1						_		ely, trac			
			1								) ) '		37.14			
1		<b></b>	1		Fine		1124									
			1													
			1											4 .		
			]		*											
15.0																
			1		310	ifa =	+0 9loc	ع د و	ekri	met	met					
			1					_		- 0 '	•			1		
			1		-									- 1		
			-											- 1		
			+	a										1		
			1		1	k	+0									
		<u> </u>	1		Mardi	, v ~ >	0M							1		
			1		SILT W	1/3.	AND (ML)									
20.0			1		Pale b.	10-7	to pale	ye 11 a	~ /o	lestit	Song	(for	nt-reliet Somitis	e structure		
BLOW	S/FT	DENSITY	BLOWS/FT.		ISISTENCY	T	SAMPLER ID.			DESCRIPTIONS			NOTES			
0-4	VERY LC		0-2	VERY SOFT	A THE LANGE OF THE	ss	SPLIT SPOON		MOSTLY		50-100%	WD	WHILE DRILLING			
5-10	LOOSE		3-4	SOFT		ST	SHELBY TUBE		SOME		30-45%	NE	NOT ENCOUNTERED			
11-30	MEDIUM	DENSE	5-8	MEDIUM ST	IFF	G	GRAB SAMPLE		LITTLE		15-25%	UR	NOT READ			
31-50	DENSE		9-15	STIFF		мс	MACRO-CORE		FEW		5-10%	NR	NO RECOVERY			
50+	VERY DE	NSE	16-30	VERY STIFF	:				TRACE		<5%					
1			31+	HARD										. 1		

	-0044	
A	=COM	

## **Soil Boring Report**

BORING NO. 055-E20-17

	ORGANIC	SAMPLER							
EPTH •N	VAPOR	BLOWS	SAMPLE	SAMPLE DEPTH		FIFI D CLASSI	FICATION AND REMARKS		
ET	SCREENING	PER	NUMBER	RANGE		I IEED OEAGGI	TICATION AND ILMANICO		
.0	(PPM)	8 INCHES			2	All Control of the Co			
					5117 W/	SAND (ML)			20000019 17
	•				2 ( )	to pale yellow to	laht arms /Form	+- ce1	het country
					Pale brown	to pale yellow	120 20 2 124	(-	3
					structure	work to net	med douse, m	NST/	51/T1
				·	Car C	& to fine gt	sand force	1.	uca tonic
					17th e me	a to sine j	July 1 line		
					1				
			1		clay				
					/				
25.0									
			ĺ		5,000	to above			
			1			-			
			1	1					
			1						
			1			473			
			1	28	lea de	to above			
			1		>140	10000			
			1		23,000				
	<u> </u>		1		Sir w/	SAVO (ML) - SAF	200175		
30.0			1		7	277	200115		
JU.U		<u> </u>	1		Rote cold.	4 yellow to pale	yellow, dous	المر و م	oist
			1		Vent recerts			1,	rringh
		<b>—</b>	1		Mostly si	It, little fine som	ud, trove mir	a (N)	TTIC 4115
			1						
				1	1 / 1// /				
		1	1		1 (19 100) y	chw 31).			
					daying y	chw 31).			
					dating y	apo 31).			
					dething y	11/2.	Y		
					dailing y	11/2.	· V		
35.0					dating y	11/2.	V		
35.0					dather y	1 ( SI).			
35.0					dather y	11/2.			
35.0					dating y	11 ( SI).	1		
35.0							71 - 1		
35.0						Terminated Q	36.0		
35.0							36.0		
35.0							36.0		
35.0							36.0		
35.0					Borns	Terminated C			
					Borns	Terminated C			
35.0					Borns	Terminated C			
					Borns	Terminated C			
					Borns S.	Terminated Q			
					Borns S.	Terminated Q			
					Borns S.	Terminated C			
					Borns S.	Terminated Q			
					Borns S.	Terminated Q			
					Borns S.	Terminated Q			
					Borns S.	Terminated Q			
40.0					Borns S.	Terminated Q			
					Borns S.	Terminated Q			
40.0	S/ET (S/ET	DENSITY	BI OWE		Borns	Terminated Q crear - 30-35 Afrond 6-25-27.	5		NOTES
40.0 45.0		DENSITY	BLOWS/		Borns F Be	Terminated Q  crear - 30-35  other - 27.5-35  utposite-25-27.	DESCRIPTIONS	50.100%	NOTES WITH WHITE PRINTING
45.0 LOW	VERY L	LOOSE	0-2	VERY S	Borns  F  Be  ONSISTENCY SOFT	Terminated Q  crear - 30-35  other - 27.5-35  utposite-25-27.  SAMPLERID.  SS SPLIT SPOON	DESCRIPTIONS MOSTLY	10	WD WHILE DRILLING
45.0 8LOW 1-4 1-10	VERY L	LOOSE	0-2 3-4	VERY S	Borns  F  Be  ONSISTENCY  SOFT	Terminated Q  Terminated Q  There = 30-35  There = 27.5-35  Thought = 25-27.  SAMPLERID.  SS SPLIT SPOON  ST SHELBY TUBE	DESCRIPTIONS MOSTLY SOME	30-45%	WD WHILE DRILLING NE NOT ENCOUNTERE
40.0	VERY L	LOOSE : M DENSE	0-2	VERY S	Borns  F  Be  ONSISTENCY  SOFT  MISTIFF	Terminated Q  crear - 30-35  other - 27.5-35  utposite-25-27.  SAMPLERID.  SS SPLIT SPOON	DESCRIPTIONS MOSTLY	30-45% 15-25%	WD WHILE DRILLING

	ΑΞ	COA				ng Re		BORING NO. FOR OBSW-15				
PRO	JECT:	P9-	Shake	s. pcare	60-700 =	te str	refuse y			PROJECT	NO:	606 35197
CLIE	NT:	Start	Fy	No.	- /	7.22 - 10 - 10				LOCATION	g 🗀	Intmost Plant
CON	TRACTOR	5	AEDAC	(0)			- 3			ELEVATION	N;	
EQU	IPMENT:	Co	oprobe	8140	Somie	118 3234	0 2 2		XXX = 2.5	NORTHING	3:	
GRO	UNDWATE	R	<u>'</u>		DRILL	ING INFORMAT	TON			EASTING:		-101
DATE	HRS	WATER	METHOD		CASI	ING	TE	MP / PERM	<u> </u>	DATE STA	RT:	3/6/21
ldash			HOLE DIA.		CAS	ING DIA.	C	ASING TYPE		DATE FINE	SH:	3/6/21
<u> </u>			DEPTH			ING DEPTH	7.00	ROUT TYPE		DRILLER:		V. FIEFST
├			SAMPLING		HAM	IMER WT	Н	AMMER FALL		OVERSIGH	IT:	5.1203
DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE				N AND REMA	ARKS	SOII	L CLASSIF	ICATION: USCS
					Fill -	SAND SAND who red, lay, trace	\$ f. F.	moist,	ND (S	E) Hy ~	ed;	to five soud,
<b>–</b> 5.0				S		r to al						
					Pole yell maist	owish rery de	ed u/	nostly	m. Hen s.17,1	1+1/e	n n Sout	layers of white,
10.0					Pale base	Sitt -	and (c)	ML) h brown	. 10 )	ishtge	~ ~	(mottled), med, med, med to fire
15.0					Silt w/ hic bras wed do chy, to	SAND (3	brown to st, unaffer desparl	osthy sod dari	ish bi	me u	to Colfred to	ternating layers), in Fugo soudy force multiplet, trace
20.0					Simila	into abo	ove -	rehet g	grow,	tic t	- de	ic evident
- 20.0	<u> </u>	· -			Borns	Eminat	EN 0	20	•			70 A)
BLOW	/S/FT.	DENSITY	BLOWS/FT.	CON	SISTENCY	T T	LER ID.	T	DESCRIPTIONS			NOTES
0-4	VERY LO		0-2	VERY SOFT		SS SPLIT SP	OON	MOSTLY	5	50-100%	WD	WHILE DRILLING
5-10	LOOSE		3-4	SOFT		ST SHELBY	TUBE	SOME		30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM	DENSE	5-8	MEDIUM STI	FF	G GRAB SA	MPLE	LITTLE		15-25%	UR	NOT READ
31-50	DENSE		9-15	STIFF		MC MACRO-C	CORE	FEW		5-10%	NR	NO RECOVERY
50+	VERY D	ENSE	16-30	VERY STIFF		,		TRACE		<5%		
			31+	HARD								

## **Shallow Monitoring Well Construction Details**

PROJECT: Pilot Study - Shakespeare Comp. Structures	WELL NUMBER:	ISCO-C	BSW-1S			
LOCATION: Newberry, South Carolina	JOB NUMBER:	6063	35197			
CLIENT: Signify North America	TYPE OF INSTALLATION	:				
CONTRACTOR: SAEDACCO, Inc.	- Mon	itoring Well				
DRILLER: Dylan Fierst	LOCATION: Newberry, South Carolina					
FIELD REPRESENTATIVE: S. Ross	INSTALLATION DATE:		08/06/21			
	-					
SURVEY DATUM: SC State Plane, NAVD 88 (Vertical)  NAD 83 (Horizontal)	NORTHING: 905001.02					
TOP OF CASING ELEVATION: 548.19 ft	EASTING:	<b>EASTING:</b> 1808368.37				
GROUND SURFACE ELEVATION: 548.33 ft	CASING STICKUP:		0.14			
SNOSIN SON ACE ELEVATION. 040.00 II	OAGING CHOICE.		0.14			
COMMENTS:	TYPE OF ANNULA	IR SEAL	Grout			
	TYPE OF WELL CASING OF		Sch. 40 PVC			
	NOMINAL BOREHOLE DIA	METER	6.0 inch			
	TOP OF WEI	_L SEAL	6.0 feet			
	TYPE (	OF SEAL	Bentonite Chips			
	TOP OF SAND FILTE	R PACK	8.0 feet			
	TOP OF SCREENED IN	TERVAL	10.0 feet			
	TYPE OF S	CREEN	PVC			
	SL	OT SIZE	0.010 inch			
	INSIDE DIA	METER	1.0 inch			
	SCREEN L	.ENGTH	10.0 feet			
	FILTER PACK AROUND S	CREEN	No. 2 Sand			
	воттом о	F WELL	20.0 feet			
NOTE: ALL DEPTHS ARE REFERENCED TO GROUND SURFACE	BOTTOM OF BOR	REHOLE	20.0 feet			
DIAGRAM NOT TO SCALE						

## A=COM **Shallow Monitoring Well Construction Details** WELL NUMBER: **PROJECT:** Pilot Study - Shakespeare Comp. Structures ERD-OBSW-11 LOCATION: Newberry, South Carolina JOB NUMBER: 60635197 CLIENT: Signify North America TYPE OF INSTALLATION: CONTRACTOR: SAEDACCO, Inc. Monitoring Well DRILLER: Dylan Fierst LOCATION: Newberry, South Carolina FIELD REPRESENTATIVE: S. Ross INSTALLATION DATE: 08/05/21 SURVEY DATUM: SC State Plane, NAVD 88 (Vertical) NORTHING: 904891.34 NAD 83 (Horizontal) TOP OF CASING ELEVATION: 551.24 ft **EASTING:** 1808429.08 **GROUND SURFACE ELEVATION: CASING STICKUP:** 551.42 ft 0.16 **COMMENTS:** TYPE OF ANNULAR SEAL Grout TYPE OF WELL CASING OR RISER Sch. 40 PVC INSIDE DIAMETER 1.0 inch NOMINAL BOREHOLE DIAMETER 6.0 inch TOP OF WELL SEAL 25.0 TYPE OF SEAL Bentonite Chips TOP OF SAND FILTER PACK 27.5 feet TOP OF SCREENED INTERVAL 30.0 PVC TYPE OF SCREEN 0.010 SLOT SIZE inch **INSIDE DIAMETER** 1.0 inch SCREEN LENGTH 5.0 feet FILTER PACK AROUND SCREEN No. 2 Sand

**BOTTOM OF WELL** 

**BOTTOM OF BOREHOLE** 

35.0

36.0

feet

NOTE: ALL DEPTHS ARE REFERENCED TO GROUND SURFACE DIAGRAM NOT TO SCALE

## **Shallow Monitoring Well Construction Details**

PROJECT: Pilot Study - Shakespeare Comp. Structures	WELL NUMBER:	ERD-OBSW-1S				
LOCATION: Newberry, South Carolina	JOB NUMBER:	60635197				
CLIENT: Signify North America	TYPE OF INSTALLATION	l:				
CONTRACTOR: SAEDACCO, Inc.	Mor	nitoring Well				
DRILLER: Dylan Fierst	LOCATION: Newberry, South Carolina					
FIELD REPRESENTATIVE: S. Ross	INSTALLATION DATE: 08/05/21					
	<b>I</b>					
SURVEY DATUM: SC State Plane, NAVD 88 (Vertical)	NORTHING: 904231.41					
NAD 83 (Horizontal) TOP OF CASING ELEVATION: 560.72 ft	EASTING:	1808543.89				
		1000040.00				
GROUND SURFACE ELEVATION: 560.71 ft	CASING STICKUP:	0.01				
GROUND SURFACE ELEVATION. 500.71 II	CASING STICKUP.					
COMMENTS:						
	TYPE OF ANNULA	AR SEAL Grout				
	TYPE OF WELL CASING OF	R RISER Sch. 40 PVC				
	INSIDE DIA	AMETER 1.0 inch				
	NOMINAL BOREHOLE DIA	AMETER 6.0 inch				
	TOP OF WE	LL SEAL 16.0 feet				
	TYPE (	OF SEAL Bentonite Chips				
	TOP OF SAND FILTE	R PACK 18.0 feet				
	TOP OF SCREENED IN	TERVAL 20.0 feet				
	TYPE OF S	SCREEN PVC				
	SL	OT SIZE 0.010 inch				
	INSIDE DIA	AMETER 1.0 inch				
	SCREEN I	ENGTH 10.0 feet				
	FILTER PACK AROUND S	SCREEN No. 2 Sand				
	FILTER FACK AROUND S	SCREEN No. 2 Sand				
	воттом с	DF WELL 30.0 feet				
	BOTTOM OF BOR	REHOLE 30.0 feet				
NOTE: ALL DEPTHS ARE REFERENCED TO GROUND SURFACE						
DIAGRAM NOT TO SCALE						



## Water Well Record Bureau of Water

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

A THE STATE OF THE										
1. WELL OWNER INFORMATION:			7. PERMIT NUMBER: 12873							
Name: Signify North America										
Address: 200 Franklin Square Di	rive (firs	it)	8. USE:  Residential Public Supply Process							
~ 0		0070	☐ Irrigation ☐ Air Conditioning ☐ Emergency							
city: Somerset State: NJ	Zip: 0	00/3	☐ Test Well							
	VEVENNESSE		9. WELL DEPTH (completed)  Date Started: 8/5/2021							
Telephone: Work: 908-705-4743										
2. LOCATION OF WELL: CO			tt. Date Completed: 67 37 2021							
Name: Shakespeare Composite	Structures	5	10. CASING: ☑ Threaded ☐ Welded  Diam.: 2" Height: Above/€elow							
Street Address: 19845 US-76	7:		Diam.: 2" Height: Above/€elow  Type: ☒ PVC ☐ Galvanized Surface 0 ft.							
City: Newberry, SC	Zip: 29108		☐ Steel ☐ Other   Weight   Ib /ft							
			0 in. to 30 ft. depth Drive Shoe? ☐ Yes ☒ No							
Latitude: 905001.02 Longitude	1808368.	37	in. toft. depth							
	BLIC SYSTE		11. SCREEN:  Type: PVC							
	****		Slot/Gauge: Length:							
4. ABANDONMENT: ☐ Yes 🔀	No		Set Between: 30 ft. and 35 ft. NOTE: MULTIPLE SCREENS							
Give Details Below	26	,	ft. and ft. USE SECOND SHEET							
Grouted Depth: from f			Sieve Analysis ☐ Yes (please enclose) 🖾 No							
	*Thickness	100.00	12. STATIC WATER LEVEL ft. below land surface after 24 hours							
Formation Description	of	Bottom of	13. PUMPING LEVEL Below Land Surface.							
	Stratum	Stratum	ft. after hrs. Pumping G.P.M.							
Poorly graded sand (SP)	3	3	Pumping Test:  Yes (please enclose)  No							
	4.5	40	Yield:							
Silt with Sand (ML)	15	18	14. WATER QUALITY							
0.11 1.11			Chemical Analysis ☐ Yes ☒No Bacterial Analysis ☐ Yes ☒No							
Silt with sand (ML)	16	31	Please enclose lab results.							
	5	26	15. ARTIFICIAL FILTER (filter pack)							
Saprolite	၂ ၁	36	Installed from 28 ft. to 35 ft.							
			Effective size #2 Uniformity Coefficient							
			16. WELL GROUTED? ☑ Yes ☐ No							
			□ Neat Cement □ Bentonite ☑ Bentonite/Cement □ Other							
			Depth: From 0 ft. to 26 ft.							
			17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft direction							
			Type Well Disinfected □ Yes ☒ No Type: Amount:							
			Section 2 Sectio							
			18. PUMP: Date installed: Not installed 🖾							
			Mfr. Name: Model No.:							
			H.P Volts Length of drop pipe ft. Capacity gpm  TYPE:   Submersible   Jet (shallow)   Turbine							
			TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal							
			19. WELL DRILLER: Dylan Fierst CERT. NO.: 2285 Address: (Print) Level: A B C D (circle one)							
			Address: (Print)  SAEDACCO  Level: A B C D (circle one)							
			9088 Northfield Drive Fort Mill, SC 29707							
*Indicate Water Bearing Zones			Telephone No.: (803) 548-2180 Fax No.: (803) 548-2181							
(Use = 0 = d = b = = 1 %			20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under							
(Use a 2nd sheet if needed)			my direction and this report is true to the best of my knowledge and belief.							
5. REMARKS:										
Bentonite seal from 26-28'			1							
			Signed: Dylan Fisrst Date: 8/14/2021							
			Well Driller							
6. TYPE: ☐ Mud Rotary ☐ Jetted		Bored	NA CONTRACTOR OF THE CONTRACTO							
□ Dug □ Air Rot		Driven	If D Level Driller, provide supervising driller's name:							
☐ Cable tool ☑ Other	.a.y ⊔ l	Dilveil	Richy Lemire							
L Cable tool E Other										



## Water Well Record Bureau of Water

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:		7. PERMIT NUMBER:					
Name: Signify North America (last)		12873					
	(first)	8. USE:					
Address: 200 Franklin Square Drive		☐ Residential ☐ Public Supply ☐ Process					
City: Somerset State: NJ	Zip: 08873	☐ Irrigation ☐ Air Conditioning ☐ Emergency					
140	500 • St.	☐ Test Well					
Telephone: Work: 908-705-4743 Home:		9. WELL DEPTH (completed) Date Started: 8/5/2021					
	: Newberry	ft. Date Completed: 8/5/2021					
Name: Shakespeare Composite Stru	ctures	10. CASING: ☑ Threaded ☐ Welded					
Street Address: 19845 US-76		Diam.: 2 " Height: Above/€elow Type: ☑ PVC ☐ Galvanized Surface 0 ft.					
City: Newberry, SC Zip: 2	9108	Type: ₩ PVC ☐ Galvanized Surface ☐ tt.  ☐ Steel ☐ Other Weight — Ib./ft.					
Latitude: 904831.34 Longitude: 180	9420 09	0 in. to 20 ft. depth Drive Shoe? ☐ Yes ☒ No					
Latitude: 904031.34 Longitude: 100	0429.00	in. to ft. depth					
3. PUBLIC SYSTEM NAME: PUBLIC:	SYSTEM NUMBER:	11. SCREEN:					
ERD-O	BSW-1S	Type: PVC Diam.: 2"					
4. ABANDONMENT:  Yes  No		Slot/Gauge:010 Length:10 '  Set Between:20 ft. and30 ft. NOTE: MULTIPLE SCREENS					
Give Details Below		ft. and ft. USE SECOND SHEET					
Grouted Depth: from ft. to	16ft.	Sieve Analysis ☐ Yes (please enclose) ☒ No					
*Thic	kness Depth to	12. STATIC WATER LEVEL ft. below land surface after 24 hours					
	of Bottom of	13. PUMPING LEVEL Below Land Surface.					
1	3	ft. after hrs. Pumping G.P.M.					
Clayey Silt (ML)	7	Pumping Test: ☐ Yes (please enclose) ☒ No					
Silty Sand (SM)	7 24	Yield:					
Silty Sand (SM)	24	14. WATER QUALITY					
Silt with sand (ML) 6	30	Chemical Analysis ☐ Yes ☒No Bacterial Analysis ☐ Yes ☒No Please enclose lab results.					
		15. ARTIFICIAL FILTER (filter pack)					
		Installed from <u>18</u> ft. to <u>30</u> ft.					
		Effective size #2 Uniformity Coefficient					
		16. WELL GROUTED?    Yes □ No					
		□ Neat Cement □ Bentonite ☑ Bentonite/Cement □ Other					
		Depth: From 0 ft. to 16 ft.					
		17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft direction					
		Type Well Disinfected □ Yes ☒ No Type: Amount:					
		The second secon					
		18. PUMP: Date installed: Not installed ☑ Mfr. Name: Model No.:					
		H.P. Volts kloser No.: ft. Capacity gpm					
		TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine					
		☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal					
		19. WELL DRILLER: Dylan Fierst CERT. NO.: 2285					
		Address: (Print) Level: A B C D (circle one)					
		9088 Northfield Drive					
*Indicate Water Bearing Zones		Fort Mill, SC 29707 Telephone No.: (803)548-2180 Fax No.: (803)548-2181					
		20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under					
(Use a 2nd sheet if needed)		my direction and this report is true to the best of my knowledge and belief.					
5. REMARKS:							
Bentonite seal from 16-18'							
		Signed: Dylan Fierst Date: 8/14/2021					
		Wei Driller					
6. TYPE: ☐ Mud Rotary ☐ Jetted	☐ Bored	If D Level Driller, provide supervising driller's name:					
☐ Dug ☐ Air Rotary	☐ Driven	Annual transfer of the control of th					
☐ Cable tool		Richy Lemire					



## Water Well Record Bureau of Water

2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:			7. PERMIT NUMBER:
			12873
Name: Signify North America	(firs	t)	
Address: 200 Franklin Square Dri	ive	.,	8. USE:
, daress.			☐ Residential ☐ Public Supply ☐ Process
city: Somerset State: NJ	zip: 0	8873	☐ Irrigation ☐ Air Conditioning ☐ Emergency
J. 140	<b>L.p.</b>		☐ Test Well ☐ Monitor Well ☐ Replacement
Telephone: Work: 908-705-4743 H	ome:		9. WELL DEPTH (completed) Date Started: 8/6/2021
	JNTY: Newb	errv	20 Bata Consolitati
Name: Shakespeare Composite S		-	20 ft. Date Completed:
AND THE STREET STREET STREET STREET	structures	'	10. CASING: ☑ Threaded ☐ Welded
Street Address: 19845 US-76	**************************************		Diam.: 2" Height: Above/Gelow
City: Newberry, SC Z	ip: 29108		Type: ☒ PVC ☐ Galvanized Surface 0ft.
			Steel Other Weight — Ib./ft.
Latitude: 904231.40 Longitude:	1808543.	.88	0 in. to 10ft. depth Drive Shoe? ☐ Yes 🗵 No
			in. to ft. depth
3. PUBLIC SYSTEM NAME: PUB	LIC SYSTE	M NUMBER:	11. SCREEN:
IS	SCO-OBSW-1	.s	Type: PVC Diam.: 2"
4. ABANDONMENT: ☐ Yes ☒ N	No.		Slot/Gauge:
	NO		Set Between: ft. and ft. NOTE: MULTIPLE SCREENS
Give Details Below	. 16		ft. and ft. USE SECOND SHEET
Grouted Depth: from0ft.			Sieve Analysis ☐ Yes (please enclose) ☒ No
THE STATE OF THE S	Thickness	The section of the se	12. STATIC WATER LEVEL ft. below land surface after 24 hours
Formation Description	of	Bottom of	13. PUMPING LEVEL Below Land Surface.
	Stratum	Stratum	
Grass	1	1	ft. after hrs. Pumping G.P.M.
	I		Pumping Test: ☐ Yes (please enclose) ☑ No
Clayov Sand (SC)	6	7	Yield:
Clayey Sand (SC)			14. WATER QUALITY
Silty Sand (SM)	,	10	Chemical Analysis ☐ Yes ☒No Bacterial Analysis ☐ Yes ☒ No
Silty Salid (Sivi)	3	10	Please enclose lab results.
		40	15. ARTIFICIAL FILTER (filter pack)   ☑ Yes □ No
Clayey Silt (ML)	3	13	Installed from <u>8</u> ft. to <u>20</u> ft.
	*		Effective size #2 Uniformity Coefficient
Silty sand (SM)	7	20	
			16. WELL GROUTED?    Yes □ No
			□ Neat Cement □ Bentonite ☑ Bentonite/Cement □ Other □
			Depth: From <u>0</u> ft. to <u>6</u> ft.
			17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft direction
			Type
			Well Disinfected ☐ Yes ☒ No Type: Amount:
			18. PUMP: Date installed: Not installed 🗵
			Mfr. Name: Model No.:
			H.P. Volts Length of drop pipe ft. Capacity gpm
			TYPE: Submersible Jet (shallow) Turbine
			☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal
			19. WELL DRILLER: Dylan Fierst CERT. NO.: 2285
			Address: (Print) Level: A B C D (circle one)
			9088 Northfield Drive
the disease Wester Province	-		Fort Mill, SC 29707
*Indicate Water Bearing Zones			Telephone No.: (803) 548-2180 Fax No.: (803) 548-2181
(Use a 2nd sheet if needed)			20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under
(Use a 2nd sheet if needed)			my direction and this report is true to the best of my knowledge and belief.
5. REMARKS:			
bentonite seal from 6'-8'			
			Signed: Dylan Fisrst Date: 8/14/2021
			Signed: Date: 0/14/2021
			vigali utiller
6. TYPE: ☐ Mud Rotary ☐ Jetted		Bored	If D Level Driller, provide supervising driller's name:
☐ Dug ☐ Air Rotar	ry 🗆 [	Driven	Printer Transfers
☐ Cable tool        ☐ Other			Richy Lemire



# Monitoring Well Development Log

Page

Date Started (yr/mo/day) 8/19/21 Date Completed (yr/mo/day) 8/19/21		Total Well Depth (TWD) =	70,0%	1/100 ft
Field Personnel J. Butter	ı	Depth to Ground Water (DGW) =	91.01	1/100 ft
Site Name Shakespeare-Newberry		Length of Water Column (LWC) = TWD - DGW =	WD - DGW = 4.86	1/100 ft
Job # 60635197		1 Casing Volume (OCV) = LWC x 6.163 =	3.163 = 1.61	gallons
Nell ID # ISCO OBSW-1S		5 Casing Volumes =	8.05	gallons
Upgradient x Downgradient		Method of Weil Development	Surge-overpump	
Weather Conditions				
Air Temperature	Ļ.	Total Volume of Water Removed	426	gallons

			Т		_					-	_
Remarks	1247	14.30	15.97	02.91	16.13	16.90	16.81	11.87	11.5]		
Sand Content (%)	71%	71%	7190	71%	217	41%	4190	7617	4120		
Turbidity/Color	71100	71160	71100	71050	544.9	288.7	1416	77.03	38,67		
Specific Conductivity (µmhos/cm)	0.165	0.137	0.125	6.119	60.109	0.104	0,100	960.0	0.094		
Eh	0,462	-308.2	-244.1	2.42-	-187.5	-171.5	-167.6	5.85 -157.0	149.1		
Hd	0.16 Jano	6.75 -308.2	81.7	6.19	5.83 -187.5	5.19 -171.5	5.81 -1676	5.85	5.81 -149.1		
Water Temperature (°C)	23.5	23.4	22.5	22.3	22.3	12.2	72.7	22.6	22%		
Volume Purged (gallons)	Inthal	2.5	20	7,5	0,41	12.5	150	12.5	200		
Discharge Rate (gpm)	0.5	98	90	6,5	5,0	9,0	0.S	0.15	808		
Date/Time	9/4/2 1420	5241	1430	1435	0441	1445	05.51	MSS	0051	,	

COMMENTS/OBSERVATIONS:



# Monitoring Well Development Log

ō

Page

Date Started (yr/mo/day) 8/19/2	Date Completed (yr/mo/day)	श्रीक्षीय	Total Well Depth (TWD) =	30.29	1/100 ft
Field Personnel J. Butter			Depth to Ground Water (DGW) =	11.51	1/100 ft
Site Name Shakespeare-Newberry			Length of Water Column (LWC) = TWD - DGW =	WD - DGW = (3.78	1/100 ft
Job # 60635197			1 Casing Volume (OCV) = LWC × 0.163 =	0,163 = 3,06	gallons
Well ID # ERD OBSW-1S			5 Casing Volumes =	15.3	gallons
Upgradient x Downgradient	T,		Method of Well Development	Surge-overpump	
Weather Conditions	7				
Air Temperature		₽.	Total Volume of Water Removed	212	gallons

Date/Time	Discharge Rate (gpm)	Volume Purged (gallons)	Water Temperature (°C)	H	Eh	Specific Conductivity (µmhos/cm)	Turbidity/Color	Sand Content (%)	Remarks 70
8/19/cm 1247	50	Trailtal	20.7	5.93 151.8	151.8	6.351	71160	og1<	15.20
श्रीकरिया १७६३	3 0.5	3.	(3.3	5.41	5.41 149.2	0.307	187.9	4190	17.30
श्रीमीय । रज	200	9	14.1	5.44	5.44 141.8	0.292	143.2	41%	17.10
8/4/4 1305	500	6	14,1	5.46	5.46 147.2	0,292	105.4	215	17.34
State 1341	2.0	12	19.	5.50	5.50 146.5	0, 298	38.69	06/7	17.47
gala 1317	7 0.5	ž	13.8	5.51	5.51 1420	262.0	15,42	4190	17.51
		in					1		
		7					gill and a second		
									2
					τ.				
			al						
COMMENTS/OBSEBVATIONS:	SEBVATIONS							ji n	



# Monitoring Well Development Log

Page

Date Started (yr/mo/day) 8/4/cd	Total	Total Well Depth (TWD) = 35.50	1/100 ft
Field Personnel J. Butler	Depth	Depth to Ground Water (DGW) =	1/100#
Site Name Shakespeare-Newberry	Lengt	Length of Water Column (LWC) = TWD - DGW = 24.5	1/100 ft
Job # 60635197	1 Cas	1 Casing Volume (OCV) = LWC x 6.63 = 3.99	galions
Well ID # ERD OBSW-11	5 Cas	5 Casing Volumes = 14.95	gallons
Upgradient x Downgradient	Metho	Method of Well Development Surge-overpump	
Weather Conditions Glean			
Air Temperature		Total Volume of Water Removed	gallons

arks										
Remarks <b>W</b> C	12,21	1854	1821	1915	19,43	19.38				
Sand Content (%)	>2	17	17	15	17	77				
Turbidity/Color	71100	340.3	409.6	27.3)	31.28	25.17		3		
Specific Conductivity (µmhos/cm)	0.109	0.089	0.086	0.058	0.083	0 289				
Eh	34.1	65.1	79.6	64.3	73.7	13.5				
Hd	5.20	5.61	5.40	2,60	5.63	5.56				
Water Temperature (°C)	19.2	18.8	18.6	18.5	18.6	18.7				
Volume Purged (gallons)	Trital	4	**	15	16	22				
Discharge Rate (gpm)	8'0	8'0	8'0	8,0	8,0	200				3VATIONS:
Date/Time	81.9kg 1103	Sam raisir	Sialy Les	श्रीया ११४४	8/4 kg 1123	Thelen 1128				COMMENTS/OBSERVATIONS:

Northing	Easting	Elevation	Descripiton	
904231.4078	1808543.8870	560.72	MW WELL_CAS	ING ISCO-OBSW-1S
904232.9502	1808545.0488	560.71	GROUND	
904231.4863	1808544.3875	561.01	CONCRETE	
904891.3427	1808429.0831	551.24	MW WELL_CAS	ING ERD-OBSW-1S
904892.5119	1808430.1031	551.42	GROUND	
904891.3227	1808429.7579	551.45	CONCRETE	
905001.0240	1808368.3719	548.19	MW WELL_CAS	ING ERD-OBSW-1I
905002.6324	1808368.4333	548.33	GROUND	
905001.3737	1808368.9768	548.46	CONCRETE	

	Pilot Study Report – Shakespeare Composite Structures Newberry, SC
Attachme	nt D
Field Data Records and Equipment Calibration	Logs for Groundwater Sampling Events



Well ID: TMW - 29
-------------------

## **Groundwater Sample Collection Record**

Client:	Newberry					Date:	7/29/20	20			5_(	24hr)
	No: 60635								Fin	ish 120	8	
II .	ation: Ne											
Weather	:	CLOU	Dy	853		Collecto	or(s): Ja	mes Leaph	art			
1. WAT	ER LEVEL	DATA:	(meas	ured from To	op of Cas	sing)						
Total	well length:	12:	75	Water column	length:	2.	28					
Water	table depth	n: <u>/</u> c	7,47	Casing type/dia	ameter:	PVC	Mir Mir	nimum pur	ge volume:	Na	(I	iters)
	L PURGE I e Method:		-	PETRISTANC	K Pur	- du	(01.)	FLOR	1			
	<u>ptance Crit</u> nperature	eria det 3%		ield Sampling		00% De				lown < 0.	3 ft	
- pH								1 4	Diawa	OWII VO.	J II	
- D.O			.5 mg/L		- Turk	oidity	<10 N	TU				
			_	within 10%		,		TU within 1	0%			
Field	Testing Eq	uipment	used:	Make		Mod	el		Serial	number(s)		
				YSI		_	PRO			1761037	31	
				HF Scientif			20000			20071119	9	
	Headspace			RAE System	ns	Min	iRAE PID	(10.6eV)				1
Begir	purge at	1138	>			-						
Time	Purge Vol.	Temp.	pН	Spec. Cond.	ORP	DO	Turbidity	Flow Rate	Drawdown	Co	mments	
(24hr)	(Gals)	(°C)	p.,	(μS/cm)	(mV)	(mg/L)	(NTU)	(ml/min)	(feet)		illillents	
(24hr)		(°C)	4.96			E	(NTU)			Flow cell ful		
(24hr) 1145	0.00	22.9 22.7		(μS/cm)	(mV)	(mg/L)	(NTU)	(ml/min)	(feet)			
(24hr) 1145 1145	(Gals) 0.00 0.60	22.9 22.7 23.0	4.96	(μS/cm) 30 29 29	(mV) 172.9 161.8 183.5	(mg/L) 6.78 5.79 6.00	(NTU) 220.4 125.4 70.78	(ml/min)	(feet)		1	
(24hr) 1145	0.00	22.9 22.7	4.96	(μS/cm) 30 29	(mV) 172.9 161.8	(mg/L) 6.78 5.79 6.00 5.71	(NTU) 220.4 125.4 70.78 68.26	(ml/min)	(feet) /Z.55 /Z.37	Flow cell ful	11118	
(24hr) 1145 1145	(Gals) 0.00 0.60	22.9 22.7 23.0	4.96	(μS/cm) 30 29 29	(mV) 172.9 161.8 183.5	(mg/L) 6.78 5.79 6.00 5.71	(NTU) 220.4 125.4 70.78	(ml/min)	(feet) /Z.55 /Z.37 /Z.19	Flow cell ful  DRY @ ALLOW  AT TIME	1148 To REC	cou etc
(24hr) 1145 1145	(Gals) 0.00 0.60	22.9 22.7 23.0	4.96	(μS/cm) 30 29 29	(mV) 172.9 161.8 183.5	(mg/L) 6.78 5.79 6.00 5.71	(NTU) 220.4 125.4 70.78 68.26	(ml/min)	(feet) /Z.55 /Z.37 /Z.19	Flow cell ful  Dzy e  Account	1148 To Ra	cou etc
(24hr) 1145 1145	(Gals) 0.00 0.60	22.9 22.7 23.0	4.96	(μS/cm) 30 29 29	(mV) 172.9 161.8 183.5	(mg/L) 6.78 5.79 6.00 5.71	(NTU) 220.4 125.4 70.78 68.26	(ml/min)	(feet) /Z.55 /Z.37 /Z.19	Flow cell ful  DRY @ ALLOW  AT TIME	1148 To Ra	cou etc
(24hr) 1140 1145 1150 1165	(Gals) 0.00 0.60	(°C) 22.9 22.7 23.0 22.5	4.96 4.80 4.46 4.47	(µS/cm) 30 29 29 29	(mV) 172.9 161.8 183.5 178.3	(mg/L) 6.78 5.79 6.00 5.71	(NTU) 220.4 125.4 70.78 68.26	(ml/min)	(feet) /Z.55 /Z.37 /Z.19	Flow cell ful  DRY @ ALLOW  AT TIME	1148 To Ra	cou etc
(24hr)  1145  1150  1155  1155	(Gals) 0.00 0.60 ~1.00 1.50	(°C) 22.9 22.7 23.0 22.5  CTION	4.96 4.80 4.46 4.47	(µS/cm) 30 29 29 29	(mV) 172.9 161.8 183.5 178.3	(mg/L) 6.78 5.79 6.00 5.71	(NTU)  220.4  125.4  70.78  68.24  446.96	(ml/min)  / 50  / 00  / 00	(feet) /Z.55 /Z.37 /Z.19	Flow cell ful  DRY @ ALLOW  FAT TIME BY PASS	1148 To Ra	cou etc
(24hr) 1145 1150 1155	(Gals) 0.00 0.60 ~1.00 1.60 PLE COLLE	(°C) 22.9 22.7 23.0 22.5	4.96 4.80 4.46 4.47	(µS/cm)  30  29  29  29  No. of Containe	(mV) 172.9 161.8 183.5 178.3	(mg/L) 6.78 5.79 6.00 5.71	(NTU)  220.4  125.4  70.78  68.24  446.96	(ml/min)	(feet)   12.00   12.37   12.19   12.68	Flow cell ful  DRY C  ALLOW  FAT TIME  BY PASS	1148 To REC OF SA, FLOW C	cou etc
(24hr) (140 (145 (150 (155 (155  Sam	(Gals) 0.00 0.60 ~1.00 1.60 PLE COLLE	(°C) 22.9 22.7 23.0 22.5	4.96 4.80 4.46 4.47	(µS/cm)  30  29  29  29  No. of Containe	(mV) 172.9 161.8 183.5 178.3	(mg/L)  6.78  6.79  6.00  5.71	(NTU)  220.4  125.4  70.78  68.24  446.96	(ml/min)	(feet)	Flow cell ful  DRY C  ALLOW  FAT TIME  BY PASS	1148 To Row or Sa.	cou etc
(24hr) (140 (145 (150 (155 (155  Sam	(Gals) 0.00 0.60 ~1.00 1.60 PLE COLLE	(°C) 22.9 22.7 23.0 22.5	4.96 4.80 4.46 4.47	(µS/cm)  30  29  29  29  No. of Containe	(mV) 172.9 161.8 183.5 178.3	(mg/L)  6.78  6.79  6.00  5.71	(NTU)  220.4  125.4  70.78  68.24  446.96	(ml/min)	(feet)	Flow cell ful  DRY C  ALLOW  FAT TIME  BY PASS	1148 To Row or Sa.	cou etc
(24hr) (140 (145 (150 (155 (155  Sam	(Gals) 0.00 0.60 71.00 1.60 PLE COLLE	(°C) 22.9 22.7 23.0 22.5	4.96 4.80 4.46 4.47	(µS/cm)  30  29  29  29  No. of Containe	(mV) 172.9 161.8 183.5 178.3	(mg/L)  6.78  6.79  6.00  5.71	(NTU)  220.4  125.4  70.78  68.24  446.96	(ml/min)	(feet)	Flow cell ful  DRY C  ALLOW  FAT TIME  BY PASS	1148 To Row or Sa.	cou etc



Well ID:	TMW-31	
----------	--------	--

## **Groundwater Sample Collection Record**

Client:	Newberry				D	ate: _	7/29/20	20	Time:	Star		1050	_(24hr
	lo: 60635		0.0							Finis	h	1125	_
	ation: Ne			>		N=11=-1	(-):						
veather	P. CLO	04	82			Collecto	or(s): <u>Ja</u>	mes Leaph	art				
WAT	ER LEVEL	DATA:	(meas	sured from To	op of Cas	ing)							
Total	well length:			Water column			/						
Water	table depth	10	58	Casing type/di	ameter:	Prc/	/ Mi	nimum pur	ge volu	me: _	~	)A	_(liters
. WELI Purge	PURGE ( Method:	DATA	PE	PEITIALT	c Ro	fun	- 4	ow F	ری	)		**	_
				ield Sampling									
	perature	3%						nV	- Dr	awdo	wn	< 0.3 ft	
- pH - D.O			).1 unit .5 mg/		- SpCo - Turb			TII					
- D.O				within 10%	- Turb	idity		TU within 1	0%				
Field	Testing Eq	uipment	used:			Mod				Serial n	umber(	s)	
				YSI		_	US-D					3731	
\A/=II				HF Scientif		_	20000	(10 ( 10		7	1007	11199	
	Headspace			RAE Syster	ns	Min	iRAE PID	(10.6eV)					
begii	purge at	1050	_			+			-				
	I=	T-		0 0 1									
Time (24hr)	Purge Vol. (Gals)	Temp. (°C)		Spec. Cond. (μS/cm)	(mV)	DO (mg/L)	Turbidity (NTU)	Flow Rate (ml/min)	Drawd (fee	t)		Commen	ts
1054	0.00	22.7	5.21	57	1563	9.61	24.19	200	11.2	$\overline{}$	Flow ce	ll full	
059	1.75	22.7	4.83	49	162.6	659	28.24	200	11.2				
1104	2.50	22.9	4.54	48	1759	5.42	34.15	150	11.1	_			
114		22.8		48			36.55	150	11.1	_	-		
119	4.00	22.8		48			35.20	150	11.1				
SAMP	LE COLLE	ECTION		Me	ethod:	Par	eistacti	C					
		I MANGE OF	ntainer	No. of	Pre	servati			ysis Re	quirec	1	Time	7
	ple ID		уре	Containe	rs	11. 1			1. 6				4
	-31	701	ul 18	4 3	-	HCL	-	100	VOC	5		1120	4
1100													
7/~~													
//ww													
7/10													-1
commen	ts:												4
	ts:												-
	ts:				1								_
	ts:			1/.									-



## YSI Pro + / Water Quality Calibration Certificate

## A=COM

Cal Standard	Temp, LAB, C:	21.5	Temp, FIELD, C :		]
Conductivity	Lot #	Expiration	Post-Cal, LAB	D 4 G 1 77777	•
1413 UMHO/CM	7903107	3/21		Post-Cal, FIELD	Acceptable Range
@ 25 <sup>c</sup>			1.25	Ī	(+/5%)
<b>DV</b>					
PH 4.00	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
(m 25°	7003164	3/22	3.98		(+/- 0.2 units)
					(+/- 0.2 units)
PH 7.01	Lot #	T			
@ 25 <sup>C</sup>	7003167	Expiration 3/22	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
S. 447		3/22	7.03		(+/- 0.2 units)
PH 10.01	Lot #	Expiration	Post-Cal, LAB	Dood Call EVEN D	
@ 25 <sup>°</sup>	7003038	3/22	9 9 8	Post-Cal, FIELD	Acceptable Range
	'				(+/- 0.2 units)
ORP	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Accompanie D
ZOBELLS	7004132	1/21	237.5		Acceptable Range
231.0 MV @ 25 <sup>C</sup>				'	(+/- 20 MV)
		Temp, C	% Saturation	<b>a</b>	
Dissolved Oxygen	Post-Cal, LAB	22.8	97.6	mg/L &-35	1 4 4 3 5 75
(Saturated Air)	'	Temp, C	% Saturation	•	Acceptable Range
	Post-Cal, FIELD		76 Saturation	mg/L	( +/- 2%) / (+/- 2%)
	New_DO Membrane		,		
	○ Yes 🏋 No		Do Ca		1
			Diack	Blue O Yellow	
Model	YSI - PRO PLUS 🔻	S/N		- Cabl	*//^
					N/A ▼
	Cambration refe	renced to the temp	erature of the calibration	standards.	
Turbidity	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	A
.02 NTU	2001146	JAN-22	5.01		Acceptable Range (.0196 to .0204)
10 NTU	9//02	NOV-21	9-99		(9.8 to 10.2)
1000 NTU	2001149	JAN-22	1004		(970 to 1031)
Model	N. TOUR				
Model	Micro TPW	S/N	2007/115	<i>5</i> ▼	
Calibrated By	Eric Olson		Date of Calibration	7-24-22	
				1 2 2 2 2 2 2	r
Project Name	1 PS		Project number	60633	797
0.	ر ا			00053	1111
Signed:	200		•		

## Pace Analytical®

## PACE ANALYTICAL SERVICES, LLC

106 Vantage Point Drive • West Columbia, SC 29172 Telephone No. 803-791-9700 Fax No. 803-791-9111 www.pacelabs.com

Number 110278

COV Column 1, A State 25 Code  Regist Name
--

## Americas

Daily Tailgate Meeting	S3AM-209-FM5
Instructions: Conduct meeting prior to sending crews to individual tasks. attendance of all AECOM employees and subcontractors. Invite personnel simultaneous operations for coordination purposes. Review scope of works.	Require from Phone Number:
briefly discuss required and applicable topics. This meeting is a daily refinot a full orientation. Task-specific discussions associated with Task Haz	resher, Phone Number:
Assessment (THA) follow this meeting at the task location immediately befundividual task is started.	Meeting Leader: James Lass Hare
Date: 7.29.20 Project Name/Location: New 33	
Today's Scope of Work:	- Saughinite
Muster Point Location: First Aid Kit Location:	Fire Extinguisher Location: Spill Kit Location:
Front Patekinst Travek	TRUCK TRUCK
1. Required Topics	2. Discuss if Applicable to Today's Work
Fitness for Duty requirements, all sign in / sign out Required training (incl. task specific) completed and current SH&E Plan onsite - understood, reviewed, signed by all (incl. scope, preplanning hazard assessments / risk registers, controls, procedures, requirements, etc.)  Task Hazard Assessments (THAs) are to be reviewed and completed for each task immediately prior to conducting  STOP WORK Right & Responsibility- all task changes/changed conditions re-assess with THA  Requirement to report to supervisor any injury, illness, damage, near miss, unsafe act / condition  Emergency Response Plan – including muster point, first aid kit, fire extinguisher, clinic/hospital location  Personal Protective Equipment (PPE) - Required items per hazard assessments in good condition / in use by all  Equipment/machinery inspected (documented as required) and in good condition - operators properly trained/certified  Work area set up and demarcation/ barricades in place to protect workers, site staff, and the public  Required checklists/records available, understood (describe):  Lessons Learned / SH&E improvements (describe):	☑       Check ☑ as reviewed or mark ☑ as not applicable         ☑       Biological/ Chemical / Electrical Hazards         ☑       Ergonomics - Lifting, Body Position         ☐       Lock Out/ Tag Out         Short Service Employees - visual identifier and mentor/oversight assignment         ☑       Simultaneous/ Neighbouring Operations         ☑       Slip/ Trip/ Fall Hazards         ☑       Specialized PPE Needs         ☐       ☑         ☐       Waste Management/ Decontamination         ☑       Weather Hazards / Heat Stress / Cold Stress         ☐       ☑         Ø       Subcontractor Requirements (e.g., JHAs, THAs, procedures, reporting, etc.)         ☐       Work Permits / Plans required (e.g., Fall Protection, Confined Space, Hot Work, Critical Lifts, etc.); in place, understood (identify/attach):         ☐       Other Topics (describe/attach):         ☐       Client specific requirements (describe):
3. Daily Check Out by Site Supervisor	
Describe incidents, near misses, observations or Stop Work interventions from today:	Describe Lessons Learned/ Improvement Areas from today:
The site is being left in a safe condition and work crew	checked out as fit unless otherwise specified as above.
Site Supervisor Name Signature	Date 7-29-20 Time (at end of day / shift) /215

Worker Acknowledgement / Sign In Sign Out sheets applicable to this meeting are on reverse and, if applicable, attached.

## All employees:

- STOP WORK if concerned / uncertain about safety / hazard or additional precaution is not recorded on the THA.
- Be alert and communicate any changes in personnel or conditions at the worksite to the supervisor.
- Reassess task, hazards, & mitigations on an ongoing basis; amend the THA if needed.

## SITE WORKERS (including AECOM Contractors and Subcontractors): Your signature below means that you understand:

- \* The requirement to participate in creating, reviewing, & updating hazard assessments (THA) applicable to your task(s).
- \* The hazards & control measures associated with each task you are about to perform.
- \* The permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
- \* That no tasks or work is to be performed without a hazard assessment.
- \* Your authority & obligation to "Stop Work" intervene, speak up/ listen up.

## Your initials (right columns) certify that you arrived & departed fit for duty, & have reported all incidents/near misses; meaning:

- \* You are physically and mentally fit for duty and have inspected your required PPE to ensure satisfactory condition.
- \* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
- \* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or impairment/fatigue issue to the AECOM Supervisor.
- \* You signed out as fit / uninjured unless you have otherwise informed the AECOM Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
1 -1-6-		In & Fit	Out & Fit
Ames leapthoner Action	X F Locaha	JL 0930	JC 1215
•	0.00%	In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed) Identify number of attached sheets:

ISITOR / SITE REPRESENTATIVE								
Name	Company Name	Arrival Time	Departure Time	Signature				

## Task Hazard Analysis



Task Name: General Field Work and Office Work

NEW 7.25-50

Control #:

Error! Reference source not found.

## All Employees

STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

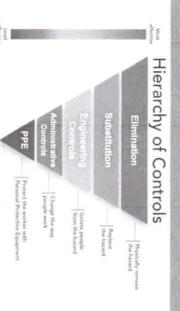
Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

Use 4-Sight, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- What am I about to do?
- What can go wrong?
- What can be done to make it safer?
- What have I done to communicate the hazards?

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories





- Most hazards need more than one control
  What should you do? Stack your controls
- PPE can NEVER be your only means of protection

Worker Sign On	sign On
I participated in the on-site review and fully understand the content of this Task Hazard Assessment	and the content of this Task Hazard Assessment
Printed Name	Signature
1. Supervisor: James leasther	I transfer
2.	0 0 0
3.	
4.	
S.	
6.	
7.	
Ċ.	
9.	
10.	

Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com

Well ID: Mw.2

Client: S	Signify				Da	te: 🤰	pole	Tim	e: Start 🕦	am/pm
Project No:				35197		40 - 50	0.500		Finish	645 am/pm
Site Location			re-Newbe							
Weather Co	onds:	Par	the Ch	way 905	Co	ollector(s):	7. 8	otter		
				red from Top c. Length of			(a-b)			neter/Material
b. Wate	er Table D	epth [	6.39	d. Calculated	d System Vol	ume (see t	ack) 🔏	98 cal		
2. WELL F	PURGE D	ATA								
a. Purge	e Method	:	Pens	eller Po	мр					
b. Acce	ptance Cr	iteria d	efined (	see workplan	)					
- Tempe		3%		-D.O.	10%					
- pH			.0 unit	- ORP	± 10m\	/				
- Sp. Co	nd.	3%		- Drawdown						
c. Field	Testing E	quipme	ent used	: N	1ake		Model		Seria	l Number
				YS	I		Pro Pl	งรั		5489
					Schenlife	47	Micro			17190810
	Volume								75	
	Removed		pН	Spec. Cond.		ORP	Turbidity		Drawdown	Color/Odor
(24hr)	(Liters)	(°C)	5.01	(μS/cm)	(mg/L)	(mV)	(NTU) 25.38	(mi/min)	7.02.	NA
	IMHOL	723	4.92		6.50		I	1/1/22		-
165	2.20	72.1		0.020	6.30	157.0	20.11	4244	7.08	NA
1606	4,40	$\overline{}$	492	0.020	6.50	16516	16.30	MMO	7.13	
1611	1,60	414	493	0,020	6.91	175.8	19.21	MOULE	7.14	NA
1616	8.80	22.0	4.91	0,020	7,01	178.2	13.56	HULL -	7.15	NA NA
1621	10.00		494	0,020	7.17	181.9	9.91	44041	7.16	NA
	13.20		491	0.020	1,26	187.4	6.98	17044	7.16	NA
	ptance c				Yes No	N/A	4			(continued on back)
	required									
	required			eacned						
	paramet									
If	no or N/	A - Expl	lain belo	W.						
							1			
3. SAMPL	E COLLE	ECTION	l: 1	Method:	eristativo	Pump	Rever	sc Flow		_
Sample ID	Co	ntainer	Туре	No. of Cont	ainers	Prese	vation	Analysi	s Req.	Time
MW-2		40M		3			CL	1/00	,	1630
Mus 2		401		2		H		ME		1630
Mw-2		250				HI	102	Melo	1s Fe.	1630
MU-2		2-50	QOH_	L			one	TD	1	1630
Comments		200	Poly	1		A)	ave.	Nog/	NO2/500	4/ALK 163
Mush		219		- 1		И	7.50ej	TOC	•	163C
Mb-2		150					one	Das	metals	Fe 1630
Mura		20	Roly	1			one	Chlo	ride	163
Signature		a	us	Mos				Date	8/19/2	
		/								



Well ID: TAW-29

Client: Signify		Date: \$	3/20/21	Tin	ne: Start /c	004 am/pm
Project No: 6063.	5197	<i>Date.</i>	SILOILI		Finish	
Site Location: Shakespeare-Newber						
Weather Conds: Clocky 80'	5	Collector(s)	_Just	on Butle	×	
WATER LEVEL DATA: (measure a. Total Well Length		•	6 (a-b)		_	eter/Material
b. Water Table Depth 10.13	d. Calculated System	Volume (see t	oack)	0.33	1	
2. WELL PURGE DATA					•	
	Peristallie Puni	P				
b. Acceptance Criteria defined (s	500					
- Temperature 3%	-D.O. 10%					
- pH <u>+</u> 1.0 unit	- ORP <u>+</u> 10					
- Sp. Cond. 3%	- Drawdown < 0.	3'				
c. Field Testing Equipment used:	Make <b>YS</b>		Model			Number
	HF schenly	0,,	MicroT			01809171
Volume	Hr south	NC-	INCIO!	70		
Time Removed Temp. pH (24hr) (Liters) (°C)	Spec. Cond. DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (mi/min)	Drawdown (Teet)	Color/Odor
1006 Initial 23.3 4.86	0.934 5.01	148.3	301.5	38	12.30	NA
1011 6.18 233 4.59	0.033 4.88	168.4	512.4	.38	12.65 DRY	AN
1022 0,40 23.7 4.72	0.033 4.33	168.9	102.5	20	11.64	NA
1027 0.50 23.5 4.58	0.033 422	174.6	34.22	20	11.65	NA
1032 0.60 23,5 4,50	0.033 41.48		11.16	20	11.69	WA
1037 8,20 235 4,50	0.035 4,53		4.43	20	14.68	NA
d. Acceptance criteria pass/fail		No N/	Α			(continued on back)
Has required volume been rer						
Has required turbidity been re	eached 🗹					
Have parameters stabilized						
If no or N/A - Explain below	v.					
3. SAMPLE COLLECTION: N	lethod: Parslal	Le Pump	r <u>Revert</u>	Flow		
Sample ID Container Type	No. of Containers	Prese	rvation	Analysi	s Req.	Time
TMW-29 40ML	3	Н	LL	\/6	) (	1040
TMM-29 250 poly		No	ne.	10	3	1040
7 250 pol-1		No	ve	chd	oride	1040
Comments & Pump on lowes	f setting					
Signature Just	ho			Date	8/20)	hi
						<u> </u>



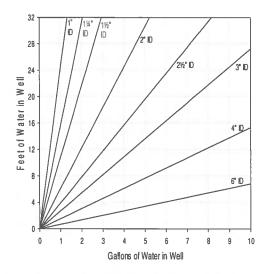
Well ID: TOW-31

Shakespeare-Newberry   Collector(s):   Justin Butler		ignify		5107	Dat	:e: <b>8</b>	holy	Tim	e: Start o	
Water Level Data:	Project No:								rillisii 1	alli/pli
WATER LEVEL DATA: (measured from Top of Casing)   a. Total Well Length 21.43   c. Length of Water Column					Co	llector(s):	Just	Hin Butte		
2. WELL PURGE DATA  a. Purge Method: Periohaltic Pump  b. Acceptance Criteria defined (see workplan)  - Temperature 3% - D.O. 10%  - pH	a. Total	Well Leng	th 21.43	c. Length of V	Vater Colun				Casing Diame	eter/Material
a. Purge Method: Periodalic Pump b. Acceptance Criteria defined (see workplan) - Temperature 3% -D.O. 10% -pH ±1.0 unit -ORP ±10mV -Sp. Cond. 3% -Drawdown <0.3'  c. Field Testing Equipment used: Make				u. Calculateu	System von	unic (see b	ack)	1. 73		
- Temperature 3% - D.O. 10%			_	alte Pomp	•					
- Temperature 3% - D.O. 10%	b. Accep	otance Cri	teria defined (s	see workplan)						
- pH				-	10%					
c. Field Testing Equipment used:    Make										
YST	•	nd.								
No   No   No   No   No   No   No   No	c. Field	Testing Eq	uipment used:					5		_
Time   Removed   Temp.   pH   Spec. Cond.   DO   ORP   Turbidity   Flow Rate   Drawdown   Color/Odor   (uslivini)   (uslivini)   (my   my   my   my   my   my   my   m			_				<del></del>			-
Time   Removed   Temp.   pH   Spec. Cond.   DO   (u.liers)   (viv.)   (vi		Volume	_	117-361	EINTI (C		INICIO	I VY	4	770111
12.12   23.3   4.91   0.105   4.09   161.4   98.59   25.2   11.80   1.09	Time F	Removed					Turbidity	Flow Rate		Color/Odor
176   23.6   4.54   0.049   4.17   167.6   142.0   252   12.07   1.05   12.07   12.07   12.07   1.05   12.07   1		W								A IA
1										
18.57   25.6   17.09   18.57   25.2   17.09   17.09   17.09   18.57   25.2   17.09   18.59   18.59   25.2   17.09   18.59   18.59   25.2   17.09   18.59   25.2   17.09   18.59   25.2   17.09   18.59   25.2   17.09   18.59   25.2   17.09   18.59   25.2   17.09   18.59   25.2   17.09   17.50										
1	_									· ·
Continued on back   Cont		-								î
d. Acceptance criteria pass/fail Yes No N/A (continued on bace)  Has required volume been removed Has required turbidity been reached Have parameters stabilized If no or N/A - Explain below.  3. SAMPLE COLLECTION: Method: Peristablic Pump/Reverse Flow  Sample ID Container Type No. of Containers Preservation Analysis Req. Time  TMM-31 40 M 3 HCL VOC 0950  TMM-31 250 poly 1 None (blonde 0950)  Comments										
d. Acceptance criteria pass/fail  Has required volume been removed  Has required turbidity been reached  Have parameters stabilized  If no or N/A - Explain below.  3. SAMPLE COLLECTION: Method: Peristablic Purp Reverse Flew  Sample ID Container Type No. of Containers Preservation Analysis Req. Time  TMW-31 40 M 3 HCL VXC 0950  TMW-31 250 poly 1 None (Monde 0955)  Comments  Comments										NA
Has required turbidity been reached Have parameters stabilized  If no or N/A - Explain below.  3. SAMPLE COLLECTION: Method: Perisfallic Purp/Reverse Flow  Sample ID Container Type No. of Containers Preservation Analysis Req. Time  TMW-31 40 M 3 HCL VXC 0450  TMW-31 1250 poly 1 None (hloride 0950)  Comments			iteria pass/fail	•	Yes No					(continued on back)
3. SAMPLE COLLECTION: Method: Peristallic Pump/Reverse Flow  Sample ID Container Type No. of Containers Preservation Analysis Req. Time  TMV-31 40 m 3 HCL VXX 0950  TMV-31 250 poly 1 None (hloride 0950)  Comments	Has r Have	required to	urbidity been r ers stabilized	eached			,			
Sample ID Container Type No. of Containers Preservation Analysis Req. Time  TMW-31 40 M 3 HCL VX 0950  TMW-31 250 poly 1 None (hloride 0950)  Comments	It	no or N/A	\ - Explain belo				1			
TMW-31 40 mL 3 HCL VOC 0950 TMW-31 250 poly 1 None TD) 0950 TMW-31 250 poly 1 None (hloride 0950) Comments	3. SAMPL	E COLLE	CTION:	Method:	Peristalli	c Pump/	Reverse	Flow		_
TMW-31 250 poly 1 None (hloride 0950) Comments	Sample ID	Cor	ntainer Type	No. of Conta	iners	Presei	vation	Analysi	s Req.	Time
TMW-31 250 poly 1 None (Moride 0956)  Comments	TMW-3	1	40 mL	3		Н	KL	Vo	۷	0950
Comments	TMW-3	1	250 poly	1		N	one			0950
	TMW-3		250 poly	1		N	one.	Chle	nde	0950
	Comments									
Signature Date 8/20/2			1							1
Signature Just 18/20/21										
Signature Date 8/20/2			1	1/1					2/-	1 .
	Signature_		7110	1000				Date	10518	य

Well ID: 1500 ORGS-15

	Signify				Da	ate: <u>8</u>	20/21	Tim		530 am/pm
Project No		1		5197	<del></del>				Finish	am/pm
Site Locat Weather			re-Newbe			ollector(s):	1,,0	Hin But		
- Treather		100	- 04	700-04				por year	<u> </u>	
1. WATE	R LEVEL	DATA:	(measui	red from Top	of Casing	)	-			
a. Tota	al Well Len	gth 20	0.02	c. Length of V	Water Colu	mn <u> </u>	(a-b)		Casing Diame	
b. Wa	ter Table D	epth 1	161	d. Calculated	System Vo	olume (see t	ack)	.37		
2. WELL	PURGE D	ATA								
a. Pur	ge Method	l:	Peris	talter Per	m)					
b. Acc	eptance Cr	riteria d	lefined (s	see workplan)						
	perature	3%		-D.O.	10%					
- pH		<u>+</u> 1	.0 unit	- ORP	<u>+</u> 10m	V				
- Sp. C	Cond.	3%	,	- Drawdown	< 0.3					
c. Field	d Testing E	auiome	ent used:	. Ma	ake		Model		Serial	Number
					SI		Profles		54	_
				NFS	chentific	,	MEOT	PW		1809171
	Volume									
<u>Time</u> (24hr)	Removed (Liters)	Temp.	pН	Spec. Cond. (µS/cm)	<u>DO</u> (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (mi/min)	Drawdown (Teet)	Color/Odor
1535	Inital	24,9	5.91	0.097	2,39	-109.1	69.60	316	1125	NA
1540	1.58	24.7		8.097	2.37	-137.1		316	11.25	NA
1545	3.16	24.6		0.096	2,44	-141,4	50.83	316	11,25	AN
1550	4.79	24.0		0.096	258	-139.2	43.88	316	11.25	NA
1555	6.32	240	5.79	0.096	2.71	-137.4		316	11:25	NA
1600	7,90	24,4	5.16	5,044	337	-124,2	30.11	316	11:25	NA
1605	9,48	24.2	5.73	0,094	3.51	8.251-		316	11.25	NA
	ceptance c				Yes No	N/A	1			(continued on back)
	required v						,			
	required t			eached						
	ve parame									
	If no or N/	A - Exp	lain belo	w.						
						. 0	10			
3. SAMP	LE COLLE	ECTION	N: I	Method: 2	crisial	ne yun	p/Ken	erse Fla	J	
Sample II	) Co	ntaine	г Туре	No. of Conta	iners		vation	Analysi	s Req.	Time
Isca-0	B40-15	4	ma	3		H	CL	V4	٥	1620
Iscs. OF			0004	1		_ A)	on-e		5	1620
ISCO.O	345-13	25	DPSH	1		N	ane	Chl	oride.	1620
Commen	ts									
			1	- T			-			
Cianatura		/	10.1	flax.		_		D-+-	o la a l	
Signature			1/1/0	O POUR				Date	8/20/	4

## Purge Volume Calculation



		_
Volume /	Linear Ft.	of Pipe
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

continued (					-					
Time	Volume Removed	Tom-	-14	Case Card	DO	ODD	Totalitation	Claw Date	Danuatau	0-1/0-1
(24 hr)	(Liters)	Temp	рм	Spec. Cond. (µS/cm)		ORP	Turbidity		Drawdown	Color/Odor
		(°C)	2		(mg/L)	(mV)	(NTU)	(ml/min)	(ft)	2.4
1610	11.06	24.0	5.70	5A93	360	-117.3	_	316	11.25	NA NA
1615	12.64	23.8	5.72	0.094	3.64	-119.6		316	11.25	NH-
						-				
										1
			-							
_						<del>                                     </del>				
			-							
		100								
			-				l			
			-							
	_									
	-									
						-				
			-							
				-						
						-				



Well ID: MW-10

	Signify				Da	ate:	12/02	Tin	ne: Start 13	am/pm
Project No				35197					Finish 10	am/pm
Site Locati	-		e-Newbe							
Weather (	Conds:	<u> </u>	cty CI	outy 90'5	C	ollector(s):		). Buller		
1. WATE	R LEVEL I	DATA:	(measu	red from Top	of Casing					
				-			3 (- b)		Casing Diame	ter/Material
a. IUla	ii vveli Len	Bru W		c. Length of V	vater Colu	<u>182</u>	(a-n)		2	
h Mat	er Table D	onth i	5	d. Calculated	Custom Va	luma ( t	10	102		
D. Wat	er rable b	ериі <u>Т</u>	122	u. Calculateu	System vo	nume (see c	ack)o	7.93		
2. WELL	PURGE D	ATA								
a. Purg	ge Method	:	P	eristallic	POMD					
					41					
				see workplan)	4.004					
,	perature	3%		-D.O.	10%	,				
- pH			.0 unit	- ORP	± 10m	V				
- Sp. C	ond.	3%		- Drawdown	< 0.3'					
c. Field	d Testing E	auinme	ent used	Ma	ake		Model		Serial	Number
5		-1	0000		ST		Pro Plu	5		189
			_		riedile		Microt			80917/
	Volume		_		- MENTINE	,	Truc-0 1	PN	20	14031//
Time	Removed	Temp.	pH -	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)		(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(reet)	
1324	Talkey	18.7	5.26	0,170	2.79	153.8	44.72	316	13.28	NA
1329	1.28	18.7	5,24	8,170	2.82	1540	26.11	316	13.94	NA
13.34	3.16		5115	0.165	2.76	154.4	1891	316	14.59	NA
1339	4,74	18.8	5.13	0.462	2.75	155.0	15.88	316	14.75	NA
1244	6.32		5.17	0.164	2.77	153.0	13.03	316	14.90	NA
1349	7.90		5.18	0.164	2.73	152.8	1206	316	1497	NA
1354	9.48		5.17	0.165	2.68	152.8		316	15.04	NA
	eptance c				Yes No	N/A	1			(continued on back)
	required v									
	required t			eached						
	e paramet									
	If no or N/	A - Expl	ain belo	w.						
							12		V	
3. SAMP	LE COLLE	CHON	1: P	Method:	eristal	te KOM	W/KCVA	erse Flow	ر	
Commis ID			T	N= -6C4-		D				-
Sample ID		ntainer	a .	No. of Conta	iners		vation	Analysi		Time
WM-10		401		3			CL		100	1355
MW-10		250					bone		Alas 1201	1322
WW-CD		750					NO3		elals FC	1355
MM-10		750	70H				2504		TOC.	1355
Comment	s	250	Port	UU_		٨	SMOL	D:	sshelds 1	E 1355
MUVID		7.50	DAL	· ·			Jone		Moride	1355
MW·10		40		2			MUL		S GOSME	
MW-10		ILO					None		¿ lesidonsi	1355
MW-10		40m	11	.3			HUL		VOC	1355
Signature			Chis	Mas				Date	8/20/2	
			4	<u> </u>						



Well ID: MW-10T

Client: Signify	/			Da	ate:	2/20/21	Tii	me: Start _	
Project No:			5197					Finish _	<b>1760</b> am/pm
Site Location: Weather Conds:	Shakespear		rry S		ollector(s):		1100	.11.	
weather conds.	CIOU	عدر مد	2		onector(s).		8 rted	WHET	<del></del>
1. WATER LEV	EL DATA:	(measui	ed from Top	of Casing	)				
a. Total Well	Length 47	00	c. Length of	Water Colu	mn 3A.c	ਪ੍ਰ (a-b)		Casing Dian	neter/Material
								2	્રા
b. Water Tab	le Depth	0.86	d. Calculated	System Vo	lume (see b	ack)	4.90		
2. WELL PURG	E DATA							_	
a. Purge Met		2000	allic Pu	A. 0	85°				
a. raige met		ZALIBYE	THC 10	ткр					
b. Acceptance	e Criteria d	efined (s	ee workplan)						
- Temperatui			-D.O.	10%					
- pH	<u>+</u> 1	.0 unit	- ORP	<u>+</u> 10m	V				
- Sp. Cond.	3%		- Drawdown	< 0.3'					
c. Field Testi	na Fauinma	nt usad	ž M	ake		Model	(kr	Corio	ıl Number
c. Heid Festi	ig Equipine	int useu.		SI		Pro Plus			5489
	4	_		cientific	N.		_		
Volu	me	_	/ HPS	CIERNIIC	11 333	Microti	U	300	1809171
	ved Temp.	pH =	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdowr	Color/Odor
(24hr) (Lite	rs) (°C)	- 100	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)		
1114 Tail		5.53	0.088	3.08	166.5	19.41	316	11.47	NA
1119 1.58		5.43	0.089	2.41	164.2	1838	31%	11.54	NA
1124 3.16	18.4	5,40	0.089	2.43	161.8	17.71	316	11,60	NA
1179 4.7		5.37	0.089	2.45	160.7	12.38	316	11.61	NA
1134 6.3		5.37	0.689	2.38	159.2	9.28	316	11.6/	UB
1139 7.90		537	9800	2.46	158.0	7.01	316	11.61	NA
1144 9,0		5.35	0.088	2.50	1583	5.13	316	11,61	NA
d. Acceptan				Yes No		4			(continued on back)
	red volume								
/	red turbidit	•	eacned						
1	meters stal								
11 110 0	r N/A - Expl	ain belov	ν.						
§** —								Vi.	- (3)
B. SAMPLE CO	LECTION	ı. n	Nethod: P	erislalt	D. 40	12-100	· Elas		
	LLLOTTOT		rictiou.	SI 10/4	C Tongs	VENC17	C 1 10W		
Sample ID	Container	Type	No. of Cont	ainers	Preser	vation	Analys	sis Req.	Time
NW-DI	YOM		3			CL		C	1145
10T	250 p					SAE	NO2/A		
MO. NOT	250		1			102	Mel	7.	1145
W-LO.T	250		1		1000	504	TOC		1142
omments	250	504	i		٨٥		Uiss	mulau Fe	1145
MWYOR	250	20H	1		No	le_	chlo	ride	1145
	HOM	_	2		Н				MEE 1145
MWYOT	14.00	4	1		Ne	١		roibleds	1845
	•		11						
Signature		100	TYPE				Date	8/20	121
MW-10T	250 40 M	904 L	2		Not	le L	(hlo Diss Mic	ride 60sex	MEE II

Well ID: ERD-OBSW- IS

	Date	e: 81.	20/21	Tim	ne: Start	<b>7.0</b> am/pi
oject No: 60635197					Finish 15	1/5 am/pi
e Location: Shakespeare-Newberry						
eather Conds: Partly Clarky 90'5		lector(s):	7.1	3uller		_
water Level Data: (measured from Top of a. Total Well Length 30.29 c. Length of Water	ter Colum				Casing Diame	
b. Water Table Depth 11,60 d. Calculated Sys	stem Volu	ime (see b	ack)	3.05		
WELL PURGE DATA  a. Purge Method: Purishabic Pun	υŞ					æ
b. Acceptance Criteria defined (see workplan)	4					
- Temperature 3% -D.O.	10%					
- pH <u>+</u> 1.0 unit - ORP	<u>+</u> 10mV					
- Sp. Cond. 3% - Drawdown	_ < 0.3'					
c. Field Testing Equipment used: Make			Model			Number
YSI			Dro Dres			189
HESU	tentiti		Microt	PW	201	809171
Volume	DO	ODD	The sale halling	Class Data	Describeron	0.1./0.1
Time Removed Temp. pH Spec. Cond. (μS/cm)	DO (mg/L)	ORP (mV)	(NTU)	Flow Rate (mi/min)	Drawdown (reet)	Color/Odor
		165.9	1301	316	12.01	NA
		164.0	52.78		17.08	AUA
	.85	1608	26.04	3116	12.14	NA
		157.3	17.22	316	12.15	NA
		154.4	13.96	316	17.16	NA
	.74	151.2	12.08	316	12.16	NA
	72	1499	11.56	316	1216	NA
d. Acceptance criteria pass/fail Yes		N/A				(continued on bac
Has required volume been removed						
Has required turbidity been reached						
Have parameters stabilized						
If no or N/A - Explain below.						
SAMPLE COLLECTION: Method: Peris	sallie	Dony	Rever	e Flou	7	
mple ID Container Type No. of Containe	ers	Preser	vation	Analysi	s Req.	Time
3D-685W-15 40ML 3		1-1	در	Vo	)_	1500
RD-085W-15 250poly 1			ne	NO2	NO. 150V	1500
BD-0856-15 250pply 1			ND2	ME		1500
RD.0856-15 2500014 1			2 SOH	10		1500
mments 25 bily		1/2	one.		melals Fr	
RD-0856-15 2501084 L			ONC		onde	1900
BD-085W-13 YOUL 2			ul		GOSES ME	
RD-085W-1> 160014 1			rone.		tobals	1500
nature huston				Date	8/20/	

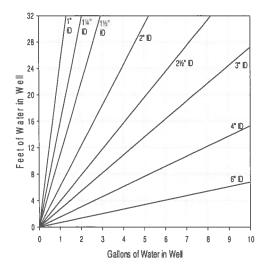
Well ID: ERD-OBSM-IT

Cilent:	Signify				Da	re:	20171		ie: Start 19	am/pm
Project No			6063						Finish 12	am/pm
Site Locati			e-Newbe			.11 + / - \		0 11 4		
Weather (	Lonas:	Yeld	Hy Cle	2dy 80'5		ilector(s):		. Butters		
1. WATE	R LEVEL I	DATA: (	measur	ed from Top	of Casing)					
a. Tota	al Well Leng	gth 35	,50	c. Length of V	Vater Colur	nn 24,4	<b>9</b> (a-b)		Casing Diame	ter/Material
	·			Ü		<i>A</i>	•		2	t
b. Wat	ter Table D	epth	10.1	d. Calculated	System Vo	ume (see b	ack)	3.99		
2 WELL	PURGE D	ATA								
	ge Method		Per	istallic i	PUMID					
h Acc	entance Cr	itoria de		ee workplan)		36				
	perature	3%	ennea (s	-D.O.	10%					
- pH	perature		.0 unit	- ORP	± 10m\	,				
- Sp. C	and	3%	.o umit	- Drawdown	< 0.3'					
- 3p. C	ona.	J/0		- Diawdowii	₹0.5					
c. Field	d Testing E	quipme	nt used:	_	ake		Model			Number
			_	Ys			Pro Pl.	<u>ئ</u>		189
			_	HFSC	reveren		Microt	PW	ZOIT	12120
T:	Volume	T		0 0 1		000	- 1 1 121	EL . D		
<u>Time</u> (24hr)	Removed (Liters)	(°C)	<u>Н</u> д	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (mi/min)	Drawdown (reet)	Color/Odor
1202	Total		5.70	0.037	1.81	76.4	28.37	316	11.65	NA-
1207	1.58	19.3	5.55	0.093	1.34	55.1	23.14	316	11.72	NA
1212	316	19.1	5,49	0.091	1.43	48.0	20.97	316	11.78	NA
1217	4.74		5.43	0,089	1.50	57.9	14.81	316	11.78	NA
1222	6.32	19.3	5,40	0.087	1.59	73.1	11.88	316	16.78	NA
1227	7.90	19.2	5.39	0.086	1.66	79.8	9,98	316	1678	NA
1232	9.48	19.1	5.41	0.086	1.73	82.7	841	316	11.78	NA
	ceptance cr				Yes No	N/A	A			(continued on back)
	required v					, 📙				
	required t			eached						
	e paramet									
	If no or N/	A - Expla	ain belo	w.						
3 SAMP	LE COLLE	CTION		Method:	arch Il	Ω	10 ,000	- 61.		
o. OAIIII	LL OOLLL	.011011		vietilou.	אישוכון	C PCHP	Herens	C 1 106-1		_
Sample ID	) Co	ntainer	Type	No. of Conta	iners	Prese	rvation	Analysi	s Rea.	Time
<b>任意P-0</b>			ML	2			CL	Vo		1235
ERD- OF			S paly	ī			ne_		Ma / 201	1235
ERD-08	Contract the state of the state		160	1			J6 2		tals Fr	1235
FW-08			مالاه				364	TO		1235
	156-1E		bay.	1			one		Melals Fe	1235
Comment	_	10	Spoly.	1			ent	chlo		1235
	SW-IT	LM		110111111111111111111111111111111111111		ни		Dir Gosco MER		
ERP-OB	SW-15		100	2		Н	u	Dim	GOSCE ME	E 1235
ERP-OB ERP-OB	50-15	4	JAO	2						
ERD-OB	50-15	4	100	,			00/2		8/10/2	1255

Well ID: 1500 0865-15

Client: Signify	Date: 8/20/21	Time: Start	530 am/pm
Project No: 60635197		Finish	am/pm
Site Location: Shakespeare-Newberry			
Weather Conds: Partly Clarky	Collector(s):	stin Butter	<u>~</u>
1. WATER LEVEL DATA: (measured from Top of Coa. Total Well Length 20.02 c. Length of Water			neter/Material
b. Water Table Depth ((,6) d. Calculated Sys	tem Volume (see back)	1.37	1
2. WELL PURGE DATA			
a. Purge Method: Penstellar Rump			
b. Acceptance Criteria defined (see workplan)			
	10%		
- pH <u>+</u> 1.0 unit - ORP	<u>+</u> 10mV		
- Sp. Cond. 3% - Drawdown	< 0.3'		
c. Field Testing Equipment used: Make	Model		al Number
751	Poly		484
Volume Volume	White Micros	PW = 2	01809171
Time Removed Temp. pH Spec. Cond.	DO ORP Turbidity		Color/Odor
	mg/L) (mV) (NTU)	(mi/min) (reet)	1 -A
	.39 -109.1 69.60	316 1125	NA
	37 -137.1 57.61	316 11.25	NA
	<u>,44 -141.4 50.83</u>	316 11.25	AN
	58 -139.2 43.88	316 11.25	NA
200	71 -137.4 39.94	316 11.25	NA
	37 -124,2 30.11	316 11,25	MA
	51 -126.8 66.63	316 11.25	NA
d. Acceptance criteria pass/fail Yes			(continued on back)
Has required volume been removed	/		
Has required turbidity been reached  Have parameters stabilized			34
If no or N/A - Explain below.			
3. SAMPLE COLLECTION: Method: Per	stallie Pump/Re	verse Flaw	
Sample ID Container Type No. of Container	rs Preservation	Analysis Req.	Time
ISCO-0840-15 48M 3	HCL	VOC	1620
ISCO.0845-15 25000/4 1	None	T05	1620
TSCO-03-55 250 poly 1	None	Chloride	1620
Comments			
The state			1.
Signature Just Mass		Date	14

### Purge Volume Calculation



Volume /	Linear Ft	of Pipe
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

(continued f	rom front) Volume									
Time	Removed		рН	Spec. Cond.		ORP		Flow Rate		Color/Odor
(24 hr)	(Liters)	(°C)		(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(ft)	
1610	11.06	240	5.70	5A93	3.60			316	11.25	NA AN
1615	12.64	23.8	5.22	0.094	3.64	-1196		316	11.25	NH-
		1								
	5 1									
			-							
		-								
		1								
			-							
		ļ <u> </u>								
			-							

Client:	Signity				Da	te: 81	20121		ie: Start 14	
Project No		1		35197					Finish	1/5 am/pm
Site Locat Weather			re-Newbe			ollector(s):	10	Buller		
· · · · · · · · · · · · · · · · · · ·		MANA	CVETT	705		onector (5).	3. 1	AME!		
1. WATE	R LEVEL [	DATA:	(measu	red from Top	of Casing)					
a. Tota	al Well Len	gth _3(	29	c. Length of V	Vater Colu	mn <u>18.6</u>	<b>9</b> (a-b)		Casing Diame	
							·		2	
b. Wa	ter Table D	epth _	1,60	d. Calculated	System Vo	lume (see b	ack)	3.05		
2. WELL	PURGE D	ATA								
a. Pur	ge Method	•	Perio	Hallic P.	CMD					
l- A										
		iteria d 3%		see workplan) -D.O.	10%					
- pH	perature		.0 unit	-D.O. - ORP	± 10m\	,				
- Sp. C	`ond	3%		- Drawdown	< 0.3'					
ър. с	.0114.	370		- Diawdowii	\ 0.5					
c. Fiel	d Testing E	quipme	ent used	: Ma	ake		Model		Serial	Number
			_	Y.	SI		Pro Pho			189
			_	HE	Schenki	7	Microt	Pw	201	209171
Time	Volume Removed	Tomp	pH -	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)	<u> </u>	(μS/cm)	(mg/L)	(mV)	(NTU)	(mi/min)	(Teet)	Coloi/Odoi
1425	Lostinz	19,0	5,27	0.296	2.30	165.9	1301	316	12.01	NA
1430	1.58	18.8	5.19	0.292	1.89	164.0	52.78	316	17.08	NA
1435	3.16	18.7	5.17	0.291	1.85	1608	26.04	31/6	12.14	NA
1440	4,74	186		0.291	h81	157.3	17.22	316	12.15	NA
1445	6.32	18.5	5.19	6,291	L77	154,4		316	12.16	NA
1450	7.90	7	5.2	0.292	1.74	151.2	12.08	316	12.16	NA.
1455	9.48 ceptance cr	18.7	100	6.292	H72 Yes No		11.56	316	1216	WA
	s required \					19//	1			(continued on back)
	s required t									*
	ve paramet			Casirea						
	If no or N/			w.						
				_		_	10			
3. SAMP	LE COLLE	ECTION	<b>l:</b> 1	Method:	nobaltic	- Puny)	Rever	se Flou	1	
			_							
Sample II		ntaine		No. of Conta	ainers		rvation	Analysi	•	Time
50050 AVALASE-	3ω-15		onl	3			رد		1	1500
	B5W-15		Dooly	1			she was		NO. ISDY	1500
	1560-15 1560-15	20	Plend	1		1,000	N03	7000000	kk Fe'	1500
		7.5	B 0514	1		-	F JOST	10		1500
Commen							one	- America Str.	smelals Fe	
EKD.	0850-12		Displa				IONE		londe	1000
	1950-13		10ml	2			466		goses ME	
CKD-	0B5w-1>		Lpoly				vone.	יושו	ctobals	1500
Signature	2		Ch	offe	3			Date	8/20/	7.1
0			1	1//					0,00	

Well ID: FRD-OBJM-IT

Client:	Signify				Dа	te:	20 21	I im	e: Start 17	
Project No				5197					Finish 12	48 am/pm
Site Locati			e-Newber							
Weather (	Conds:	Yel	Hy CK	2dy 80'5	Co	ollector(s):	7	Butters		
1. WATE	R LEVEL I	DATA:	(measur	ed from Top	of Casing)					
			•	c. Length of V			9 (a-h)		Casing Diame	ter/Material
0. 100	ii vveii Eeriq	- <u>- 7</u>	7130	c. cengui oi i	vater corar	27.	(0.5)		2"	
b. Wat	er Table D	epth i	laki	d. Calculated	System Vo	lume (see b	ack) 3	399		
						· · · · · · · · · · · · · · · · · · ·		~		
	PURGE D		ວ							
a. Purg	ge Method		rei	istallic F	CMD					
b. Acce	eptance Cr	iteria d	efined (s	ee workplan)						
	perature	3%		-D.O.	10%					
- pH		<u>+</u> 1	.0 unit	- ORP	<u>+</u> 10m\	/				
- Sp. C	ond.	3%		- Drawdown	< 0.3'					
c. Field	d Testing E	quipme	nt used:				Model			Number
			_	Ys:			Pro Pla			189
	\		_	HFSC	rentitive		Microt	اللا	2817	75178
Time	Volume Removed	Temn	Hq -	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)	Dil	(μS/cm)	(mg/L)	(mV)	(NTU)	(mi/min)	(Teet)	Colol/Odol
1202	Tothel	1.91	5.70	0.037	1.81	76.4	28-37	316	11.65	NA
1207	1.58	19.3	5.55	0.093	1.34	55.1	23.14	316	11.72	NA
1212	316	19.1	5,49	0.091	1.43	48.0	20.97	.316	11.78	NA
1217	4.74	19.7	5.43	0,089	1.50	57.9	14.81	316	11.78	NA
1222	6.32	19.3	5,40	D.087	1,59	73.1	11.88	31.6	16.78	NA
1227		19.2	5.39	0.086	1,66	79.8	9.98	316	1678	NA
1232	9.48	19.1	5.41	0.086	1.73	82.7	&41	316	11.78	NA
	eptance ci				Yes No		4			(continued on back)
	required v					_				
	required to required to require the requirement of		-	eached		H				
	If no or N/.			14/						
	II IIO OI IN/	r - rvbi	alli belo	vv.						
3. SAMP	LE COLLE	ECTION	d: N	Method:	ish ll	Plus	12- Veres	e flows		
					713100-11	C ( Coop)	HENOS	C. 1 (DAL)		_
Sample ID	) Co	ntainer	Туре	No. of Conta	iners	Preser	vation	Analysis	s Req.	Time
EEP-0	BJW-IL	40	ML	3		Н	CL	Vo	د	1235
ERD- OF			6 poly	1		الم		MNO	ויפר / שנו	1235
ERD-08			7/30 G	1		1-11	36 2	Nie	lols Fr	1235
FRU-08	SW-II		B DOLY			Hz	Soy	TO		1235
Commen	56-15	29	s day	1			and.	Dys	Metals Fr	12.35
ERP-OB	4	15	Book	1			BILL	chlo		1235
ERP-OR		580	LOAL	7		Н	0.000	<u> </u>	GOSCS ME	
ERD- 08			L goly	1		2.90	DOME.		Coppor	1235
	1 300	1	1/2	1		7.0		1123		
Signature		h	BOY	b~				Date	8/20/2	4
		1								



Well ID: ISERD-OBSW-10

	Signify No	th America		0625105	D	ate:	10/29/21	Ti	me: Start 13	
Project No		Maurhamu CC		0635197					Finish	am/pm
Site Locat Weather		Newberry, SC			0	Collector(s):		usha	Butter	
	R LEVEL I	•		n <b>Top of Casing)</b> c. Length of Water Co	olumn	Εľ	(a-b)		Casing Diame	eter/Material
							( /		_	PVC - 2 in
b. Wa	ter Table D	epth 17	2.17	d. Calculated System	Volume (see bi	ack)	_		-	
2. WELL	PURGE D	ATA								
a. Pur	ge Method	Perist	altic pump							
b. Acc	eptance Cr	iteria define	ed (see wor	kplan)						
- Tem	perature	3%		-D.O.	10%					
- pH		<u>+</u> 1.0	unit	- ORP	<u>+</u> 10mV					
- Sp. C	Cond.	3%		- Drawdown	< 0.3'					
c. Field	d Testing E	quipment u	sed:		/ake		Model		Serial	Number
					SE		Pro Pl	us	3	732
				int s	sucritifi	C	Micro	TPW	20	01869172
	Volume								THE WAY	
Time	Remove	d Temp.	pН	Spec. Cond.	DO	ORP	<u>Turbidity</u>	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)		(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	
1381	Toillo		7,5	0.340	2.14	17.0	36.32	324	13.76	Clear
1336	1.62	17.4	679	0.352	0.79	9.53	26.11	324	13.34	
1341	3.24	17.4	6.52	0366	0.50	26.7	20.21	324	13.43	
1346	4,86	174	6.37	0.381	0.28	28.7	90.68	324	13.48	
1351	8,00	17.3	6.27	0.381	0.13	17.0	135.2	324	13.52	cloudy
1356	9.72	17.3	6.22	0.388	0.10	26.1	177.3	324	13.52	
		riteria pass/		0.301	Yes No	The sales of the s		1 26		(continued on back)
		volume bee				_				(continued on buck)
		turbidity be								
		ers stabilize								
	If no or N/	A - Explain b	elow.							
						40.0	100			<u></u>
3. SAMP	LE COLLE	ECTION:	Me	ethod: Lou	S Flow					
Sample II		Container T		No. of Containers		Droco	rvation	Amplysis	Dog	Time
	·OBSW-11		AL C	3			المال	Analysis <b>V</b> 0		1405
	-085W-10		AL G	3 2			الم	035	GOS MEE	- 1405
	0956-10		10 00 14	- i			)Q/	10	C	1405
	-0840-F		Dooly			1	A		ride	1905
	·0850-1	0 29	10 poly				V03		loss Fe	1405
	· 63500 -1	0 2.9	DOOH			Λ	JA	0:	ss Melols	Fe 1405
	-085W	10 2	50 Doly	1			VIA	AUT	3, NOZ/SOL	TALK 1405
TIER	0.0856-		1 h pol.				VA	1	M.E.O	1405
Signature	2		,					Date		

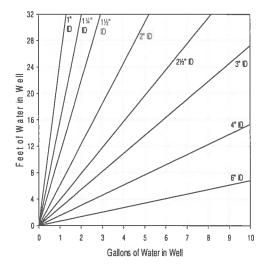


Well ID: MW-10

nify North	America				ate: 10	129/21	Ti		am/pm
		606	35197	72 1				Finish 1	375 am/pm
_							. 0.		
ids:	Portly	Cloudy	60'7		Collector(s)		HN BL	le(	
EVEL DA	T4./		T( Oi)						
				aluma.	10	42 /2 10		Casina Dia	-4/04-4:-1
								Sch 40	PVC - 2 in
Table Dep	oth <u>[[,</u>	<b>89</b> a.	. Calculated System	1 Volume (see b	eack)	<u>3</u> ,	00/11.3	3	
RGE DA	ΓΑ								
Method:	Perista	ltic pump							
		d (see workp	olan)						
ature	3%		-D.O.	10%					
		unit		_					
1.	3%		- Drawdown	< 0.3'					
sting Equ	ipment us	ed:		Vake		Model			Number
		_		27					<u> </u>
<i>t</i> -1		-	HE2	3444712		T OTHER	יאי	801	809172
	Temp.	nH	Spec Cond	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
		<u> </u>							Coloirodoi
	T .	16,31	The second secon						white/clocd.
2	17.9	10.45	0.428	1.19	•3.6		242	14.61	
.42	17.4	10.39	0.425	0.83	.32.9	19.82	242	15.58	
.63	17.5		0.429	0.67			242	16.03	
								11	
	- 4							The state of the s	<del>                                      </del>
			0.415		The state of the s		242	16.56	
						4			(continued on back)
COLLEC	TION:	Meth	nod: Low f	low					
Co	ntainer Tv	ne	No. of Containers		Prese	rvation	Analysis	Rea	Time
-									1360
			2		Н	u	0366	os MEE	1340
			l l				TO	-	1300
			t		Z.	Ar'	Chlo	ride	1310
	250 00	14	l				mele	ob Fe	1380
	250 0	014			A	A	0.55	melals Fe.	1300
	250 00	14			N	19			LK 1360
	16 P	ply			N	4	M	icro	1360
	-	1	1/40						
	EVEL DA /ell Lengt Table Dep RGE DA Method: ance Crite ature  // Lesting Equ // L	EVEL DATA: (mean defended in the second second in the second second in the second in t	RGE DATA Method: Peristaltic pump  Ance Criteria defined (see works ature 3% + 1.0 unit d. 3%  Esting Equipment used:  Volume temoved Temp. pH (Liters) (°C)  Table Depth 1.39  Label 17.4 10.39  Label 17.4 10.39	Sevent Scart Cloudy Go's  Sevent Cloudy Go's	Newberry, SC   Ids:   Por Hy Clocky 60'T	Newberry, SC   Por Hy Close   Collector(s)	Newberry, SC   Ids:   Por Hy   Clocky   60°T   Collector(s):   Justice   J	Newberry, SC   Ids:   PorMy Cloudy 60'T   Collector(s):   Just 10   RJ	Second   S

### Purge Volume Calculation

(continued from front)



Volume /	Linear Ft	. of Pipe
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

(continued										
	Volume									
Time	Removed	Temp	pН	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24 hr)	(Liters)	(°C)		(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(ft)	
1300	8.47	17.3	10.07	0.415	0.68	-120.5	64.12	242	16.56	white (cloudy
1305	9,68			0,418	6,65	-127.3	63.74	242	16.56	
				-						
-										
	<u> </u>									
	1	1								



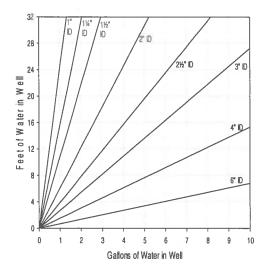
Well ID: ISERD OBSW-101

Project No			60	635197			5 7		Finish 1º	ZID am/
Site Locat	_	ewberry, SC								
Weather	Conds:	port	4 Cloud	7 60'5	C	ollector(s):		usha Bu	Her	
								nu.		
				Top of Casing)						
a. Iota	al Well Leng	th	(	. Length of Water C	olumn		(a-b)		Casing Diame	eter/Materi PVC - 2 in
b. Wat	ter Table De	pth 1	1.55	d. Calculated System	Volume (see ba	ack)	_	1.75	3011 40	FVC-2111
2. WELL	PURGE DA	TA								
a. Pur	ge Method:	Perist	altic pump							
b. Acc	eptance Cri	eria define	ed (see work	plan)						
- Tem	perature	3%		-D.O.	10%					
- pH		<u>+</u> 1.0	unit	- ORP	<u>+</u> 10mV					
- Sp. C	ond.	3%		- Drawdown	< 0.3'					
c. Field	d Testing Eq	uipment u	sed:		∕lake		Model		Serial	Number
					SŦ		Pro Pl	S		137.
				HF	Scientific		Microt			308172
_	Volume	_								
Time	Removed	Temp.	<u>Hq</u>	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Ode
(24hr)	(Liters)	(°C)	- 07	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	0.240.0
1123	INHOL	1.00	7.97	0.344	0.53	.32.4	339.8.	258	13.02	wh.
1128	04291		9.19	0.353	0.31	-117.4	327.0	258	13.11	
1133	04793		9.27	0.389	0.20	·185 D	475.3	258	13.20	
1138	5:16	17.4	9.71	0.384	0.14	- 192.1	677.9	258	13.70	
1143	6.45	17.3	9.75	0.376	0.14	0.5M-	706.3	258	13.50	
1148	7.74	17.3	976	0.374	0.12	-191.4		258	13.20	1
d. Acc	eptance cri	teria pass/			Yes No	-				(continued on t
Has	required v	olume beer	n removed							
Has	required to	rbidity be	en reached			_				
	e paramete									
	If no or N/A	- Explain b	elow.							
			M 201				Aug Tar		hen	_
3 SAMP	LE COLLE	CTION:	Me	thod: Low fl	OW					
o. Orani		orioit.	1010	20411	-					_
Sample II		ontainer T	уре	No. of Containers			vation	Analysis		Time
HE CO	-6050-1	OF 40	MLG	3		Н	CL	Voc		1170
0 334	ソルロレ	464	46	2			LL		S MEE	1120
-0354	JOIL		poly	1		H	soy	TOC		1150
PD(3.54	7.10E	753	paly	1			A	Chlor	de	1150
Commen	1.10I ts	250	o'poky			HIV	3	MEIO	s Fe	1120
POBSU	1-10F	250	poly			N		DSS A	nelals Fe	1
084	1-105	250	Joly	1		N			502 / Soy /	
0854	701C	36		1		NA		Mo	cro '	
			//	wo the						1
Signature	,				p(0)			Date	A to 1 A	यीय

Well ID: MW-10I

lient: Project No	Signify Nor	th America	61	0635197	D	ate: 10	129/21	Tii	me: Start 1	am/pm am/pm
ite Locati		Newberry, SC							1 111313	ani/pin
Veather (				2212 605	c	ollector(s):	Jus	fin Butte		
WATE	D.I.EVEL I	DATA: (		7 (0 : )						
	l Well Len			n Top of Casing) c. Length of Water Co	luma m	70	(4 <sup>m</sup> ) (- b)		Carlas Diam	
a. Tota	i well tell		.0	c. Length of Water Co	iumn		(a-b)		-	eter/Material PVC 2in.
b. Wat	er Table D	epth (	1.53	d. Calculated System 1	Volume (see ba	ack)		4.80/18		r v C ZIII.
							<del></del>	710		
. WELL	PURGE D	ATA								
a. Purg	e Method	: Perist	altic pump							
b Asse	ntanco Cr	itaria dafina	ad lana was	lentan)						
	eptance Cr perature	iteria define 3%	ea (see wor	-D.O.	10%					
- pH	orataro	± 1.0	unit	- ORP	<u>+</u> 10mV					
- Sp. Co	ond.	3%		- Drawdown	< 0.3'					
					- 3.0					
c. Field	Testing E	quipment u	sed:		ake		Model		Serial	Number
			- <u>- 4</u>	YSE		93 %	ProPla	5		132
				HES	MENHIRC		M.cro	TPW	201	809172
Time	Volume		m11	Page Card		000	Trade tella	Flow D. 4	D	G 1 (0)
Time (24hr)	Remove (Liters)	<u>Temp.</u>	pН	Spec. Cond. (µS/cm)	DO (ma/L)	ORP (mV)	Turbidity	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
004	Tritia		5.66	O.127	(mg/L)	75.7	6.80	258	(feet)	slight while
1009	1.29	17.3	5.58	0.128	0.91	62.2	20.18	258	17.31	J. GIT WILL
014	2.58	12.3	5.57	0.127	0.44	55.2	45.57	258	12.33	
1019	387	17.3	5.59	0.129	0.38	47.6	93.12	258	12.33	
450	5.16	17.3	5.60	0.129	0.31	44.1	122.712		122	
1029	6.45	17.3	5.69	0.130	0.27	37.0	145.6	258	12.35	
034	7.74	17.3	5.66	0.131	0.24	346	141.6	258	12.35	V
		riteria pass/			Yes No		1			(continued on back)
		volume beer						10		
		turbidity bed ers stabilize				_				
		ers stabilize A - Explain b				,				
	. 110 01 14/1	- Exhigiii D	CIOW.							
	_									
. SAMPI	LE COLLE	ECTION:	Me	thod: Low flo	w					
ample ID		Container T		No. of Containers			rvation	Analysis		Time
MW-10		4001		3			CL.	Voc		1920
Mw-11		250 F		1			cl	100	MEE MEE	
Music		250 2	Oly			H <sub>2</sub> :	A.	100	ride	0201
Mw-		250 00	oly o	1		HN			als Fe	1050
omment		2.0 70		5 P. T.		FIR	-5	11101		
M-10	N.	25000	4			N	4	03	s Melas	FC 1050
Musc	TC	250 pc	4			NA	4	Mic	a /NO, /:	JOY/ALK 165
Mw-	101-	16				N		M	Cro	1050
		1.1	No	5					10/29	1
ignature								Date		

### Purge Volume Calculation



Volume /	Linear Ft	. of Pipe	
ID (in)	Gallon	Liter	
0.25	0.0025	0.0097	
0.375	0.0057	0.0217	
0.5	0.0102	0.0386	
0.75	0.0229	0.0869	
1	0.0408	0.1544	
1.25	0.0637	0.2413	
1.5	0.0918	0.3475	
2	0.1632	0.6178	
2.5	0.2550	0.9653	
3	0.3672	1.3900	
4	0.6528	2.4711	
6	1.4688	5.5600	

rom front) Volume									
Removed	Temp	рН	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(Liters)	(°C)		(µS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)		
9.03	17.3	5.68	0.(3)	0.24	32.1	133.4	258		slight white /clo
16.32				0.19	29.8	141.9	258		
1161				0.21	28.1	140.5	258	12.35	- V
									*
- a									
1									
	Volume Removed (Liters) 9.03 16.32	Volume Removed Temp (Liters) (°C)  4.03 17.3 16.32 17.3	Volume Removed Temp pH (Liters) (°C)  9.03 17.3 5.68 16.32 17.3 5.66	Volume         Removed         Temp (μS/cm)         pH         Spec. Cond. (μS/cm)           (Liters)         (°C)         (μS/cm)           4.03         17.3         5.68         0.13           16.32         17.3         5.66         0.132	Volume         Removed       Temp       pH       Spec. Cond.       DO         (Liters)       (°C)       (μS/cm)       (mg/L)         403       17.3       5.68       0.(3)       0.24         16.32       17.3       5.66       0.132       0.19	Volume           Removed         Temp         pH         Spec. Cond.         DO         ORP           (Liters)         (°C)         (µS/cm)         (mg/L)         (mV)           G.03         17.3         5.68         0.131         0.24         52.1           16.32         17.3         5.66         0.132         0.19         29.8	Volume         Removed       Temp       pH       Spec. Cond.       DO       ORP       Turbidity         (Liters)       (°C)       (μS/cm)       (mg/L)       (mV)       (NTU)         403       17.3       5.68       0.131       0.24       32.1       133.4         16.32       17.3       5.66       0.132       0.19       29.8       141.9	Volume         Removed       Temp       pH       Spec. Cond.       DO       ORP       Turbidity       Flow Rate         (Liters)       (°C)       (μS/cm)       (mg/L)       (mV)       (NTU)       (ml/min)         4.03       17.3       5.68       0.131       0.24       32.1       133.4       258         16.32       17.3       5.66       0.132       0.19       29.8       141.9       258	Volume           Removed         Temp         pH         Spec. Cond.         DO         ORP         Turbidity         Flow Rate         Drawdown           (Liters)         (°C)         (μS/cm)         (mg/L)         (mV)         (NTU)         (ml/min)         (ft)           4.03         17.3         5.68         0.131         0.24         32.1         133.4         258         1235           16.32         17.3         5.66         0.132         0.19         29.8         141.9         258         1235

Well ID: MW-12D

Client: Signify	Date: 3/8/22 Time: Start 1/35 am/pm
Project No: 60635197 - 60675605	Finish 1220 am/pm
Site Location: Shakespeare-Newberry, SC	
Weather Conds: Partly Cloudy 65°	Collector(s): Justin Butter
WATER LEVEL DATA: (measured from Top of Case)	sing)
a. Total Well Length \$1.45 c. Length of Water (	Column 76. 33 (a-b) Casing Diameter/Material
	2" PVC
b. Water Table Depth 5.12 d. Calculated System	m Volume (see back) 12.44 GAL
a. Purge Method: Low Flas	
b. Acceptance Criteria defined (see workplan)	
- Temperature 3% -D.O. 10	
	0mV
- Sp. Cond. 3% - Drawdown < 0	1.3'
c. Field Testing Equipment used: Make	Model Serial Number
YSI	Pro Plus 19A103315
HACH	2100 Q 19170CD82318
Volume Time Removed Temp. pH Spec. Cond. DC	ORP Turbidity Flow Rate Drawdown Color/Odor
(24hr) (Liters) (°C) (μS/cm) (mg/	
1141 Initral 15.8 8.82 0.091 4.3	
1146 CAS 15.8 6.20 DO89 4.7	
1151 1.90 16.0 6.19 0.092 4.4	
1156 2.85 15.9 6.21 0.094 4.29	
1201 3.80 16.0 6.21 0.093 4.19	
1206 4.75 16.1 618 0.089 4.10	723 71160 5.22 Cloudy /M-
1211 5.70 16.2 6.14 0.086 4.14	
d. Acceptance criteria pass/fail Yes	No N/A (continued on back)
Has required volume been removed	
Has required turbidity been reached  Have parameters stabilized	
If no or N/A - Explain below.	
II 110 of N/A - Explain below.	
3. SAMPLE COLLECTION: Method: Low Flo	w/Reverser
Sample ID Container Type No. of Containers	Preservation Analysis Req. Time
MW-120-POB 40ML 2	HLL TUYOC 1130
MW-120 40ML 3	HCL TCL VOC 1215
Comments	
Signature MA Re	Date 3/8/22
Signature (M)	Date J. V.



Well ID: Mw 200

Clie	nt:	Signify No	rth Am			Da	ate: 3/	7/22	Tim	ne: Start 1	am/pm
7	ect No				5505					Finish_L	am/pm
	Locat		wberry,						n 1.		
Wea	ather (	Conds:	(1	outy	78	C	ollector(s):	100	n Butter		
1. V	VATE	R LEVEL I	DATA:	(measu	red from Top	of Casing	)				
ā	. Tota	d Well Len	ق_gth	15,0	c. Length of \	Nater Colu	mn 31.3	7 (a-b)		_	eter/Material
	147	T 11 D		2.2						3	1 PKC
				3.65	d. Calculated	System Vo	olume (see	back)	CALGAL		
		PURGE D		flow							
-		perature	3%	.0 unit	see workplan) -D.O. - ORP - Drawdown	10% <u>+</u> 10m\ < 0.3'	V				
C	. Field	d Testing E	Equipm	ent usec		ake		Model		Serial	Number
				_	Ys			Pro Ph			103715
		Volume		_	HAC	H		Alexo 2	51006	1712	000 87.818
	me 4hr)	Removed (Liters)	Temp.	рН -	Spec. Cond.	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
15		Inited	18.8	5.39	0.092	1.22	43.2	26	226	4,42	Clear/NA
150	16	1.13	18.9	5.43	0.086	1.25	133.0	161		4.42	Cloudy/NA
159		2.26	189	5.41	0688	1.06	123.2	308		4.39	Cloudy INA
15		3.39	18.4	5.41	0.087	0.95	1126	216		4.39	cloudy INA
160	٠ .	4.52	18.6	5.39	0.087	1,00	113.5	264		4.41	Cloury IMA
100	Ь	5.65	18.5	5.39	0.087	1.04	112.5	285	- O	4,43	Crocky/NA-
(	Has Has	ceptance c s required s required re parame If no or N/	volume turbidit ters sta	e been re y been re abilized	eached	Yes No	N/A				(continued on back)
3. 5	SAMP	LE COLLE	ECTIO	N: N	/lethod:						
	nple IE	Co.	ntainer		No. of Conta	iners	Prese	rvation CL	Analysi TU		Time 1570
	D-20	4	40 ML		3			el	TUV		1610
Con	nment	s									
					0 1	,					
Sigr	nature			4	hold	W	_		Date	3/7h	

Well ID: mw-10

Client:	Signify					Date: _	3	3/22	Т	ime: Start	1355	_am/pm
Project No	o: <u> </u>		6063	5197						Finish	1450	am/pm
Site Loca	tion: Sh	akespear	re-Newbe	rry, SC								-417
Weather	Conds:	1	Pathy	Cloudy 1	690	Collect	or(s):		Justin	Bitter		
1. WATE	R LEVEL	DATA:	(measu	red from To	p of Casi	ng)						
a. Tota	al Well Ler	ngth 🗕		c. Length of	Water Co	olumn		— (a-b)		Casing Dia		laterial
										2	1/PVC	
b. Wa	ter Table [	epth_		d. Calculate	ed System	Volume	e (see	back)		_	,	
	PURGE I		1									
a. Pur	ge Method	: Lo	W HOW	>					17			durating
b. Acc	eptance C	riteria c	defined (s	see workplan	n)							
- Tem	perature	3%		-D.O.	10%							
- pH		<u>+</u> 1	.0 unit	- ORP	<u>+</u> 10	mV						
- Sp. 0	Cond.	3%	•	- Drawdow	n < 0.3	3'						
c. Fiel	d Testing	Equipm	ent used		//ake			Model		Ser	ial Numl	per
					SI			Pro Plus	5	191	15.5.014	5
			_	Н	ACH			21000			20008	
	Volume		_									
Time (24hr)	Removed (Liters)	Temp. (°C)	<u>pH</u>	Spec. Conc (µS/cm)	<u>I.</u> <u>DO</u> (mg/L)		RP nV)	Turbidity (NTU)	Flow Ra (ml/min		n Co	lor/Odor
1404	1.89	11.7	10.04	0.567	0.71		2.2	71100	190	14.55	wh	Je Juh
1409	2.89	17.4	9.97	0.559	0.41	-6	5.2	>1100		15.00	Lok	kelut
1464	3.79	17.3	9.87	0.545	0.38	-73	3.0	71160		15.53		Telrut-
1419	4.74	17.4	10.02	0.541	0.37		5.3	71100		18.86		ELNA
1424	5.69	77.4	9.92	0.569	0.35		1.0	71100		16.18		KINA-
1429	6.69	176	9.87	5.499	0.29	-93		71100	1	16.28		le lut
1434	7,54	17.6	9.85	0.488	9 30 Yes	No	N/A	71100	IV	16.38		klust
	ceptance of the company of the compa			moved	Yes	NO	IN/F	`			(contin	ued on back)
	is required is required											
	ive parame			sacried								
110	If no or N			nw.			L					
	11 110 01 11	// LA	pidiii bor									
	-		<del></del>			1	***************************************					
3. SAMF	PLE COLL	ECTIO	N: N	/lethod: L	iow Flo	xs/R	eve	se				
Sample I	D C	ontaine	r Type	No. of Cor	ntainers	F	Prese	rvation	Anal	ysis Req.	Т	ime
MW-10		40M		3			M	u		LVOC	10	135
MW-10		40,	L	٦			HO	16	ME	E RSKITS		135
MW.ID	0.0	250	ul					103		TWO		35
MULLO		20A	سال	ı	1-407			N	Fe	then nuclit		35
Commer	nts	2504	L	1			Non	re	Anie	01-	14	35
MW-10		250m	L					504	TOL		143	35
Num		IL		1				one	DHC	DHB	143	5
			-							•		
Signature	e	Ser.	01	NAT					Date	3/8/2	1	
J. 3. 10.011		100								31010	_	



Well ID: NW-10T

Client:	Signify				[	Date: 3	18/22	Tim	e: Start	25 am/pm
Project No	o:		6063	35197					Finish 11	
Site Locat	tion: Sh	akespea	re-Newbo	erry, SC						
Weather (	Conds:	Í	Porsly	Cloudy A	3	Collector(s	):	B Missel	Her	
1. WATE	R LEVEL	DATA:	(measu	red from T	op of Casir	ng)	3112			
a. Tota	al Well Le	nath -		c. Length	of Water Co	lumn —	— (a-b)		Casing Diam	eter/Material
			0.63				(\( \)		2" 9	VC
b. Wat	ter Table I	Depth_	11-20	d. Calcula	ted System	Volume (se	e back)			
2. WELL	PURGE I	DATA								
a. Pur	ge Method	d: 100	U Flor	2						
b. Acc	eptance C	Criteria d	defined (	see workpla	an)					
	perature	3%		-D.O.	10%					
- pH		<u>+</u> 1	.0 unit	- ORP	± 10r	ηV				
- Sp. C	Cond.	3%		- Drawdo	wn < 0.3	ı				
c. Field	d Testing	Equipm	ent used	d:	Make		Model		Serial	Number
					YSI		Pro Plus			02315
			_	ł	1ACH		21000			COR2318
	Volume									
Time (24hr)	Removed (Liters)	d Temp. (°C)	pН	Spec. Cor (µS/cm)	nd. DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1037	1.89	17.0	4.66	0.094			71100	(/	11.45	white
1042	7	174	4.62	0.102	0.27	56.4	71100		11.95	whik INA
1047		17.3	4.92	0.110	0.13	61.3	492		11.45	while MA
1052		17.1	5.38	0.111	0.21	29.1	140		11.45	whitelast
1657		17.3	6.00	0.118	6.16	-50.2	74,4		11.45	ClearINA
1102		17.2	6.06	0.119	0.14	-62.8	18.4		11.45	Clear INA-
1107	ceptance		608	0.120	Yes, N	10.9 N	8.01		11,45	CleorINA
	s required						1			(continued on back)
	s required					i	1			
	ve param		-	odonod		7 7	1			
	If no or N			ow.			_			
2 CAMP	LE COLL	ECTIO	M. 1	M-411	Low Flo	10				
3. SAIVIP	LE COLL	ECTIO	W: 1	Method:	LOW HO	W /Keva	ise			
Sample II	) C	ontaine	r Type	No. of Co	ntainers	Pres	ervation	Analysi	s Req.	Time
MD -10		404		3			<u>C</u> L	TLL		1110
MW -10:		401			-		100		128K175	IVO
MO-10.		250					1003	Fet	Mn,	1110
Mer-10!		ASD	46	I			2010	51.7	un Conlikes	1) 1110
Commen	ts	2501	h-L	1			one	Anio	n -	1110
NW-108	/	201		1			SOU	TOC.		1110
Men-10	Ţ	16		<u>l</u>			PONE	BHC	BHBE	1110
				7						
Signature				11.M	May			Date	3/8/2	1
oigi iatul e				CANA				Date	21010	-



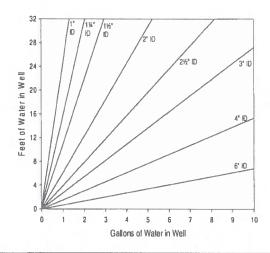
Well ID: E20-8BSW-/

	Signify No	rth Ame				ate: 3	18/22	Time	e: Start 1:	
Project No				5505 60635	197				Finish 13	am/pm
Site Locat		wberry,	SC							
Weather (	Conds:	Pare	Hy Clo	dy 67°	C	ollector(s):	<u></u>	stin Buth	2	
1. WATE	R LEVEL I	DATA:	(measu	red from Top	of Casing	1)				
a. Tota	al Well Len	gth		c. Length of \	Nater Colu	mn	(a-b)	(	Casing Diam	eter/Material
b. Wat	ter Table D	epth 1	1.70	d. Calculated	System V	olume (see	back) -		dy	VC
2. WELL	PURGE D	ATA					41			
a. Ful	ge Method:	10%	HOW						***	
- Tem - pH	eptance Ci perature Cond.	3%	.0 unit	see workplan) -D.O. - ORP - Drawdown	10% ± 10m\ < 0.3'	V				
c. Field	d Testing E	quipm	ent used	l: Ma	ake		Model		Serial	Number
					I		Pro Plus	5	19A1	21550
			_	HA			21000			81828 03
	Volume	_	_							
Time (24hr)	Removed (Liters)	Temp.	рH	Spec. Cond. (µS/cm)	<u>DO</u> (mg/L)	ORP (mV)	(NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1300	1.89	17.6	5,63	0.332	1.66	115.6	225	1.90	13.11	cooly/MA
1305	2.84	17.7	5,68	8.335	1.15	94.3	179		13.22	Cloudy INA
1310	3.79	17.8	5.13	0:340	1.06	86.3	134		13.33	Clarky / Nut
1315	4.74	179	5.78	0.345	0.93	22.0	151		13.35	Clady/lut
1320	5.69	17.9	5.80	0,349	0.88	70,0	160		13.30	Clasy InA
1325	6.64	128		0.351	0.85	61.8	156		13.38	Cloudy INA
1330		18.0		0.352	0.87	52.3	120	L V I	13.39	Cloudy IAA
Ha Ha	ceptance c s required s required ve parame If no or N/	volume turbidit ters sta	been re y been rabilized olain bel	emoved eached ow.	Yes No					(continued on back)
3. SAMP	LE COLLE	ECTION	<b>V:</b> 1	Method: Lo	w Flow	Revers	2			_
Sample II		ntaine		No. of Conta	ainers		rvation	Analysis	•	Time
EPD-08:		464		3			CC	TELL		1335
FRD. OBS		40 M		2			ch		RSK 175	1355
ERD-OB		250 H		- 1			103	FOUN	in,	1335
ERD-DE	ISW-1	250 H	41-	<u> </u>		No		Fexa	Inlustified	1335
Commen	is			Ç		Na		Anion	_	1335
ERP- 68		250	me	1		H25		TOC		1335
ERD-08	5W-1	11		1		Non	Ø	DHL,	DHB+	1335
Signature			dur	2 Ato				Date	3/8/22	

Well ID: ERO-OBSW-1I

Client:	Signify No	rth Ame				Date:	3	822	Tim	e: Start c	am/pm
Project No	o:		6067	15505 6063	597					Finish	
Site Locat	ion: Ne	wberry,									
Weather (	Conds:	Po	Hy C	ady 60		Collect	or(s):	Ju	stin But	es	
1. WATE	R LEVEL	DATA:	(measu	red from Top	of Casi	ina)					
				c. Length of				- (a-h)		Casing Diar	neter/Material
a. rott	AI VV CII LCI	igiii		c. Length of	valer O	Oldi IIII		(a-b)		_	PVC
b. Wat	ter Table D	epth_	0.58	d. Calculated	System	Volume	e (see	back)		Ø	rvo
	PURGE D		v flow			ı					
h Acc	entance C	ritoria c	defined (	see workplan)							
	perature	3%		-D.O.	10%						
- pH	porata. o		.0 unit		± 10						
	Cond.	3%		- Drawdown	< 0.3						
				d. 14.	-1			NA1 - 1		0 :	-
c. Field	d Testing E	=quipm	ent used		ake			Model	•		l Number
			-	Y5				Pro Plu			4103315
	Volume		_	HA	CPI			31000		191	20083315
Time	Removed	Temp.	pH	Spec. Cond.	DO	OF	3P	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)		(μS/cm)	(mg/L)		iV)	(NTU)	(ml/min)	(feet)	Coloi/Cuci
6921	3.18	16.8	9.48	0.380	0.56	135	-4	71100	4.68	13.08	white/NA
0926	4,62	17.1	9.73	0.397	0.33			71100		13.17	while INA
0931	5.46	17.1	9.94	8,457	0.25			71100		13.25	whikewa
0936	6.30	17.0		0.569	0 24	-76		71100		13.28	WHENA
6941	7.14	7	9.87	0.540	0.20			7(100		13.28	whiteINA
0946	7.98	17.0	9.69	0.551	0.14	-435		2400 298		13.28	whilelas
0951 d. Acc	ceptance c			0.544	Yes	-470 No	N/A	232	4 1	13.25	(continued on back)
	s required				P						(continued on back)
	s required				回		H				
	ve parame				4						
	If no or N	A - Exp	olain bel	ow.			_				
											1
					1	1	_				Fy
3. SAMP	LE COLLI	ECTIO	N: 1	Method: L	ow IF	100	Key	krise			
Sample II	) Co	ntaine	r Type	No. of Conta	ainers	F	rese	rvation	Analysi	s Rea.	Time
ERDOBSI		400		3			HL		JZLV		1010
ELD-185		401		2			H			RSK175	1010
ERD-08		250						101		h Fetma	0101
ERD-01	44. IF	2501						me		Mn Confillen	
Commen	かった	250 M	L	1			NOI	ie	Anion		1010
FRD-00		250m		J.			H25	Du	TOC.		1010
FRD OF	35W-17	11		1			No		DHL, B	HBE	1010
			1	1 1					•		
Signature		1/1	usk	1hr					Date	3/8/2	-9
Signature		-4	UNI	, ,					Date	31816	

### Purge Volume Calculation



Volume /	Linear Ft	. of Pipe
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

continued f	rom front) Volume									
Time (24 hr)	Removed (Liters)	Temp (°C)	рН	Spec. Cond (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (ft)	Color/Odor
0956	9.66	17.0	9.59	0,536	0.13	510,8	176	168	13.28	white INA
1001	10,50			0529	0.11	5569	171		13.28	white INA
1006	11.39	17.1	9.56	8.523	5.12	579.7	igl	<b>V</b>	13.28	white INA white MA
			1 1-							



### FIELD INSTRUMENT CALIBRATION LOG

Project Name: Project Number:	Signify worth Moview	YSI 556 SN:	19.10 0 19.410375 19.125 8 03.6191	
Calibrated By:	- Junter Butter	Additional Equipment SN:	191 20 20 12	-
Signature:	- gust stor	Date	318/22	-

Operation Notes:

1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.

2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.

3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

	Table 1: C	alibration Valu	ies At Various	Temperatures	
Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147,00	244.00
20	4.00	7.02	10.05	1278.00	237,50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224,50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

		Table 2: Atmosphe	eric Pressure / Altitude Table		
Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

			Table 3:	DO % Satural	ion Vs Temp	erature			
Temp C.	DO	Temp C.	DO	Temp C	DO	Temp C.	DO	Temp C.	DO
15	10 084	20	9.092	25	8.263	30	7.559	35	6.95
16	9.870	21	8.915	26	8.113	31	7,430	36	6.83
17	9.665	22	8.743	27	7.968	32	7.305	37	6.72
18	9.467	23	8.578	28	7.827	33	7.183	38	6.62
19	9.276	24	8.418	29	7.691	34	7.065	39	6.51

	YSI 55	6 Calibration		
Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	749.0		0834	mmHg
Temperature (Saturated Air)	15.9	16.0	0852	С
Temperature (Calibration Solution)	17.9	17.2	0849	С
DO	7.74	9.87	0.834	mg/L
pH 7	6.94	7.04	0840	su
pH 4	4,19	4.00	0845	SU
pH 10	10.01	10.10	0846	SU
Specific Conductance	1,43	1.15	0837	mS/cm
ORP	243,9	244,0	0849	m∨

	MicroTPW Calibration						
Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted	Yes	No				
	(circle one)						

CLIENT:	Sign	if Worth America	AECOM FIELD REPRESENTATIVE: Manage	gra-
SUBCONTRA		AECOM		
SUBCONTR		RSONNEL ON SITE: Mandail	Test	
BRIEF SUMM	MARY OF V	VORK PERFORMED: Water le	vel 5	
START	STOP			
TIME	TIME		DESCRIPTION OF ACTIVTIES: REMARKS	1 Time
1019		MW -10 - 11.13	1108 SDW-1 - 20.08	1434 trine
1017		MW-10I -10.63	1104 5000 2 - 85.67	1348 - 035
las		NW-11 - 13.36	1038 SDW-3 -07.84	1 4
0958		mw-12 -05.95	mw-1.1500-10.02	1
1000	7	NW-12I-04.12	mw-2 mw.2 1353 -	6211
1801		MO-12D -05.12	MO-27 MW-25 - 1880.	- 10.92
0941		Mw.13 -02.81	MW.20 MO.20 - 1351.	
0946		MW-14 -02.47	Mw.3 Mw.3(1487) 65000	28 Ol 400000
0944		New . 15 = 01:78	1452 mw-3I - 11.15	200000
1012		mw.16 -07.07	WS3 Mw-30 -11.31	
4010		mw-17 - 05.39	439 Mw-4 -16.40	
1025		mw.190 -08.28	1415 mw5 -16.12	
1017		MW-188 - 06.51	1408 MW SI -16.60	
1021		mw-180 - 10.64	1400 Mw.6 - 17.79	
0956		Mu-26 - 06.51		
0954		Mw.27 - 03.96		
0939		New-28 -04.12		
0936		MG-20 - 620 H	1418 mw 75 - 1533	
1016		Mw.29 - 69.11 Obs-15001 - 10.58	1419 mw.70 - 15.49	
1018		065-1cFP 1 - 11.20		
1126			1442 mu-8 - 15,70	
1112		MU-1940 MU-19I-03.17		
1128	<del></del>	140.101	1445 mw.95 - 15.34	
1/65		MW-19D-03.44		
1155		MW-20 - 03.43	1458 MW-22 - 1241	
		1.8904.0 (0.700.00)	·58 1335 TMW-21-18.35	
Illia		Mw.21 - 09.40.	1329 +mw.23-17.38	
1152		MW-21T -1870	1339 TMW 23-16.42	
1054		Mw.23 - 17.51	W24, TMW-24 - 18.39	
1049		mw.21/2 - 11.67	1428 Thw.25 - 16.45	
1047		MW-dUI - TIES	13.59 1341 TAW 29 - M. 57	
1158		Mus. 25 - 12.64	1314 Tmw-30 -14.10	
1115		RDW.1, -03.80	1345 TMW-31 - 1/18	

Well ID: Nw -2

Client:	Shakespea		osite St	ructures	Da	ate: 7-3	20-22	Tim	re: Start 15 Finish (e	
Project No		197.5							i iiion fe	
Site Local		wberry S				allester(e):		James Le	anhart	
Weather	Conds: 0	LOVI	1_	81"		ollector(s):		James Le	арпасс	
				c. Length of			(a-b)			neter/Material
b. Wa	ter Table I	Depth &	3.48	d. Calculated	d System V	olume (see	back)	2.66		2
2. WELL	PURGE I	DATA		ump - Low Flo						
- Tem - pH	ceptance C perature Cond.	3% <u>+</u> 1			10% <u>+</u> 10m	V				
c. Fiel	d Testing	Equipm	ent use		ake		Model			Number
			_		<del>itu-</del>		Troll 60	<del>0</del>		8058
	Remove		_	451			PRO			5489
Time	d	Temp.	pH -	Spec. Cond.	DO	ORP	Zocac	Flow Rate		Color/Odor
(24hr)	(Liters)	(°C)		(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	
1012	0	21.7	5.77	22	7.50	588.L	18.29	110	8.84	CLEAL
1017	0.55	21.7	5.38	21	7.48	622.4	12.42	100	8.78	11
1022	1.05	22.1	5.38	21	7.01	624.1	8.45	100	8.78	14
1027	1.55	22.2	5.36	20	6.99	628.C	8.39	100	8.78	
1032	6.05	66.6	7.36	20	6.89	661-7	3.79	100	৪. 77	N.
Ha Ha	ceptance of second required to the second required to the second required to the second required requi	volume turbidit eters sta	e been r y been abilized	emoved reached	Yes No	N/A				(continued on back)
3. SAMP	LE COLL	ECTIO	N: 1	Method: Peri	staltic Pum	р				
Sample II		ontainer 40	Type ml voa	No. of Conta	ainers		rvation [c]	Analysi 8260B	s Req.	Time
Commen	ts									
			1	, /						•
Signature	d	4to	Luch	1				Date	7-20	-22

Well ID: TMW-31

Client:	Shakespea	are Com	posite St	ructures	[	Date: 7-	20-22	Tin	-	405 am/pm
Project N	o: 6063	5197.5							Finish_	२५० am/pm
Site Loca	tion: ne	wberry S	SC							
Weather	Conds:	P.Cra	247	6"		Collector(s)	):	James Le	aphart	
				ured from To			-t (a-b)			neter/Material
				d. Calculated				0,37	1 2"	7pvc
				d. Calculatet	2 Oyoteiii	Volume (se		0,31		
	PURGE I		istaltic P	ump - Low Flo	w					<del></del>
		Criteria o		(see workplan	10%					
- pH	perature		.0 unit	-D.O. - ORP	± 10%	n\/				
	Cond.	3%		- Drawdown	_					
c. Fie	d Testing	Equipm	nent use		ake		Model	<b>N</b>		Number
			-	ins			Troll 60	70		65489
	Remove		-	Micieo			20000	>		11199
Time	d	Temp.	pH -	Spec. Cond.	DO	ORP		Flow Rate		Color/Odor
(24hr)	(Liters)	(°C)		(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(teet)	
0906	0	24.1	5.88	61	5.37	634.3	38.54	100	13.42	CLEAR
0911	0.50	23.9	5.43	58	3.71	640.2	24.60	0.80	13.10	1.
0916	0.90	23.9	5.32	54	3.94	6440	15.22	0.80	13.11	1.
0921	1.30	23.8	5.31	57	4.07	639.2	9.46	0.80	13.11	1.
5924	1.70	23.7	5.28	58	4.14	640.3	8.88	0.84	13.11	**
d. Ac	ceptance	criteria	nass/fai		Yes N	lo N/A	1	<u> </u>		(continued on back)
	s required									(Sommer on Bush)
Ha	s required	l turbidit	y been	reached	<b>1</b>					
Ha	ve parame	eters st	abilized							
	If no or N	I/A - Ex	plain be	low.						
3. SAMF	LE COLL	ECTIO	N: f	Method: Peri	staltic Pur	np				
Sample I	D Co	ontainer	Type	No. of Conta	ainers	Prese	ervation	Analysi	s Rea	Time
TMW-3			ml voa	3			łcl	8260B		0930
		250	MI PEL	<i>t</i>		NE	تهري	TDS		
		250	mi Por	1 1		ہر	こいと	CHLOIZE	26	
Commen	ts									
				/	7					
Cianata			LAN	11-1				D-4-	-	
Signature	-		X	record )				Date	7.20.	·LL

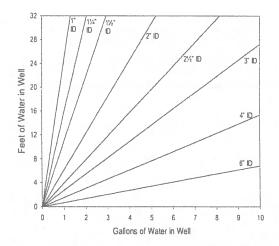
Well ID: OBSW-15

Site Loca Weather	ation: ne Conds:	S5197.5 ewberry P.C.c	SC SC	tructures		Collector/o	20-22		Finish &	ess am/pm
1. WATE	ER LEVEL	DATA	: (meas	ured from To		0.100.01(3	).	James Le	aphart	
a. Tot	tal Well Le	ngth 2	20.02	c. Length of	p of Casi	ng)				
h 104				o. Longaror	vvaler Co	umn 8	(a-b)		Casing Diar	meter/Material
D. VVa	iter Table	Depth_i	1.87	d. Calculated	System V	/olume (se	a hasta	4	2'	'/pvc
2. WELL	PURGE	DATA			•		e back)	4,33		
a. Pur	ge Metho		ristaltic P	ump - Low Flo						
D. ACC	eptance (	Criteria d	defined	(see workplan	)					
- pH	perature	3%		-D.O.	10%					
	Cond.		.0 unit		<u>+</u> 10m	V				
Оβ. (	Jong.	3%	)	- Drawdown	< 0.3'					
c. Fiel	d Testing	Equipm	nent use	d: Ma	ıke		Model			
				-Insi			Model Troll 60	-		Number
				45			ASS	0		8958
_	Remove				UST		200		18410	
Time (24hr)	<u>d</u>	Temp.	pH	Spec. Cond.	DO	ORP		Flow Rate	Drawdown	(1) 49
0825	(Liters)	(°C)	401	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	Color/Odor
OBIO	0.50		694	187	30.5	551.7	71.47	100	12.08	RIPLE
5130	0.95	22.2	6.31	192	6.94	659.5	64.77	29.6	12.20	44
0826	1.40	22.5	6.10	212	6.67	683.3	47.13	6,92	12.23	60
0825	1.85	22.4	6.05	214	6.67	697.1	35.42	0.90	12.25	N
0830	2.30	22.3	6.05	217	6.80	706.9	23.12	69.6	12.28	11
0835	2.15	22.2	6.01	219	6.85	7120.1	8.84	0.90	12.28	15
d. Ac	ceptance	criteria			Yes No			0.10	16.41	/acations described
На	s required	volume	e been r	emoved		M				(continued on back)
На	s required	turbidit	ty been							
На	ve param									
	If no or N	VA - Ex	plain be	low.						
3. SAMF	LE COLL	ECTIO	N: 1	Method: Peri	staltic Pum	n				
				1011	startio i un	Þ				
Sample I	D C	ontaine	г Туре	No. of Conta	ainers	Prese	rvation	Analysi	s Rea.	Time
LSCE - C	1350-13	<b>&gt;</b> 40	ml voa	3		I	Icl	8260B	31.	0840
			oul Pou				5,45	CHLON	UDÉ	
		250	out Pc	4		وع	シャング	TOS		
Commer	nts		> 1							
				1						
		, ,	1 1	//						



Client:	Shakespea	are Comp	posite St	ructures		Date:	19-22		ne: Start 12		
Project N	lo: 6063	5197.5							Finish_\	500	am/pm
Site Loca	ation: ne	wberry S	SC								İ
Weather	Conds: P	Cian	8 4	શુ હ		Collector(s	):	James Le	aphart		
1. WATE	ER LEVEL	DATA:	(meas	ured from To	p of Cas	ing)				/ 0. 4	-4
a. Tot	tal Well Le	ngth 35	5.50	c. Length of	Water Co	olumn 24,	> (a-b)		Casing Diam 2".	neter/ivi /pvc	ateriai
b. Wa	ater Table	Depth_[	1.50	d. Calculated	l System	Volume (se	e back) 3	91			
	PURGE in properties		istaltic F	ump - Low Flo	w						
				(see workplan							
	perature	3%		-D.O.	10%	\/					
- pH	0			- ORP	± 10r						
- Sp.	Cond.	3%		- Drawdown	< 0.3						
c. Fie	ld Testing	Equipm	ent use	ed: Ma			Model	) <del>0</del>		Number	эг
			-	451			Pizo		18415	5489	
	Remove		-	Miczo	WIT .		20000			11199	
Time (24hr)	<u>d</u> (Liters)	Temp.	pН	Spec. Cond.	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)			r/Odor
1249	0	20.5	8,25	83	1.58	24.5	603.2	100	12.38	Muty	WHITE
1254	0.50	21.3	9.26	8 i	0.63	-56.4	924	8,90	12.97	6 ~~	10
1259	0.95	22.1	18.8	74	0.39	-1519	21100	09.3	13.33	14.	- ((
1304	1.40	22.0	9.99	76	0.32	-167.4	855.2	0.90	1360	11	LV.
1329	1.85	22.7	9.10	81	0.30	-164.2	597.4	0,90	13.75	1 16	K
1314	2.30	22.2	9.09	63	0.28	-199.9	522.8	0.90	13.86	SC.	- ''
1319	2.75	22.3	9,09	84	0.25	-258.7	420.4	0.90	13.92	4.1	14
	ceptance					lo N/	4			(continue	ed on back)
	as required										
	as required		-	10001100							
Ha	ave param										
	If no or N	I/A - Ex	plain be	elow.							
3. SAMI	PLE COLL	ECTIO	N:	Method: Peri	staltic Pur	mp					
Sample I		ontainer		No. of Conta	ainers		ervation	Analysi	s Req.	Tin	
ERD-035	[ ] = W		ml voa	3			Icl	8260B		17	120
							ACI			-4 CH	1202
			> me Po				545	ALK NO		H CH	20102
			aul Pa				01-5	TOTAL	P	A0100010000000000000000000000000000000	
			oul P				2504	Diss 1			***************************************
Commer	nts	506		Ron							
					-						
Signature	e		- CA	4HENT.	+			 Date	7.19.	. 22	
				1	- 4				7 - 3	-	

### Purge Volume Calculation



Volume /	Linear Ft	. of Pipe
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

## **AECOM**

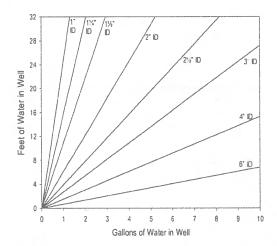
ERO-085W-11

continued											
-	Volume	-				0.77		51 D .			
Time	Removed	Temp	рн	Spec. Cond.	DO (Table 1)	ORP	Turbidity		Drawdown	Co	olor/Odor
(24 hr)	(Liters)	(°C)	10 0	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(ft)	4	1
1324	3,20	22.1	9,09	85	6,20	-316.2	3.7.8	0,90	13.97	MICES	WHITE
1329	3.65	21.6	10,8	81	0.20	-349.4		0.90	13.98		**
1334	4.10	21.8	9,57	77	0,19	-375.9	197.9	0.90	13.98		DUTAN
1339	4,55	21.5	326	73	0.18	-408.4	183.4	0.90	14.01	- 14	16
1344	5.00	21.7	1-2.8	70	0.17	-446.7	184.6	0.90	14.04	3.5	16
1349	5.45	21,2	9,63	67	0.17	-4791	185.5	0.90	14.08	- 14	
1354	5.90	21.7	20.12	65	0.16	-496.6	162.3	0.90	14.10	-1-1	1-0
1359	6.35	21.3	8,99	63	0.16	- 526.1	170,4	0,90	14.11	1-	
1424	6.80	21.2	898	62	0.16	-538.0	179.6	0.90	14.13	1-	1 1
1409	7.25	21.0	8.96	61	0.16	-560,3	1826	090	14.14		1.5
1414	7.70	21.0	168	Ġ0	0.16	-569.3	177.4	0.90	14.16	- 15	15
1419	8.15	20,9	8.95	59	0.15	-570.1	183.7	090	14.18	100	40
							10 1/2		44 - 7		
			1 o ± =								
			- C -								
										***************************************	
			0.75		D						7
			1								
		<b></b>									
			-								
							<u> -</u>				
	<u> </u>										

Client: Project N	Shakespe	are Com 5197.5	posite St	ructures		Date:_	7-	19.22	Tin	ne: Start 1	
Site Loca	***************************************	wberry S	20							Finish_	245 am/pm
Weather	Attendant			* -		Callac	h/-	١.	7		
vveatrier	Corius.	Cur	-	32.		Collec	zior(s	):	James Le	apnart	
1. WATE	ER LEVEL	DATA	: (meas	ured from To	p of Cas	sing)					
a Tot	al Well I e	nath 4e	5.92.	c. Length of	Water C	olumn	280	1 (a-h)		Casing Dian	neter/Material
u. 10t	OI 11011 EC	ngar t	7; (0)	o. Longth of	valor o	- Ciairiii	00,0	(4.6)		2"	/pvc
b. Wa	iter Table	Depth	2.30	d. Calculated	System	n Volun	ne (se	e back)	4.67		/pro
		_									
	PURGE		ictaltic D	ump - Low Flo	117						
a. Fui	ge Metro	u. Pei	istantic P	unp - Low Fio	W						
b. Acc	ceptance (	Criteria	defined	(see workplan	)						
	perature	3%		-D.O.	10%						
- pH				- ORP	<u>+</u> 10	mV					
- Sp. (	Cond.	3%	, D	- Drawdown	< 0.3	3'					
c Fie	ld Testing	Equipm	nent use	d Ma	ake			Model		Seria	Number
0.110	ia resurig	Equipit	iciii usc	Ins				Troll-60	0		8958
			_	4				1		18416	
	Remove		-	ALICIZE				0	D.	2017	
Time	d	Temp.	pH -	Spec. Cond.	DO	0	RP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)		(μS/cm)	(mg/L)		nV)	(NTU)	(ml/min)	(feet)	
1147	0	20.3	7.19	135	3.48		2,0	754.9	100	12.61	micky
1152	0.50	19.9	6.6	133	1.67		2	59.54	1	12.71	, ronot
1157	1.00	19:7	646	125	-0.99	-5	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	39.76		1276	CLEAN
1202	1.50	19:7	6.30	124	6,79	-16		37.49	100	12.78	11
1202	2,00	19.7	(5.2)	124	0,60		1.6	3316		12.80	11
1212	3,50	19.8	6.18	124	0,52		3.3	31.55	job	1284	3.5
1217	ceptance	19.7	Dass/fai	122	o.પ્ર Yes	-18 No	N//	30.21	10	12.81	
	as required						<b>A</b>				(continued on back)
	as required										
	ive param			000,100							
	If no or N			low.							
3. SAME	PLE COLI	ECTIO	N: 1	Method: Peri	staltic Pu	ımp					
0			_								
Sample I	- 4	ontaine	ml voa	No. of Conta	ainers	1		ervation	Analysi	s Req.	Time
Mbs-10	· (:		ini voa	3				Icl	8260B		1220
			in lead					101 000		102 MC3 5:	
			oul PSC	(				Je 3	Total		of Chrospy
			ral Pei	./				305 305	D155		
		250		1				Sey	Tec	1 6	
Commer	nts			1							
				1 . 1							
		1	11	11							
Signature	е	d	TRI	VIT					Date	7-19-	22
		7	A Same	7						7 - 4 - 4	

Client:	Shakespe		posite St	ructures		ate:	1.19.22	Tin	ne: Start 1	am/pm am/pm
Project N	-	5197.5							Fillish 1	128 ampin
Site Loca		wberry S								
Weather	Conds:	Cia	2100	812		Collector(s	):	James Le	aphart	
				ured from To			رام (a-b)		Casing Diam	neter/Material
									2".	/pvc
b. Wa	iter Table	Depth_	37.21	d. Calculated	d System	Volume (se	ee back)	2.85		
	PURGE rge Metho		istaltic P	ump - Low Flo	W					
b. Acc	ceptance (	Criteria	defined	(see workplan	1)					
- Tem	perature	3%	)	-D.O.	10%					
- pH		<u>+</u> 1	.0 unit	- ORP	± 10m	٦V				
- Sp. (	Cond.	3%		- Drawdown	< 0.3'					
c Fiel	ld Testing	Fauinn	ent use	ed Ma	ake		Model		Serial	Number
0.110	ia reoung	Equipii	ioni doc		itu		Trell 60	00_		8958
			_	451	PRO		PRò		18410	5489
	Remove			MICIZ	6 TPu		20000			711199
Time	<u>d</u>	Temp.	pН	Spec. Cond.	DO	ORP		Flow Rate		Color/Odor
(24hr)	(Liters)	(°C)	62 -1 -	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(teet)	T :
1017	0.50	196	11.3	399	7,80	37.9	397.2	100	13.22	CT. TAN
1022	1,00	19.2	8.08	326	3,72	45.1	24.35	100	13.84	CLEAR
1027	1.45	201	8.02	313	1.88	68.9	19.36	0.80	13.84	1.
1037	190	20.5	8.01	319	1.29	112.5	14,99	5.92	13.84	15
1042	2.35	205	8.01	317	1.23	129.6	15.54	0.90	13.84	
1847	2,80	20.5	7.93	379	084	140,4	1662	0,90	13.86	66
	ceptance			1	Yes N		A			(continued on back)
	as required					<b>S</b>				
Ha	as required	d turbidi	ty been		₫ □					
Ha	ave param	eters st	abilized		42 0					
	If no or I	V/A - Ex	plain be	low.						
3. SAMF	PLE COLI	ECTIO	N:	Method: Per	istaltic Pun	np				
Sample I	D C	ontaine	r Type	No. of Cont	ainers	Pres	ervation	Analysi	is Req.	Time
ERD.OBS	45-15	40	ml voa	3			Hcl	8260B		1100
			سرء ١٥٨				HCL	MEE		
			mi Pal				المارة المارة	ALK, NOZ N	103 504 CH	LOYDE
			one Pod	7			(403	Total 1		
		250		-+ (		· · · · · · · · · · · · · · · · · · ·	ک لبد ا	DISS FE		
Commen	nts	250	me Pol	4 1		H	2554	TOC		
			11	114					^	
Signature	e	0	#10	eghant		<del></del>		Date	7.19-	22

### Purge Volume Calculation



## **A**ECOM

Volume /	Linear Ft.	of Pipe
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

E20.035W-15

continued	from front)									
	Volume									
Time	Removed	Temp	На	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24 hr)					(mg/L)		(NTU)			
1052	3.25	(°C)	7.90	320	082	139.3	15.75	0.90	139=	CLEATE
1057	3.70	23	795	317	0.80	138-2	16.22	6.90	13.92	• •
	7,7									
		-								
		-	-							
			-							
		-				-				
						Dall I				
									1	
							1			

Well ID: Mw-12

Cilett. Snakespeare Composite Structures		ate.	17-22	111	ne: Start 6		
Project No: 60635197.5					Finish 1	е о 5 a	m/pm
Site Location: newberry SC							
Weather Conds: CLEARL 86	C	collector(s)	):	James Le	eaphart		
1. WATER LEVEL DATA: (measured from	Top of Casir	ng)					
a. Total Well Length 29,30 c. Length	of Water Col	umn it. (	(a-b)		Casing Dian	neter/Mat	erial
c. Total view dengal		14.	(0.0)		2'	'/pvc	
b. Water Table Depth 12.73 d. Calcula	ted System \	/olume (se	e back)	2.71			
2. WELL PURGE DATA							
a. Purge Method: Peristaltic Pump - Low F	Flow						
<ul><li>b. Acceptance Criteria defined (see workpl</li><li>Temperature 3% -D.O.</li></ul>	lan) 10%						
- pH + 1.0 unit - ORP	+ 10m	V					
- Sp. Cond. 3% - Drawdov	_	•					
	Make		Model	<u></u>		Number	
	I <del>nsitu</del>		Troll 60	70		08958	
	151		2000			11199	
Time d Temp. pH Spec. Con	d. DO	ORP		Flow Rate			Odor
(24hr) (Liters) (°C) (μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	Coloin	Juoi
900 0 189 9.50 64	1.44	-157.6	929.7	izo	13.67	NILKY	WIK
0907 0.50 19.5 9.69 65	0.59	-249.1	484.5	100	13.95	11	11
912 1,00 19,5 9.79 65	€.3€	-203.1	376.1	100	14.35	111	• •
0917 1.50 20.0 9.83 66	6.38	3,305-	374.2	100	14.60	11	- 11
922 200 197 9.86 65	87.3	-213.2	401.2	100	14.82	1.	4
927 250 197 991 65	0.30	-210.5	388.3	[20	15.80	- Éq	4
d. Acceptance criteria pass/fail	Yes No		1			(continued o	on back
Has required volume been removed							
Has required turbidity been reached Have parameters stabilized							
If no or N/A - Explain below.		Ц					
ii no oi N/A - Explain below.							
B. SAMPLE COLLECTION: Method: P	eristaltic Pum	р					
						-	
Sample ID Container Type No. of Co	ntainers	Prese	rvation	Analys	is Req.	Time	)
40 ml voa 3		H	Icl	8260B		293	5
			15:	MÉÉ			
Sound Pely 1			34.0		3 No2 50	1 Choi	MA
250 m Pay 1			203	TOTAL		Line I	
255 ml Pary 1			ي د در	Duss F	8		
Comments 255 all Poly 1		H2	2504	Toc			
7.7.1	-						
Signature AAA	1			Date		44	
7 1 3-36-	- 1			Date	7-19	-66	

#### FIELD INSTRUMENT CALIBRATION LOG

Project Name:	SHARESTORAL	YSI 556 SN: 184155489
Project Number:	60435197	Turbidity Meter Model/SN: MICZO TPW 200111694
Calibrated By:	d. coop Horsz	Additional Equipment SN:
Signature:	Motorbut	Date: 7-20-22
	7	

Operation Notes

1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.

2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.

3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature; and be sure the temperature sensor is submerged in the solution.

	Table 1: C	alibration Valu	es At Various	Temperatures	
Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237,50
25	4.00	7.01	10.01	1413.00	231.00
30	4.00	6.99	9.96	1548.00	224.50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

		Table 2: Atmosphe	eric Pressure / Altitude Table		
Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

			10010 0	00 10 0010100	ion Vs. Temp	0101010			
Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10.084	20	9.092	25	8.263	30	7.559	35	6.95
16	9.870	21	8.915	26	8.113	31	7.430	36	6.83
17	9.665	22	8.743	27	7.968	32	7.305	37	6.72
18	9.467	23	8,578	28	7.827	33	7.183	38	6.62
19	9.276	24	8,418	29	7.691	34	7,065	39	6.51

	YSI 556 Calibration								
Parameter	Parameter Before Calibration		Time	Units					
Barametric Pressure	736.4		चाउँ ह	mmHg					
Temperature (Saturated Air)	24.2	24.4	0755	С					
Temperature (Calibration Solution)	256	25.6	८२५८	С					
DO	8.19	8.42	0755	mg/L					
pH 7	7.14	7.01	2740	SU					
pH 4	400	4,00	0743	SU					
pH 10	10,0	(0,0)	0745	su					
Specific Conductance		4000		mS/cn					
ORP	232.8	231.2	0748	mV					

	MicroTPW Calibration		
Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes	No
		(circle	one)
		1	

### FIELD INSTRUMENT CALIBRATION LOG

Project Name: Project Number: Calibrated By: Signature: SHAKESPEARE COLONIA J. CONTROL VAJ-PAOL YSI 556 SN: 184105489
Turbidity Meter Model/SN: Mark TAW 222711197
Additional Equipment SN:
Date: 7-19-22

Operation Notes:

1) Turn meter on in Run mode and allow to warm up 10 to 15 minutes prior to calibration.

2) Observe DO % for 2-3 minutes when meter is initially turned on. The unit should display decreasing values until it is stabilized near 100%.

3) If the meter does not stabilize at/near 100%, indicates the DO sensor requires maintenance.

These values should be keyed in when calibrating a water quality meter. Be sure to use the temperature of the standards, not ambient temperature;

and be				ged in the solution	1.
	Table 1: C	alibration Valu	es At Various	Temperatures	
Temp. C	pH 4	pH 7	pH 10	Conductivity	ORP
5	4.00	7.07	10.19	896.00	257.00
10	4.00	7.06	10.16	1020.00	250.50
15	4.00	7.04	10.10	1147.00	244.00
20	4.00	7.02	10.05	1278.00	237.50
25	4.00	7.01	10.01	1413,00	231.00
30	4 00	6.00	9.06	1548.00	224 50

mm Hg = millimeters of mercury. Note that the YSI 556 uses this information ONLY when the DO calibration is being done. After calibration is complete it no longer corrects for pressure change. Verify the meter is correct for your altitude when calibrating.

		Table 2: Atmosphe	eric Pressure / Altitude Table		
Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)	Altitude feet (asl)	Pressure (mmHg)
0	760	1126	730	2290	699
278	752	1413	722	2587	692
558	745	1703	714	2887	684
841	737	1995	707	3190	676

			विधाय ३.	DO % Saturat	ion vs. remp	erature			
Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO	Temp C.	DO
15	10,084	20	9,092	25	8.263	30	7.559	35	6.95
16	9.870	21	8.915	26	8.113	31	7.430	36	6.83
17	9,665	22	8.743	27	7.968	32	7.305	37	6.72
18	9.467	23	8.578	28	7.827	33	7.183	38	6,62
19	9.276	24	8.418	29	7,691	34	7.065	39	6.51

	YSI 556 Ca	libration		
Parameter	Before Calibration	After Calibration	Time	Units
Barametric Pressure	745.9		0834	mmHg
Temperature (Saturated Air)	25.3	25.4	0525	С
Temperature (Calibration Solution)	27.4	27.2	c548	С
DO	7,27	8.23	७६५६	mg/L
pH 7	7.19	Ge, F	5839	SU
pH 4	4.51	6 c H	0841	SU
pH 10	10.01	9.98	०६५८	su
Specific Conductance	No CAL SOLUTION	on SENT WITH I	Spish	mS/cm
ORP	233.4	229.3	3180	m∨

	MicroTPW Calibration						
Calibrations performed 0.02, 10, and 1,000 NTU	Calibrations accepted:	Yes	No				
	(circle one)						

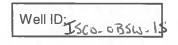
### YSI 556 MPS / Water Quality Calibration Certificate

### AECOM

			,		
Cal Standard	Temp, LAB, C:	26.1	Temp. FIELD. C:		
Conductivity	1.ot #	Expiration	Post-Cal. 1. AB	Post-Cal, FIELD	Acceptable Range
:313 UMHO/CM	80111:11	11/22	1-45		(+/5%)
w .15					
PH 4.00	\$ -01 T	Expiration	Post-Cai a AB	Post-Cal, FIELD	Acceptable Range
	2105023	2/23	4-02	Tost Cui. Fibbb	(+/- 0.2 units)
g <sup>6*</sup> 25 <sup>1</sup>		ı	7-06	1	(+/- 0.2 dints)
PH 7.01	Lot #	Expiration	Post-Cat 1 AB	Post-Cal, FIELD	Acceptable Range
(a 25°	8101544	2/23	7-14		(+/- 0.2 units)
		'	12. /		
PH 10.01	Lot#	Expiration	Post-Cai, LAB	Post-Cal, FIELD	Acceptable Range
in 25"	8102675	3/23	10.02		(+/- 0.2 units)
ORP	Lot#	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
ZOBELLS	8108575	6/22	237-5	1 000 000, 1 1222	(+/- 20 MV)
231 0 MV @ 25°	:	1	23113	1	(+/- 20 14( 4 )
2, 1,11 111 5, 2,			***	- 12	
	Doct Cal. LAD	Temp, C	% Saturation	mg/L 8-08	
Dissolved Oxygen	Post-Cal, LAB	25-8			Acceptable Range
: Saturated Air ;	Post-Cal, FIELD	Temp, C	% Saturation	ıng/L	(+/- 2%) / (+/- 2%)
	1 Ost-Cai, VIIVIII	1			
	New DO Membrane	1		p Color	
	Yes No		( Black ( )	Blue	
Model	YSI PRO PLUS	S/N	5489	▼ Cable .	NIA *
	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	F			,,
	Canoranon re	rerenced to the temp	erature of the calibration	standards.	
Turbidity	Lot #	Expiration	Post-Cal, LAB	Post-Cal, FIELD	Acceptable Range
.02 NTU	211042	017-23	0.02		(.0196 to .0204)
10 NTU	211019	001-23	10-17		(9.8 to 10.2)
1000 NTU	211059	005-23	1022		(970 to 1031)
Model	Micro TPW	S/N	2007	•	
(VIOUCE			2007/11/99		
2.90	Frie Olean			7-14-22	a
Calibrated By	Eric Olson		Date of Cambration	1-14-26	
Project Name	SISMIF	Y	Project number	606351	97 • •
V	51-				•
Signed:	_000	//			

Well ID: TMW-31
-----------------

Client:	14		Signify		Da	ite: 12	-28-2	Z Tin	ne: Start	920 am/pm
Project No	);		6063	5197					Finish	am/pm
Site Locati	ion:		Newl	erry, SC						
Weather C	Conds:	CLER	मेट, उ	(	C	ollector(s):		J.Leap	hart	
1. WATEI	R LEVEL I	DATA:	(measu	red from Top	of Casing	)				
a. Tota	l Well Len	ath 2	1.43	c. Length of \	Water Colu	mn 7.59	ک (a-b)		Casing Diam	eter/Material
						4			1 "	Puc
b. Wat	er Table D	epth_	3.85	d. Calculated	System Vo	olume (see	back)			
2. WELL a. Purg	PURGE D ge Method		Pe	5215TACTIC						
	perature	3%	.0 unit	see workplan) -D.O. - ORP - Drawdown	10% <u>+</u> 10m\	/				
c. Field	d Testing E	Equipm	ent used		ake		Model			Number
			_	45			tro		373	
	Volume		-	MICZO	IPW		20000		20166	१८१८
Time (24hr)	Removed (Liters)	Temp.	pH -	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
0921		23.5	6.16	96	5.16	169.7	49.62	100	15,45	CLEARE/
0926		24.2	5.77	73	5.03	207.4	81.13	100	16.07	15
0931	1.00	24.4	5.72	7.1	4.57	212.3	4254	100	16.14	
0936		24.4	5.67	49	4.80	216.5	23.72	100	16.21	16
0941	2.00		5.64	68	4,80	222.2	13.64	100	16.34	10
०५५७	2.50	-24.4	5.62	67	4.84	222.8	9.78	100	16.38	16
Has Has	ceptance c required required re parame If no or N/	volume turbidity ters sta	e been re y been r abilized	emoved eached	Yes No	N/A				(continued on back)
3. SAMP	LE COLLE	ECTION	V: 1	Method:	PERISTA	TIC				
Sample IE		ntainer 40 ml v	vial	No. of Conta	ainers	Н	rvation CL	Analys To	is Req. CL VOCs	Time oq5s
		250ml					NE		D5	
	7	SOM	Holy			120	>N E	Cı	المكالي و	
Comment	s									
	***						**			
	1.9		. ^							
Signature		4	t de	aplant				Date	12-28	3-22



Client:	Signify		D	ate: 12.	28.22	Tim	ne: Start	1015 am/pm
Project No:		5197					Finish	1103 am/pm
Site Location: _		perry, SC						
Weather Conds: _	Crian, 37	9		Collector(s):		J.Leapl	nart	
1. WATER LEVEL	DATA: (measu	red from Top	of Casing	g)				
	ength 20.02				(a-b)		Casing Dian	neter/Material
a. Fotal Woll 20	g	5. 25.1g.1161			(\alpha \b)		2"	209
b. Water Table	Depth 13.28	d. Calculated	System V	olume (see	back)			
2. WELL PURGE	DATA							
a. Purge Metho	d: <u> </u>	EZISTACT, (						
h Accentance	Criteria defined (							
- Temperature	3%	-D.O.	10%					
- pH	<u>+</u> 1.0 unit		+ 10m	V				
- Sp. Cond.	3%	- Drawdown	< 0.3'					
	Carriage and research	l. Ma	alea.		Madal		Carria	I. Niconala a u
c. Fleid Testing	Equipment used	1: IVIE	ake		Model		Seria	I Number
	-		UST.		20000			
Volume	_	les Care	. ((		5-000			
	d Temp. pH	Spec. Cond.	DO	ORP		Flow Rate		Color/Odor
(24hr) (Liters)	(°C)	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	
1018 INITIAL		144	4.69	394.2	48.09	100	13.39	CT PURPLE
1028 1.00		150	4.21	483.0	33.36	100	13.47	
1033 1.50		157	4.83	583.1	14.82	100	13.47	
1038 2.00		159	4.83	617.1	10,51	100	13.48	
1043 2.50		159	495		8.42	100	8:12	87,8
10-18 3.00		160	4.85	631.4	8.15	100	13.48	17.,10
	criteria pass/fail		Yes No					(continued on back)
Has require	d volume been re	emoved						
	d turbidity been r	eached						
· ·	eters stabilized							
If no or I	V/A - Explain bel	ow.	-12					
3. SAMPLE COL	FCTION:	Method:	Parist	DIT.C				
			101421					
	Container Type	No. of Conta	ainers	Presei	rvation	Analysi	s Req.	Time
51-WEBO.005	40 ml vial	3		HO			CL VOCs	1050
	250 ml Poly				NE		20	
	250 mi Poly			No	W 2	CI	HORIDE	<u> </u>
Comments								
			_					
	/ 1					P		
Signature	AK	teaslar"	-			Date	12-2	8.22
	7		1					

Well ID: Mw-Z

Client:			Signify		D	ate: 12-1	28-22	Tim	ne: Start 1	127 am/pm
Project No									Finish 1	
Site Locat	Site Location: Newberry, SC								<del></del>	
Weather (	Conds:	CLE	A72, 4	10		Collector(s):		J.Leapl	nart	
1. WATE	R LEVEL I	DATA:	(measu	red from Top	of Casing	g)				
a. Tota	al Well Len	gth 2	175	c. Length of \	Vater Colu	umn 14.5	2 (a-b)			neter/Material
b. Wat	ter Table D	epth_G	1.23	d. Calculated	System V	olume (see l	back)	2.53		
	PURGE D		Pe	RISTALLIC						
	perature	3% <u>+</u> 1	.0 unit	see workplan) -D.O. - ORP - Drawdown	10% ± 10m < 0.3'	V				
c. Field	d Testing E	quipm	ent used	: Ma	ıke		Model		Serial	Number
			_	45			PRO		3	131
			_	MICZ	, TPW		20000		201	809171
Time	Volume Removed	Temp	pH -	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters)	(°C)	<u>DI 1</u>	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	Color/Odor
1129	IPKIDL	17.7	6.00	38	7.27	297.8	16.35	100	9.52	war
1134	0.50	18.6	6.36	30	6.83	328.0	9,94	100	9.58	10
1139	1.00	19,1	5,34	26	6.81	331.5	5.10	100	9.60	**
1144	1.50	19.1	5.30	24	6.73	331.2	4.96	100	9.61	-
1149	2.00	19.3	5.36	24	6:78	330.2	4.51	100	9-61	10
1 10										
			77 - 1							
Ha:	ceptance c s required s required ve parame If no or N/	volume turbidit ters sta	been re y been r abilized	moved eached	Yes No					(continued on back)
3. SAMP	LE COLLE	ECTION	<b>V:</b> N	lethod:	PERISTO	LTIC				
Sample II		ntainer	/ial	No. of Conta	iners	Preser HC	CL		CL VOCs	Time 1150
		Soul		1		1001	_	K, 402,4031		
		50M	T	1		Non			FIDE IDE	
		= 1	1				-		TO ( IRON)	
Comment			VIAL	2		HC			<u>EE</u>	
		250 M					03		Toc	
		SO M	1 101-1			P	025	D	155. IRON	
Signature	C	AA	Jano					Date	12-28	.22



Well ID: MW-10

Client:		Signify		Da	ate:	2-19-22	- Tim	ne: Start (	cso am/pm
Project No	o:	5197						Zo5 am/pm	
Site Locat	tion:	Newbo	erry, SC						
Weather	Conds: P. c	JUC !		c	ollector(s):	§	J.Leapl	nart	
1. WATE	R LEVEL DATA:	(measur	ed from Top	of Casing	1)				
a. Tota	al Well Length <u>29</u>	1,20	c. Length of \	Nater Colu	ımn <u> 15.2</u>	1 (a-b)		Casing Diam	neter/Material
	ter Table Depth <u>J</u>	3.93	d. Calculated	System V	olume (see	back)	2,49	•	
	purge DATA ge Method:	PE	PASTACTI	C .					
- Tem	eptance Criteria d perature 3% ±1 Cond. 3%	.0 unit	-D.O.	10% <u>+</u> 10m\ < 0.3'	V				
c. Fiel	d Testing Equipm	ent used:	. Ma	ake		Model		Serial	Number
		_	45	<u> </u>		130			731
		-	MICRO TI	Au .		20000		201	171808
Time	Volume Removed Temp.	, —	Spec. Cond.	DO	ORP	Turbidity	Flow Rate	Drawdown	Color/Odor
(24hr)	(Liters) (°C)	рН	(μS/cm)	(mg/L)	(mV)	(NTU)	(ml/min)	(feet)	Coloi/Odoi
1056	INITIAL 15.3	7.01	640	6.44	-40.6	71100	100	14.29	MILKY
1101	0.50 15.5	7.13	680	0.27	-110.6	71100	100	15.05	11
1106	1.00 15.4	7.01	670	0.25	-124.5		100	15.54	14
1111	1.50 16.3	692	660	0.25	-122.0	71100	160	15.96	11
1110	2.00 15.7	6.90	640	0.33	-130.2		100	16.36	
1121	3.00 15.0	6.86	612	0.27	-128.4		00	1657	is a
	ceptance criteria p		211	Yes No		71100	100	16.76	(continued on back)
	s required volume		moved						(continued on back)
	s required turbidit				Perior	-(10)			
	ve parameters sta	•							
	If no or N/A - Exp		w.						
		11.7							
3. SAMP	LE COLLECTION	<b>1</b> : N	lethod:	CRUTO	The				
Sample II	D Container	Type	No. of Conta	ainers	Prese	rvation	Analysi	s Rea.	Time
Mw-10 40 ml vial 3					HCL			CL VOCs	1130
250 Poly 1					4203		Ta.	TOTAL 1852	
	250 1				صرد		55 1 ROF		
	256	Polis	ί		P	3470	ALKIN	205 42 83	504
Commen			2			<u>د                                    </u>		66	
		1 Pale				3		50	
1411-		- Pol-	1		13			12(DE	11.112
	LIGE	D Pal	7 1		7	an6	DH		
Signature		The	105			1 / 1	Date	12-1	9-22



Well ID. ER-O-OBSW-15
-----------------------

Client:		Signify		Da	ate: 12	-19-21	Z Tim	ie: Start 🔢	am/pm
Project No:	60635197							Finish /	am/pm
Site Location:									
Weather Conds	: Cléare	463	I The Lat	C	ollector(s):		J.Leaph	nart	
	I Length 3	2,06	c. Length of \	Water Colu	mn_15.8			_	eter/Material
b. Water Ta	ble Depth 1	4.17	d. Calculated	System V	olume (see	back)	2.58		1
2. WELL PURG a. Purge Me		A	erktaet (C	gunch				7.	
b. Acceptan - Temperatu - pH - Sp. Cond.	re 3% +1.	.0 unit	eee workplan) -D.O ORP - Drawdown	10% <u>+</u> 10m\ < 0.3'	V				
c. Field Test	ing Equipme	ent used	: Ma	ake		Model		Serial	Number
		-	45			PRO		3-	131
Valu			Mico	1PW		20000		2-	1809171
Volu Time Remo (24hr) (Lite	oved Temp.	<u>рН</u>	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
		5.79	390	0.65	189.2	426.3	100	14,44	Lains
1225 0.5		5.69	392	0.61	1949	76.89	100	14.94	
1230 1.0	0 15.6	5.57	379	0.71	202.4	35.52	100	15.09	CLEARZ
		5.46	313	0.70	205.2	19.84	100	15.18	W.
1240 2.		5.44	349	0.72	205.6		100	15.21	<b>~</b>
1245 2.4	,0 16.0	5,47	369	11.0	197.6	7.73	100	15.24	×6
Has requ Have par	nce criteria p iired volume iired turbidity ameters sta or N/A - Exp	been re / been re bilized	moved eached	Yes No	N/A				(continued on back)
3. SAMPLE CO	OLLECTION	<b>l</b> : M	lethod:	Por	et actic				
Sample ID Container Type No. of Containers				ainers	Preservation HCL			CL VOCs	Time 1250
	Hon vol			lice			VÉÉ ,		
	250			- 1111		003 002	7010	5- 180N	
	250					7	1 20	III SERVICE CONTRACTOR	
Comments	250					25-4	Too		
	250		100			3-2		Nos hos	, 204
		erz Po				340		1C	-
Signature		- 10	Ald	euplai	+	H. Arris de Se	Date		19-22



Well ID: MW-10I

#### **Low Flow Ground Water Sample Collection Record**

Client:			Signify		D	ate: 12.	14.22	Tim	ne: Start 🔟	33 <u></u> am/pm
Project No	o:		6063	35197				<del></del>	Finish 1	
Site Locat				perry, SC						
Weather (	Conds: $\overline{P}$ .	CLEUD				Collector(s)	:	J.Leapl	nart	_
1. WATE	R LEVEL	DATA:	(measu	red from Top	of Casin	g)				
a. Tota	al Well Len	ngth_ 4	0.90	c. Length of \	Nater Col	umn 26.8	<u>s</u> (a-b)		Casing Diam	eter/Material
b. Wat	ter Table D	epth_	4.05	d. Calculated	System \	olume (see	back)	1.38	2	130
2. WELL a. Purç	PURGE D			Perusiant	ic for	D.		1700		
- Temp - pH	perature	3% <u>+</u> 1	efined (	see workplan) -D.O. - ORP - Drawdown	10%					
c. Field	d Testing E	Equipme	ent used	d: Ma	ake		Model		Serial	Number
			_	4			150 bis		37:	3 (
			_	miciz	o TRU	•	20000		24180	9171
Time	Volume	Tarra	-11	Casa Caral		ODD	Tr 1 12	Floor Day 1	D 1	
Time (24hr)	Removed (Liters)	(°C)	<u>Нq</u>	Spec. Cond. (μS/cm)	<u>DO</u> (mg/L)	ORP (mV)	(NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1337		15.4	6.19	160	2.35	76.5	942.1	100	14.32	MIKY
1342	0.50	15.4	624	160	0.82	52.5	170.0	100	1450	11
1347	1,00	15.6	415	153	6.43	48,9	66.18	100	14.55	ودمنكم
1352	1.50	15.8	6.10	139	0.30	56.0	23.39	100	14.56	CLONZ
1357	200		6.07	129	0.26	60.6	17.25	100	14.56	15
1402	2.50		6.08	158	0.23	60.5	8.67	100	14.57	14
1407		15.9		126	0.25	589	8,75	100	14.57	NC.
d. Acceptance criteria pass/fail  Has required volume been removed  Has required turbidity been reached  Have parameters stabilized  If no or N/A - Explain below.						o N//				(continued on back)
3. SAMP	LE COLLE	ECTION	l: N	Method:	Pazisca	مردد	1			
Sample II	I	ntainer 40 ml v	rial	No. of Conta	ainers		rvation CL		CL VOCs	Time 1410
		Honel	400	2		4	ر د		NEZ	
		250		1	577		363	ISTA	ر الاحما	
		250		1		N	one	DIS	4 112000	
Comment	s	250		1		1.	12504	To		
	S10X	250		1			عماه		1202 203	Sou
		250					340		DE	
10		1200	12 Pol	4 !		N	DUE	DH	C	
Signature		(1.64		AAA	apha	+	100	Date	12-19	-22



Well IDERO-OBSW-II
--------------------

#### **Low Flow Ground Water Sample Collection Record**

Client:		Signify			Date:	12-19-22	_ Tim	ne: Start 🕼	138 am/pm
Project No:		6063	5197						545 am/pm
Site Location:		Newb	erry, SC					1	
Weather Conds:	P. Cua	24	480		Collector	(s):	J.Leapl	nart	
1. WATER LEVE	L DATA: (	measur	ed from Top	of Casi	ng)		0.00		
a. Total Well L	ength 35.	30	c. Length of \	Water Co	olumn <u>2</u> 2	<u>. 08</u> (a-b)		Casing Diam	eter/Material
b. Water Table	Depth_13	3,22	d. Calculated	System	Volume (	see back)	3.60		1100
2. WELL PURGE	DATA								
a. Purge Metho	od:		POZISTALT	ic Pa	que				
<ul><li>b. Acceptance</li><li>Temperature</li><li>pH</li><li>Sp. Cond.</li></ul>	3%	efined (s O unit	ee workplan) -D.O. - ORP - Drawdown	10% <u>+</u> 10 < 0.3	mV				
c. Field Testing	g Equipme	nt used:	: Ma	ake		Model		Serial	Number
		_	45	ADC NO.		PRO		37	
			MICE	WIT o		20000		2018	>09171
Volume Time Remove (24hr) (Liters)	ed Temp.	<u>рН</u> —	Spec. Cond. (µS/cm)	DO (mg/L)	ORF (mV)		Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
1440 INTIA		7.04	690	0.76			100	14.05	mikel
1445 0.50		8.40	880	6.11	-258.		100	14.90	**
1450 1.00		8.18	890	0.00			100	15.29	*1
1455 1.50		7.85	880	0.05	-151.	1 465.91	100	15.71	×C
1500 2.00		7.57	830	0.05	-120.		100	15.48	11
1505 2.50		7.56	810	0.08			100	16.10	**
1510 300		1.50	800	008			100	14.18	4
d. Acceptance Has require Has require Have paran If no or	ed volume led turbidity	been re been re oilized	moved eached		No	N/A			(continued on back)
3. SAMPLE COL	LECTION:	: N	lethod:	Pezis	TALTIC				
Sample ID (	No. of Conta	ainers	Preservation Analysis I				Time		
ERO-035W-17			3	51000		HCL TCL VOCs			1515
	Home	10.00	2			Her		NEE	
300-	250 F		1	-		MOORE		SA 11202	
Commonto									
Comments	-	Poly				Novae		C hoshes	< t
		Por				None		LORIOE	1 200
		~ Pei	4 1			None		4C	
Signature		1	1 Lags	nat	-		Date		19-22

Pilot Study Report - Shakespeare Composite Structures
Newberry, SC

#### Attachment E

Redox Tech Field Summary Report and DHEC 1903 Forms for ISCO and ERD Injections and Abandonment

#### Field Summary Report for AECOM – Newberry, SC

	Prepared by Geoff Iv	es on September 30, 2021	1
Project Name	AECOM – Newberry, SC	Start and End Date	September 20 – 24, 2021
City and State	Newberry, SC	Address	19845 US-76 Newberry, SC 29108
Contaminant of Concern	Chlorinated Solvents	Contaminated Media	Groundwater
Field Contractor	Redox Tech, LLC	Client	Scott Ross 803-740-1921 Scott.Ross@aecom.com
Address	200 Quade Drive Cary, NC	Address	101 Research Drive Columbia, SC 29203
Field Lead	Geoffrey Ives	Oversight	Justin Butler
Phone Number	404-966-7345	Phone Number	864-903-3573
Email	ives@redox-tech.com	Email	Justin.butler@aecom.com
Crew Members	Geoffrey Ives, Robert Sullivan, Wesley Rivett, John Purkey	Number of Points and Depths	ABC+: 5 points 36'-30', 5 points 30'-20' Permanganate: 3 points 20'-10'
Chemical	ABC ZVI Magnesium Oxide Potassium Permanganate	Mass or Volume	5,000 lbs 5,000 lbs 1,000 lbs 827 lbs
Concentration of Chemical	See Narrative	Volume of Solution or Slurry	5,000 gal ABC+ slurry 2,250 gal permanganate solution



#### **Brief Narrative**

Redox Tech performed direct-push technology (DPT) injections of potassium permanganate solution and Anaerobic BioChem Plus (ABC+) slurry at 19845 US-76 Newberry, SC 29108 between September 20 – 24, 2021. Permanganate solution was injected at three locations in a shallow hot spot around well TMW-31 (Figure 1). ABC+ slurry with pH buffer was injected at five intermediate locations slightly upgradient of well MW-10i (Figure 2) and five shallow locations slightly upgradient of well MW-10 (Figure 3). A total of 827 pounds (lbs) of potassium permanganate, 10,000 lbs of ABC+, and 1,000 lbs of magnesium oxide pH buffer were injected during this injection event.

For the permanganate injections, a staging area was set up directly outside of the room that TMW-31 is in. Here, a mixing station was constructed on a secondary containment pad with a 550-gallon (gal) polyethylene (poly) tank equipped with a pneumatic mixer. A chemical resistant diaphragm pump was plumbed to the poly tank within the containment, and used to inject the permanganate solution. Water for mixing amendment solution was drawn from the fire hydrant in front of the facility and transported in a 2,000 gal water truck as needed.

A total of 2,250 gal of permanganate solution containing 827 lbs of potassium permanganate was injected into the three target locations (ISCO-1, 2, and 3) around TMW-31. Each injection point received 275.6 lbs of potassium permanganate in 750 gal of solution. DPT injections were performed bottom-up, so the drill string was advanced to the target depth and then lifted upwards, injecting amendment at two-foot depth intervals. Each injection point received 150 gal of permanganate solution at 18, 16, 14, 12, and 10 feet (ft) below ground surface (bgs). Injection pressures averaged 20.3 pounds per square inch (psi) at an average flow rate of 5.9 gallons per minute (gpm). Field notes from these permanganate injections are provided in Table 1.

The 10 ABC+ injection points received a total of 10,000 lbs of ABC+ and 1,000 lbs of magnesium oxide in 5,000 gal of slurry. Each injection point received 500 lbs of ABC, 500 lbs of zero valent iron (ZVI), and 100 lbs of magnesium oxide in 500 gal of slurry. The vertical interval of injection for the intermediate locations around MW-10i was from 36 - 30 ft bgs, injecting amendment at



two-foot intervals. At two of the intermediate locations, ERD-I2 and ERD-I3, refusal was reached before 36 ft bgs. Both ERD-I2 and ERD-I3 received 250 gal of slurry at 32 - 34 ft and 250 gal of slurry at 30 - 32 ft. The other three intermediate locations received 167 gal of slurry at each depth (34 - 36, 32 - 34, and 30 - 32 ft). The shallow ABC+ injections around well MW-10 were completed as planned, with 100 gal of slurry injected at two-foot intervals between 20 - 30 ft. Injection pressures averaged 66 psi at an average flow rate of 14.5 gpm. Field notes from the ABC+ injections are provided in Table 2.

All DPT boreholes were abandoned with Portland cement grout, and borings advanced through concrete were repaired and patched with high strength concrete.

Remedial fieldwork was completed by Redox crewmembers Wesley Rivett, Robert Sullivan, John Purkey, and Geoff Ives, with oversight provided by Justin Butler.

The Redox Tech crew completed injections and demobilized on September 24, 2021.



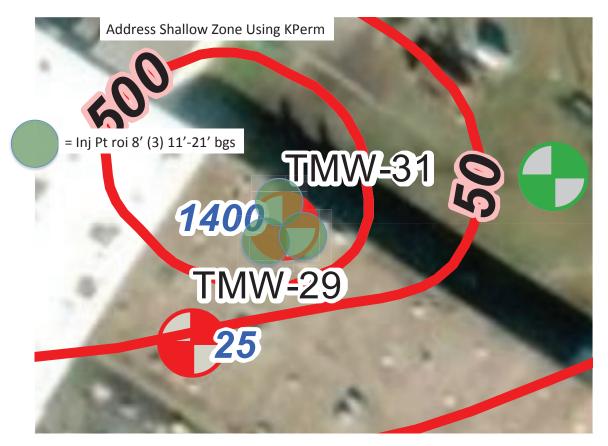


Figure 1. Potassium Permanganate Injection Location Map





Figure 2. Intermediate Zone ABC+ Injection Location Map



Figure 3. Shallow Zone ABC+ Injection Location Map



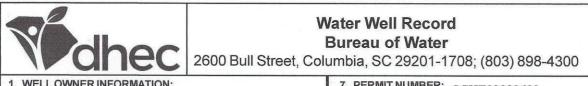
		Table 1. Po	otassiun	1 Perma	Table 1. Potassium Permanganate Injection Logs	on Logs		
					Injection	Flow	Volume	
	Injection	Depth	Start	Stop	Pressure	Rate	Injected	
Date	Point	Interval (ft)	Time	Time	(psi)	(gpm)	(gal)	Notes
9/20/21	ISCO-2	18'-20'	14:55	15:27	25	4.7	150	
9/20/21	ISCO-2	16'-18'	15:27	15:54	20	5.6	150	I
9/20/21	ISCO-2	14'-16'	15:54	16:21	20	5.6	150	
9/20/21	ISCO-2	12'-14'	16:35	16:57	20	8.9	150	
9/20/21	ISCO-2	10'-12'	16:57	17:16	15	7.9	150	
9/21/21	ISCO-1	18'-20'	7:43	8:07	20	6.3	150	
9/21/21	ISCO-1	16'-18'	8:07	8:35	20	5.4	150	
9/21/21	ISCO-1	14'-16'	8:35	9:03	20	5.4	150	
9/21/21	ISCO-1	12'-14'	9:14	9:43	20	5.2	150	
9/21/21	ISCO-1	10'-12'	9:43	10:08	15	0.9	150	
9/21/21	ISCO-3	18'-20'	11:17	11:42	30	0.9	150	
9/21/21	ISCO-3	16'-18'	11:42	12:11	25	5.2	150	
9/21/21	ISCO-3	14'-16'	12:11	12:33	20	8.9	150	
9/21/21	ISCO-3	12'-14'	12:45	13:09	20	6.3	150	
9/21/21	ISCO-3	10'-12'	13:09	13:35	15	5.8	150	

# REDOX TECH, LLC (

			Tab	le 2. AB	Table 2. ABC+ Injection Logs	Logs		
		Depth			Injection	Flow	Volume	
	Injection	Interval	Start	Stop	Pressure	Rate	Injected	
Date	Point	(ft)	Time	Time	(psi)	(gpm)	(gal)	Notes
9/22/21	ERD-I5	34'-36'	10:06	10:20	09	11.9	167	
9/22/21	ERD-I5	32'-34'	10:26	10:39	50	12.8	167	
9/22/21	ERD-I5	30'-32'	10:53	11:03	40	16.7	167	
9/22/21	ERD-12	32'-34.5'	13:59	14:12	08	12.8	167	Refusal at 34.5'
9/22/21	ERD-12	32'-34.5'	14:35	14:41	70	13.8	83	
9/22/21	ERD-12	30'-32'	14:45	14:50	09	16.8	84	
9/22/21	ERD-12	30'-32'	15:08	15:19	09	15.2	167	
9/22/21	ERD-II	34'-36'	16:03	16:13	100	16.7	167	
9/22/21	ERD-II	32'-34'	17:32	17:43	100	15.2	167	
9/22/21	ERD-II	30'-32'	17:55	18:07	09	13.9	167	
9/23/21	ERD-I3	32'-34'	8:21	8:40	80	13.2	250	Refusal at 34'
9/23/21	ERD-I3	30'-32'	9:01	9:19	06	13.9	250	
9/23/21	ERD-14	34'-36'	9:41	9:52	100	15.2	167	
9/23/21	ERD-14	32'-34'	10:35	10:46	80	15.2	167	
9/23/21	ERD-14	30'-32'	10:56	11:06	70	16.7	167	
9/23/21	ERD-S1	28' - 30'	13:41	13:48	70	14.3	100	
9/23/21	ERD-S1	26' - 28'	13:49	13:58	70	11.1	100	
9/23/21	ERD-S1	24' - 26'	14:08	14:15	09	14.3	100	
9/23/21	ERD-S1	22' - 24'	14:18	14:26	70	12.5	100	
9/23/21	ERD-S1	20' - 22'	14:28	14:35	09	14.3	100	
9/23/21	ERD-S5	28' - 30'	15:13	15:20	100	14.3	100	
9/23/21	ERD-S5	26' - 28'	15:23	15:30	09	14.3	100	
9/23/21	ERD-S5	24' - 26'	15:37	15:43	80	16.7	100	
9/23/21	ERD-S5	22' - 24'	15:47	15:53	08	16.7	100	

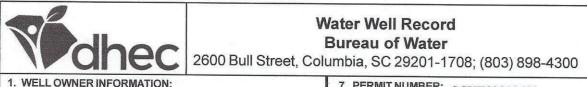


			Tab	le 2. AB	Table 2. ABC+ Injection Logs	Logs		
		Depth			Injection	Flow	Volume	
	Injection	Interval	Start	Stop	Pressure	Rate	Injected	
Date	Point	(ft)	Time	Time	(psi)	(gpm)	(gal)	Notes
9/23/21	ERD-S5	20' - 22'	16:04	16:10	09	16.7	100	
9/23/21	ERD-S4	28' - 30'	17:12	17:18	09	16.7	100	
9/23/21	ERD-S4	26' - 28'	17:22	17:29	09	14.3	100	
9/23/21	ERD-S4	24' - 26'	17:32	17:39	70	14.3	100	
9/23/21	ERD-S4	22' - 24'	17:41	17:47	70	16.7	100	
9/23/21	ERD-S4	20' - 22'	17:48	17:55	09	14.3	100	
9/24/21	ERD-S2	28' - 30'	9:39	9:46	70	14.3	100	
9/24/21	ERD-S2	26' - 28'	9:48	9:57	09	11.1	100	
9/24/21	ERD-S2	24' - 26'	10:18	10:26	40	12.5	100	
9/24/21	ERD-S2	22' - 24'	10:28	10:34	40	16.7	100	
9/24/21	ERD-S2	20' - 22'	10:35	10:42	09	14.3	100	
9/24/21	ERD-S3	28' - 30'	8:11	8:18	40	14.3	100	
9/24/21	ERD-S3	26' - 28'	8:20	8:27	50	14.3	100	
9/24/21	ERD-S3	24' - 26'	8:43	8:50	50	14.3	100	
9/24/21	ERD-S3	22' - 24'	8:52	8:59	45	14.3	100	
9/24/21	ERD-S3	20' - 22'	9:01	9:08	45	14.3	100	



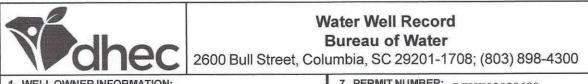
Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION: Name: Signify North America			7. PERMIT NUMBER: SCHE03020600
Address: 200 Franklin Square Driv	Zip: 08	i i	8. USE:  Residential Public Supply Process Irrigation Air Conditioning Emergency Test Well Monitor Well Replacement
Telephone: Work: 908-705-4743  2. LOCATION OF WELL: ISCO-1,2,3 CO		orry.	9. WELL DEPTH (completed)  Date Started: 9/20/2021  20  9/21/2021
Name: Former Shakespeare Comp Street Address: 19845 US Highw City: Newberry	osite Structu	res Site	20
3. PUBLIC SYSTEM NAME: PU	BLIC SYSTEM	NUMBER:	11. SCREEN: Type: Diam.:
Give Details Below	No t. to Surface	ft.	Slot/Gauge:
Formation Description	*Thickness of	Bottom of	12. STATIC WATER LEVEL NA ft. below land surface after 24 hours  13. PUMPING LEVEL Below Land Surface.
	Stratum	Stratum	NA ft. after hrs. Pumping G.P.M.  Pumping Test: Yes (please enclose) No  Yield:
			14. WATER QUALITY  Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No Please enclose lab results.
N N			15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No Installed from NA ft. toft.  Effective size Uniformity Coefficient
			16. WELL GROUTED? ☑ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other ☐ Depth: From 20
			17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft direction Type $\frac{NA}{N}$ Well Disinfected $\square$ Yes $\square$ No Type: Amount:
			18. PUMP: Date installed: NA Not installed   Mfr. Name: Model No.: H.P Volts Length of drop pipe ft. Capacity gpm  TYPE:
			19. WELL DRILLER: Robert Sullivan  Address: (Print) 6513 Boulder Crest Court Flowery Branch, GA 30542  CERT. NO.: 2253  Level: A B C D (circle one)
*Indicate Water Bearing Zones			Telephone No.: Fax No.:
(Use a 2nd sheet if needed)  5. REMARKS:			20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
3 Temporary DPT Injection Points to 20 ft			Signed:
6. TYPE:		ored	If D Level Driller, provide supervising driller's name: Chris Lacko certificate number 1982



Note: Personal information provided on this document is subject to public scrutiny or release.

WELL OWNER INFORMATION:     Name: Signify North America			7. PERMIT NUMBER: SCHE03020600
(last)	(firs	t)	0.1100
Address: 200 Franklin Square Driv	ve		8. USE:
			☐ Residential ☐ Public Supply ☐ Process
City: Somerset State: NJ	Zip: 08	873	☐ Irrigation ☐ Air Conditioning ☐ Emergency  ☑ Test Well ☐ Monitor Well ☐ Replacement
Telephone: Work: 908-705-4743			9. WELL DEPTH (completed) Date Started: 9/22/2021
2. LOCATION OF WELL: ERD-1,2,3,4,5C			36 ft. Date Completed: 9/23/2021
Name: Former Shakespeare Comp	posite Structu	res Site	
Street Address: 19845 US Highw	av 76		10. CASING: ☐ Threaded ☐ Welded Diam.: ☐ Height: Above/Below
City: Newberry	-		Type: ☐ PVC ☐ Galvanized Surface NA ft.
and the moenty	Zip. 29100		Steel Other Weight
Latitude: 904882.40 Longitude	1808430		l sale
Latitude: 70-602.40 Longitude	: 1808439		
3. PUBLIC SYSTEM NAME: PU	JBLIC SYSTEM	NUMBER:	in. toft. depth  11. SCREEN:
			11. SCREEN: Type: Diam.:
4. ABANDONMENT:   ✓ Yes   ☐	No		SlovGauge Length:
Give Details Below			Set Between: ft. NOTE: MULTIPLE SCREENS
Grouted Depth: from 36	Surface		ft. andft. USE SECOND SHEET
Grodied Deptil. Horri			Sieve Analysis ☐ Yes (please enclose) ☐ No
Formation Description	*Thickness of	Depth to Bottom of	12. STATIC WATER LEVEL NA ft. below land surface after 24 hours
	Stratum	Stratum	13. PUMPING LEVEL Below Land Surface. NA
			ft. after hrs. Pumping G.P.M.
			Pumping Test: ☐ Yes (please enclose) ☐ No
			Yield:
			14. WATER QUALITY
	FEIENE T		Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
2			Please enclose lab results.
			15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
			Installed from NA ft. toft.
			Effective size Uniformity Coefficient
	_ [ ]		16. WELL GROUTED? ☑ Yes ☐ No
		77.5	□ Neat Cement □ Bentonite ☑ Bentonite/Cement □ Other
			Depth: From 36 ft. to Surface ft.
			The state of the s
			17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft direction Type
		THE STATE	
			Well Disinfected  Yes  No Type: Amount:
			18. PUMP: Date installed: NA Not installed □
			Mfr. Name: Model No.:
			H.P Volts Length of drop pipe ft. Capacity gpm
	-		TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
			☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal
			19. WELL DRILLER: Robert Sullivan CERT. NO.: 2253
			Address: (Print) Level: A B C D (circle one) 6513 Boulder Crest Court
*I- E- (- 10) ( - D - 1 - D			Flowery Branch, GA 30542
*Indicate Water Bearing Zones			Telephone No.: Fax No.:
(Use a 2nd sheet if needed)			20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under
5. REMARKS:			my direction and this report is true to the best of my knowledge and belief.
5 Temporary DPT Injection Points			
to 36 ft			Acres 11
			Signed: Date: 10/5/21
			Well Driller Date: _/
6. TYPE: ☐ Mud Rotary ☐ Jetted	□ во	ored	If D Level Driller, provide supervising drilleds name
☐ Dug ☐ Air Rota			If D Level Driller, provide supervising driller's name:
☐ Cable tool ☐ Other			Chris Lacko certificate number 1982
S. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.			



#### Water Well Record

Note: Personal information provided on this document is subject to public scrutiny or release.

1. WELL OWNER INFORMATION: Name: Signify North America			7. PERMIT NUMBER: SCHE03020600
(last)	(first	) <b> </b> -	A LIGE.
Address: 200 Franklin Square Drive			8. USE:  Residential Public Supply Process
			☐ Residential     ☐ Public Supply     ☐ Process       ☐ Irrigation     ☐ Air Conditioning     ☐ Emergency
City: Somerset State: NJ	Zip: 088	373	☑ Test Well
	ome:		9. WELL DEPTH (completed) Date Started: 9/23/2021
2. LOCATION OF WELLERD-6,7,8,9,10COU			30 Date Completed: 9/24/2021
Name: Former Shakespeare Compo		res Site	10. CASING: ☐ Threaded ☐ Welded Diam.: Height: Above/Below
Street Address: 19845 US Highway	76		Diam.: Height: Above/Below
City: Newberry Zi	ip: 29108		Type:   PVC   Galvanized   Surface   NA  ft.
			☐ Steel ☐ Other Weight — lb./ft.
Latitude: 904991.80 Longitude:	1808367		in. to ————ft. depth Drive Shoe? Yes No
			in. toft. depth
3. PUBLIC SYSTEM NAME: PUB	LIC SYSTEM	NUMBER:	11. SCREEN: NA NA Diam.:
			Slot/Gauge: Length:
4. ABANDONMENT:   ✓ Yes   ✓ N	No	Part Indian	Set Between: ft. and ft. NOTE: MULTIPLE SCREENS
Give Details Below	C C	200	ft. and ft. USE SECOND SHEET
Grouted Depth: from $\frac{30}{}$ ft.	to Surface	ft.	Sieve Analysis ☐ Yes (please enclose) ☐ No
**	Thickness	Depth to	12. STATIC WATER LEVEL NA ft. below land surface after 24 hours
Formation Description	of	Bottom of	13. PUMPING LEVEL Below Land Surface.
	Stratum	Stratum	NA tt. after hrs. Pumping G.P.M.
		170	Pumping Test: Yes (please enclose) No
			Yield:
			14. WATER QUALITY
		100	Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
			Please enclose lab results.
	1477 107		15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☑ No
			Installed from NA ft. to ft.  Effective size Uniformity Coefficient
			Effective size Uniformity Coefficient
			16. WELL GROUTED?   ✓ Yes □ No
			□ Neat Cement □ Bentonite ☑ Bentonite/Cement □ Other □ Surface
			Depth: From 30 ft. to Surface ft.
			17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft direction
			Type NA
2.1%, 37%			Well Disinfected ☐ Yes ☐ No Type: Amount:
			18. PUMP: Date installed: NA Not installed
			Mfr. Name: Model No.:
			H.P Volts Length of drop pipe ft. Capacity gpm
			TYPE: Submersible Jet (shallow) Turbine
			☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal
			19. WELL DRILLER: Robert Sullivan CERT. NO.: 2253
			Address: (Print) Level: A B C D (circle one) 6513 Boulder Crest Court
	2		Flowery Branch, GA 30542
*Indicate Water Bearing Zones			Telephone No.: Fax No.:
(Use a 2nd sheet if needed)			20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under
			my direction and this report is true to the best of my knowledge and belief.
5. REMARKS: 5 Temporary DPT Injection Points			
to 30 ft			the wife
10 50 11			Signed: Date: W/S/Z/
			Well Driller
6. TYPE: ☐ Mud Rotary ☐ Jetted		Bored	If D Level Driller, provide supervising driller's name:
☐ Dug ☐ Air Rota	ary 🕡 I	Driven	Chris Lacko certificate number 1982
☐ Cable tool ☐ Other			

PROJECT N	IUMBER:	60635197 DATE: [2[7]2] REPORT NUMBER:
PROJECT 8	LOCATION	Pilot StudyShakespeare Comp. Structures Site Newberry, SC
CLIENT:	Signify	AECOM FIELD REPRESENTATIVE:LISTIN BUHEY
SUBCONTF	ACTOR:	Redox Tech
SUBCONTF	ACTOR PE	RSONNEL ON SITE: Jorny Ray, Robert Sullivan, John Parkey
BRIEF SUM	MARY OF V	VORK PERFORMED: Judgections in Dickort Area
		•
START	STOR	
TIME	STOP TIME	DESCRIPTION OF ACTIVTIES: REMARKS
0730		Arrive on site, HLS meeting
0815		mob component into slegit area
6845		Grob readies @ MW-10, ISERD. OBSW-1
0945		Gab readings @ MW-10T TOERD-OBSW-II
1225		Begin drilling ERD. 18 Piro, 29 Refusal
1325		Begin injecting @ F.RD-SZ
1345		Injection complete
1410		Begin dilling ERD-S1, 30
1411		Begin injectiq @ ERD-31
1400		Injection complete
1440		Beyin drilling @ ERD-53, 26' Refuse
1450		Begin injecting @ ERD-S3
1514		Injection Complete
1523		Begin drilling @ ERD-SY, Zo' Refusal
1538		Begin injecting @ ERD-34
1555		Injection complete
1604		Begin drilling ERD-55
1613		Begin injecting @ ERD-S5, 29! Refusal
16.32		Injection Complete
1645		Mob equipment out of woods
1730		Leave sike
<u> </u>		

FIELD REPRESENTATIVES SIGNATURE:

DATE

18/2/4

FIELD REPRESENTATIVES SIGNATURE:

#### **DAILY REPORT**

DATE:

					1.1			
PROJECT N	UMBER:	60635197		_DATE:	12/1/21	REPORT NUM	BER:	<u>-</u>
PROJECT &	LOCATION	Pilot Stu	dyShakespe	eare Comp.	Structures Site Newbern	y, SC		
CLIENT:	Signify				AECOM FIELD REPF	RESENTATIVE:		
SUBCONTR	ACTOR:							
SUBCONTR	ACTOR PE	RSONNEL ON SITE:						
BRIEF SUM	MARY OF V	VORK PERFORMED:						
START	STOP					551115110		
TIME	TIME				RIPTION OF ACTIVTIES			
		WM · 102			ISE			
			_					* 39.1
			-					
			Du:				P1-20	
								0.0)
					ISERP	· 085W - II	wh:	12.15
		MW- 10I	W6:	12.20		-		
					10.00			
			ORP: "	71.3			Temp:	12.0
			Temp:	16.1			Do:	0.51
			Do: 0	2.58				
			_					
				Line and the second	A SELECTION OF THE SECOND OF T			
				AL AND	*****			*
							2002 10	
					- 1722 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 1724 - 172		2011	
				11		10 - 10		

PROJECT N	NUMBER:	60635197 DATE: 1218121 REPORT NUMBER:
PROJECT 8	LOCATION	N: Pilot StudyShakespeare Comp. Structures Site Newberry, SC
CLIENT:	Signify	AECOM FIELD REPRESENTATIVE:
SUBCONTE	RACTOR:	Redox Tech
SUBCONTE	RACTOR PE	PRSONNEL ON SITE: Jerny Ray, Robert-Sullivan, John Purkey
BRIFF SUM	IMARY OF V	NORK PERFORMED: <u>Injections</u> @ Dickert Property
		The strong of th
START TIME	STOP TIME	DESCRIPTION OF ACTIVTIES: REMARKS
0800		Arrive on site, Hts meeting
0815		Beyin drilling ERD-II, 36' refusal
0846		Begin injecting @ ERD. II
0857		Injectuo complete
0905		Begin drilling @ ERD- I2, 37' Refusal
0918		Begin injecting @ ERD-IZ
0933		Injection complete
0941		Begin drilling ERD. Is, 34 Refusal
0952		Beyon injecting @ ERD. I3
1003		Injection Complek
1013		Bogin drilling FRD. T.S. Refusel @ 28', offset try again Refused 30'+21' Bogin infalling @ FRD. IY, Refusel 32', come book to ERD-IS
1050		Begin in 12 0 FRD. IY, Refusal 32, come back to ERD-IS
1105		Begin injecting @ FRD-I4
1117		Injection complete, Daylighting up ERD-TS holes @ end of injection
1130		Begindriling ERD-IS again, refusal 28, offset closer to ERD-I3,
1155		splil difference in locations. Refuel 33'
1210		Begin injectory ERD-IS
1240		Injection complete, Flush lives
1400		Begin site clean up + de nob
(****		
		ERD-083W.IL
		€KV-003W-11
<u> </u>		- II
		3
	ļ	· ERDBY - · ERD - IT (NEW)
	-	511
		ERD-IS(OID)
		WM·10E
-	-	

FIELD REPRESENTATIVES SIGNATURE:

\_DATE: |2/8/21

## Page\_of\_

# REAGENT INJECTION LOG

Pilot Study Shakespeare Composite Structures Site Newberry, South Carolina

Injection Area

Technician					3		74.	B		The same of the sa	4		413	2	S	7	R
Notes/ Observations		Daylighting at 16:00, injection stopped		Split volume into 4 intervels					Split volune into 3 intervals			split volume into 3 intervals				Porte load into & Intervals	
Flow Meter Flow Rate (gpm)	4.2 (15:35)	5.2 (15:45)	4.2 (16:00)														
Volume Injected (gallons)		200			100			001		001			201		001		001
Injection Depth (ft)		45-41			18-20			30.20		02-92			36.20		74-30		85-31
Batch No.		-			_					_					-		2
Method of Delivery		DPT Bottom-Up		7.60	3	Bottom	TeO	Bothary	Lon	, 12 K	Derron al	700		799	go was foo	DPT	Bollon up
Injection Point					ERD-52	9:0	500-50			ERD-53			ERD 34		ERD-35		ERV-II
Time				\	5251			1411		OShI			1533		1613		0841
Date		Example			12/2/21			12/2/21		121/121	•		12/2/21		12/2/101		12/8/21

### Page\_of\_

# REAGENT INJECTION LOG

Pilot Study Shakespeare Composite Structures Site Newberry, South Carolina

Injection Area

Technician Notes/ Observations Initials		at 16:00, injection stopped			into 3 intervals	into 3 intervals	into 2 Entervals	w 4 5	w	"	رن الا الله الـ ا	"	رن الا الله الـ ا	"	4 to 1	\(\alpha\) \(\frac{\lambda}{\tau}\) \(\frac{\lambda}{\tau}\) \(\frac{\tau}{\tau}\) \(\f	"	\(\alpha\) \(\frac{\lambda}{\tau}\) \(\frac{\lambda}{\tau}\) \(\frac{\tau}{\tau}\) \(\f
		Daylighting at 16:00, injection stopped			spillod into 3 intervals	il lood into 3 inki	2 4	w 4 16	w	~ ~ ~ =	1 into 2 33,33-31	1 into 2 33.31. 1 into 1 into 1 into 1	1 into 2 33,33,31 into 1 into 1	1 into 2 33.31 into 1 into 1	1 into 2 35.35 35 35 35 15 1	1 into 2 33.31 into 1 into 1	1 into 2 33.31 into 1 into 1	1 into 2 33.31 into 1 into 1
Daylighting at 16:00, inji	Daylighting at 16:00, inje			calvi pool lila			Split lood into	34-33,33.	34-33,33.	34-33, 33-	34-33,33- 34-33,33- ntine load into 1	1:4 lood into 34-33,33.	34-33,33- 34-33,33- ntine load into 1	1:4 lood into 34-33, 33.	34-33,33. 34-33,33.  The load into 1	1:4 lood into 34-33,33- 1:4 lood into 1:4 lo	1:4 lood into 34-33, 33.  34-33, 33.  The load into 1	1:4 lood into 34-33,33- 1:4c lood into 1:4c lood into 1:4c
Daylightin	Daylightin	Splil 1 oct	splil 1 and			Split load	•	34-3	34-3 Ensine lad	34-3 Entire loca	34-3 Entire load Entire 100d	34-3 Entire load Entire load	34-3 Entire load Entire load	34-3 Entire load Entire load	34-3 Entire load Entire load	34-3 Entire load Entire 1000	34-3 Entire load Entire load	34-3 Entire load Entire load
4.2 (15:35) 5.2 (15:45) 4.2 (16:00)			2			35			W									
2. r	2 2	2	4.2															
		200			0			0	9	0 0	0 0	01 01	0 0 01	0 0 01	0 0 01	0 0 0	0 0 01	0 0 0
		45-41			37.31			34.31	34.31	34.31	34.31	33-31	34.31	33-31	34.31	32-31	33-31	32-31
		-			4			7	7	7 7		7 7 4	7 7 4	7 7 4	7 7 4	7 7 4	7 7 4	7 7 7
		DPT Bottom-Up		120	Bottomy	,	100	Betonut	Betouch	Betourt DPT  DPT  Beton 4	Betoury DPT Beton 49	Beton of Beton of Beton of Botton of		Betour P Beton 4 Beton 4 Beton 9	Beton up Beton up Beton up Beton up Beton up	Betonup Betonup Betonup Betonup	Beton of Beton of Beton of Beton of Beton of	Betonup Betonup Betonup Betonup
					ERV-12 Botton			ERD-I3	ERO-13		ERD-13	ERD-13	ERD-13	EW-13	ERD-13	ERD-13 ERD-14	EW-14 EW-14	ERD-13 ERD-14
Start								0 152										
Date		Example			S18/21 0818			ग्रिशिय										

Pilot Study Repor	rt – Shakespeare Composite Structures Newberry, SC
Attachment F	
Laboratory Reports of Analysis and Chain-of-Custody Reco	rds for Microbial Analysis



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133





Client: Scott Ross Phone: 803-201-9662

AECOM

101 Research Dr

Columbia, SC 29203 Fax:

Client Project #: 60635197 Client Project Name: Shakespeare - Signify North America

Purchase Order #: 137415

Test results provided for: CENSUS

Reviewed By:

Casy Brown

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

#### MICROBIAL INSIGHTS, INC.

 $10515 \; Research \; Dr., \; \; Knoxville, \; TN \; 37932$ 

Tel. (865) 573-8188 Fax. (865) 573-8133

Client:AECOMMI Project Number:077SHProject:Shakespeare - Signify North AmericaDate Received:08/21/2021

Sample Information

Client Sample ID:		MW-10I	ERD-OBSW-1I	MW-10	ERD-OBSW-1S
Sample Date:		08/20/2021	08/20/2021	08/20/2021	08/20/2021
Units:		cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT/CB	HT/CB	HT/CB	HT/CB
chlorinating Bacteria					
Dehalococcoides	DHC	3.20E+00	<5.00E-01	<5.00E-01	<5.00E-01
tceA Reductase	TCE	1.00E-01 (J)	<5.00E-01	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Vinyl Chloride Reductase	VCR	1.00E-01 (J)	<5.00E-01	<5.00E-01	<5.00E-01
Dehalobacter spp.	DHBt	8.28E+01	1.30E+02	1.70E+00 (J)	<4.80E+00

#### Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL

I = Inhibited

**CENSUS** 

< = Result not detected

#### **Quality Assurance/Quality Control Data**

#### Samples Received 8/21/2021

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	08/21/2021	08/27/2021	0 °C	104%	non-detect	non-detect
TCE	08/21/2021	08/27/2021	0 °C	100%	non-detect	non-detect
VCR	08/21/2021	08/27/2021	0 °C	96%	non-detect	non-detect
DHBt	08/21/2021	08/27/2021	0 °C	106%	non-detect	non-detect
DHC	08/21/2021	08/27/2021	0 °C	101%	non-detect	non-detect

JAE ROM  IDI Research D						Name:	ny:	1		N	2	Z									-			5	hinlinciahte	12	Cic			
1						Company																5	U	0	3		ノうり	2	N	
5	Ų		1			Address:	· ::	f																			)			
2	29763							1													= 3	0515	10515 Research Dr	ch Dr						
Scott. Ross @ A	AEGM.COM	20		,		email:		1													∠ ∞	65-57	Knoxville, 1N 37932 865-573-8188	3/932						
740.192						Phone: Fax:	200	1 1 1													>	ww.m	www.microbe.com	СОШ						
						Purchase Order No.	se Or	der N	· ·												п.	lease	Please Check One:	One						
Shakespeere						Subcol	ıtract	No.													ш	Σ	ore sa	ımple	s to f	ollo	>			
Sig7						MI Quo	te No	. 1														ž n	Add	itiona	ll San	seldu	**			
ird (default)	☐ Microbi	ial Insights Lev	rel III raw	data(15	% surch	arge)		icrobia	I Insigl	nts Le	Vel IV	(25%	surcha	(ebu			Com	preh	ensive	e Inte	erpret	ive(1	(%9			orica	I Intel	preti	ve (3	(%
ial Insights Sta	andard (det	fault)		other (	availa	ole ED.	Ds (5	ıns %	charge	_	Sp	ecify E	EDD 1	Гуре:							1									
ns about the analy:	ses or filling	out the COC :	at (865) 5	73-818	3 (9:00	am to 5.	00 pn	EST	M-F).	After	hours	semai	il: cus	tomer	servic	e@mi	crobe	COM.											-	- 1
Sample Inform	nation					Analys	ses		ENS	US:	olea	se se	elect	the:	targ	et or	gan	sm/g	Jene											102:0
ole Name	Date Sampled	bəlqms2 əmiT	xintsM	Total Number of Containers	A <sub>7</sub> Jq	NGS	QuantArray Chlor		DHC Functional genes	= 10.20719610		DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SAR-Salfate Reducing Bacteria-APS)	MGN (Methanogens)	(arlqontonsriteM) AOM	OWWS	DMF (Dentriflers-nirS and nirK) OMA	(ammonia oxidizing bacteria)	PM1 (MTBE aerobic)				BSSA ASSA		ANA		Other:	Other:
	10fzefzy	1056	Ao	-				-	-		_	-			_															
OBSW-10I	waste	1150	Na	-					×	^	~										П									
	njerjoi	1310	B	_																				$\dashv$	$\dashv$	$\dashv$	-	4		
	10 28/21	1405	B	_					_		_							+	+			+	+	-	-	+	-	+	_	
								+	+	+	+	-							+		+	+	+	+	+	+	_	+	_	
									-	$\vdash$	-										T			$\vdash$	$\vdash$					
																					$\vdash$	$\vdash$		$\vdash$	$\vdash$					
									_	_	_							+	+		+	+	-	_	-	+	$\perp$	+	$\perp$	1 1
	10	)ate	1			Re	ceive	d by:	S	6	2	R	Dat	0	0	5	0	21												
Failure to p	rovide suffic	cient and/or co	It is vita	I that ch mation	tain of	custody	is filler	out o	errectly	/ & tha	at all r	relativ	e info	rmatic	no is p	rovide	d.									l.				
N (C) (V O O O O O O O O O O O O O O O O O O	Shakespeere 60635197 60635197 Sandard (default) Microbial Insights Sta Microbial Insights Sta Many questions about the analys Sample Name Sample Inform Sample Inform TSERD-OBSW-10I TSERD-OBSW-10I TSERD-OBSW-10	Showcopeere 60635197  Sample Name Sample Name Sample Name  Sample Name	Sample Name  Sampl	and (default)   Microbial Insights Level III raw and (default)   All considered (default)   All contains about the analyses or filling out the COC at (865) 5.  Sample Information   COC at (865) 5.  Sample Information   COC at (865) 5.  Sample Information   COC at (865) 5.  Bate   COC at (865) 5.  Sample Information   COC at (865) 5.  Bate   COC at (865) 5.  Bate	and (default)   Microbial Insights Level III raw data(155 bial Insights Standard (default)   All other a bial Insight Charactin Indian and for correct information	Report Type:    Color Sample Name   Color Samp	and (default)  and (default)  and (default)  bial Insights Standard (default)  consider a available EDE  and (default)  consider a available EDE  consider a available EDE  consider a available EDE  consider a filling out the COC at (865) 573-8188 (9:00 am to 5:10 and to	ard (default)	ard (default)	ard (default)	and (default)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level III raw data(15% surcharg	and (default)   Microbial insights Level III raw data(15% surcharge)   Microbial insights Level IV    Sample Information   Microbial insights Level III raw data(15% surcharge)   Microbial insights Level IV    Sample Information   Microbial insights Level IV    Analyses   CENSUS: Pleas    CENSUS: Pleas    DHC (Dehalobacines)    DHC (DHC (Dehalobacines)    DH	To Bay War to Control of earling and the control	and (default)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level IV (25% surcharge)   Specify EDD    Sample Information   All other available EDDs (5% surcharge)   Specify EDD    Sample Information   Analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hous earlill: cus considered in the constitution of custody is filled out (default)   Specify EDD    Description   Specify EDD   Specify EDD    Sample Information   Analyses   CENSUS: Please select constitution    Constitution   Specify EDD   Specify EDD    Description   Specify EDD	and (default)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level IV (25% surcharge)   Microbial Insights Level IV (25% surcharge)   Microbial Insights Level IV (25% surcharge)   Specify EDD Type:    Sample Information	and (default)   Microbial Insights Level III raw datatis% surcharge)   Microbial Insights Standard (default)   All other available EDDs (5% surcharge)   Specify EDD Type:  Sample Information   All other available EDDs (5% surcharge)   Specify EDD Type:  Sample Information   All other available EDDs (5% surcharge)   Specify EDD Type:  Sample Information   All other available EDDs (5% surcharge)   Specify EDD Type:  Sample Information   All other available EDDs (5% surcharge)   Specify EDD Type:  Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After hours email: customerservice    Analyses or filling out the COC at (885) 573-8788 (9:00 am to 6:00 pm EST, M-F). After the form of custody is filled out (4:00 pm EST, M-F). After the filling is expected by: M-F).	and (default)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level IIV (25% surcharge)   Microbial Insights Level IIV (25% surcharge)   Microbial Insights Level IIV (25% surcharge)   Dial Insights Standard (default)   All other available EDDs (5% surcharge)   Specify EDD Type:    Dial Insights Standard (default)   All other available EDDs (5% surcharge)   Specify EDD Type:	and (default)   Microbial Insights Level III raw data (15% surcharge)   Microbial Insights Level IV (25% surcharge)   Omega to the content of default)   Microbial Insights Level III raw data (15% surcharge)   Omega to the content of default)   Omega to the cont	and (default)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Standard (default)   Microbial Insights Level III raw data(15% surcharge)   Microbial Insights Level IV (25% surcharge)   Compreh)    Sample Information   All other available EDDs (5% surcharge)   Specify EDD Type:  Sample Information   Analyses or filing out the COC at (665) 573-8188 (9.00 am to 5.00 pm EST, M-F). After hours email: customerservice@microbe compreh)    Sample Information   Analyses or filing out the COC at (665) 573-8188 (9.00 am to 5.00 pm EST, M-F). After hours email: customerservice@microbe compreh)    Sample Information   Analyses or filing out the COC at (665) 573-8188 (9.00 am to 5.00 pm EST, M-F). After hours email: customerservice@microbe compreh)    Sample Information   Analyses or filing out the COC at (665) 573-8188 (9.00 am to 5.00 pm EST, M-F). After hours email: customerservice@microbe compreh)    Sample Information   Analyses or filing out the COC at (665) 573-8188 (9.00 am to 5.00 pm EST, M-F). After hours email: customerservice@microbe compreh)    Analyses or filing out the COC at (665) 573-8188 (9.00 am to 5.00 pm EST, M-F). After hours email: customerservice@microbe compreh)    Analyses or filing out the case select the target organism of custody is filled out of custody is fi	and (default)   Microbial Insights Level III raw data (15% surchange)   Microbial Insights Level IV (25% surchange)   Comprehensive strain insights Level IV (25% surchange)   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   Specify EDD Type:  Sample Information   All other available EDDs (5% surchange)   Specify EDD Type:  Sample Information   Specify EDD Type:  Sa	Maurobial Insights Level III aw data (15% surcharge)   Microbial Insights Level III (25% surcharge)   Microbial Insights Level III aw data (15% surcharge)   Microbial Insights Standard (defautt)   All other available EDDs (5% surcharge)   Specify EDD Type:    Sample Information   Analyses or filling out the COC at (865) 573-8188 (9.00 an to 5.00 pm EST, M-F). After hours email: customerservice@microbe.com   Sample Information   Analyses or filling out the COC at (865) 573-8188 (9.00 an to 5.00 pm EST, M-F). After hours email: customerservice@microbe.com   CENSUS: Please select the target organism/gene   CENSUS: Plea	Analyses   Microbial Insights Level IV (25% surcharge)   Diducte No.  Analyses   Microbial Insights Level IV (25% surcharge)   Specify EDD Type:  OdamtArray Chlor   Analyses   Specify EDD Type:  Analyses   CENSUS: Please select the target organism/gene   CENSUS: Please select the target organism   CENSUS: P	Analyses   Microbial Insights Level IV (25% surcharge)   Diducte No.  Analyses   Microbial Insights Level IV (25% surcharge)   Specify EDD Type:  OdamtArray Chlor   Analyses   Specify EDD Type:  Analyses   CENSUS: Please select the target organism/gene   CENSUS: Please select the target organism   CENSUS: P	Analyses Chlor  Received by:  Macute No.  Microbial Insights Level IV (25% surcharge)  Dominicative.  Analyses Specify EDD Type:  Cananthringy Petro  Quanthringy Petro  Dominications of Scott Consulting Bacteria Bacteri	Analyses   Microbial Insights Level IV (25% surcharge)   Diducte No.  Analyses   Microbial Insights Level IV (25% surcharge)   Specify EDD Type:  OdamtArray Chlor   Analyses   Specify EDD Type:  Analyses   CENSUS: Please select the target organism/gene   CENSUS: Please select the target organism   CENSUS: P	Analyses Analyses   Microbial Insights Level IV (25% surcharge)   Microbial Insights Level IV (25% surcharge)   Roceive No.    Analyses   Analyses   Censor Received Part   Marchael Insights Level IV (25% surcharge)   Comprehensive Interpretive (15%)   Comprehen	Analyses   Microbial Insights Level IV (25% surcharge)   Microbial Insights Level IV (25% surcharge)   Rocelived No.    Rocelived by:   Canada   Ca	Received by:    Manage   All Microbial Insights Level IV (25% surcharge)   All Microbial Insights Level IV (25% surcharge)   All Microbial Insights Level IV (25% surcharge)   Table EDDs (5% surcharge)   Specify EDD Type:   Oam to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com	Analyses Ana	Analyses (5% surcharge)  Miguete No.  Miguet

\* additional cost and sample preservation are associated with RNA samples.

\*\*Saturday delivery: See sampling protocol for alternate shipping address.



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133





Client: Scott Ross Phone: 803-201-9662

AECOM

101 Research Dr Columbia, SC 29203

SC 29203 **Fax:** 

Client Project #: 60635197 Client Project Name: Shakespeare - Signify North America

Purchase Order #: 137415

Test results provided for: CENSUS

Charles Slater

Reviewed By:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

#### MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932

Tel. (865) 573-8188 Fax. (865) 573-8133

Client: **AECOM** 109SJ MI Project Number: Project: Shakespeare - Signify North America

10/30/2021 Date Received:

**CENSUS** 

#### Sample Information

Client Sample ID:		MW-10I	ISERD-0BSW-10	MW-10	ISERD-0BSW-10
Sample Date:		10/29/2021	10/29/2021	10/29/2021	10/29/2021
Units: Analyst/Reviewer:		cells/mL BB/CS	cells/mL BB/CS	cells/mL BB/CS	cells/mL BB/CS
chlorinating Bacteria					
Dehalococcoides	DHC	1.00E+00	1.05E+02	6.26E+03	<1.90E+00
tceA Reductase	TCE	<5.00E-01	<3.13E+01	<1.00E+03	<1.90E+00
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<3.13E+01	<1.00E+03	<1.90E+00
Vinyl Chloride Reductase	VCR	<5.00E-01	1.37E+01 (J)	<1.00E+03	<1.90E+00
Dehalobacter spp.	DHBt	5.21E+02	1.13E+04	2.85E+04	2.07E+04

#### Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited

< = Result not detected

#### **Quality Assurance/Quality Control Data**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHBt	10/30/2021	11/05/2021	0 °C	116%	non-detect	non-detect
BVC	10/30/2021	11/05/2021	0 °C	109%	non-detect	non-detect
TCE	10/30/2021	11/05/2021	0 °C	111%	non-detect	non-detect
VCR	10/30/2021	11/05/2021	0 °C	100%	non-detect	non-detect
DHC	10/30/2021	11/05/2021	0 °C	106%	non-detect	non-detect



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133





Client: Scott Ross Phone: 803-201-9662

AECOM

101 Research Dr Columbia, SC 29203

Fax:

Client Project #: 60635197 Client Project Name: Shakespeare Composite Structures

Purchase Order #: 137415

Test results provided for: CENSUS

Charles Slater

Reviewed By:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

#### MICROBIAL INSIGHTS, INC.

 $10515 \; Research \; Dr., \; \; Knoxville, \; TN \; 37932$ 

Tel. (865) 573-8188 Fax. (865) 573-8133

Client: AECOM MI Project Number: 036TC

Project: Shakespeare Composite Structures Date Received: 03/09/2022

#### Sample Information

Client Sample ID:		ERD-0BSW-1I	MW-10I	ERD-OBSW-1	MW-10
Sample Date:		03/08/2022	03/08/2022	03/08/2022	03/08/2022
Units:		cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		BB/CS	BB/CS	BB/CS	BB/CS
Dechlorinating Bacteria  Dehalococcoides	DHC	1.00E-01 (J)	<1.30E+00	<8.00E-01	<2.50E+01
tceA Reductase	TCE	<5.00E-01	<1.30E+00	<8.00E-01	<2.50E+01
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<1.30E+00	<8.00E-01	<2.50E+01
Vinyl Chloride Reductase	VCR	<5.00E-01	<1.30E+00	<8.00E-01	<2.50E+01
Dehalobacter spp.	DHBT	5.92E+03	3.91E+02	4.66E+03	<2.50E+02

#### Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL

I = Inhibited

**CENSUS** 

< = Result not detected

#### **Quality Assurance/Quality Control Data**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	03/09/2022	03/15/2022	0 °C	94%	non-detect	non-detect
DHBT	03/09/2022	03/15/2022	0 °C	108%	non-detect	non-detect
BVC	03/09/2022	03/15/2022	0 °C	105%	non-detect	non-detect
TCE	03/09/2022	03/15/2022	0 °C	101%	non-detect	non-detect
VCR	03/09/2022	03/15/2022	0 °C	106%	non-detect	non-detect







10515 Research Drive Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133

Web: www.microbe.com

#### **SITE LOGIC Report**

QuantArray®-Chlor Study

Contact: Scott Ross Phone: 803-201-9662

Address: AECOM

101 Research Dr Email: scott.ross@aecom.com

Columbia, SC 29203

MI Identifier: 090TB Report Date: 03/17/2022

Project: Shakespeare Composite Structures, 60675505.3 Comments:

**NOTICE:** This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.



#### The QuantArray®-Chlor Approach

Quantification of *Dehalococcoides*, the only known bacterial group capable of complete reductive dechlorination of PCE and TCE to ethene, has become an indispensable component of assessment, remedy selection, and performance monitoring at sites impacted by chlorinated solvents. While undeniably a key group of halorespiring bacteria, *Dehalococcoides* are not the only bacteria of interest in the subsurface because reductive dechlorination is not the only potential biodegradation pathway operative at contaminated sites, and chlorinated ethenes are not always the primary contaminants of concern. The QuantArray®-Chlor not only includes a variety of halorespiring bacteria (*Dehalococcoides*, *Dehalobacter*, *Dehalogenimonas*, etc.) to assess the potential for reductive dechlorination of chloroethenes, chloroethanes, chlorobenzenes, chlorophenols, and chloroform, but also provides quantification of functional genes involved in aerobic (co)metabolic pathways for biodegradation of chlorinated solvents and even competing biological processes. Thus, the QuantArray®-Chlor will give site managers the ability to simultaneously yet economically evaluate the potential for biodegradation of a spectrum of common chlorinated contaminants through a multitude of anaerobic and aerobic (co) metabolic pathways to give a much more clear and comprehensive view of contaminant biodegradation.

#### The QuantArray®-Chlor is used to quantify specific microorganisms and functional genes to evaluate the following:

#### Anaerobic Reductive Dechlorination

Quantification of important halorespiring bacteria (e.g. *Dehalococcoides, Dehalobacter, Dehalogenimonas, Desulfitobacterium* spp.) and key functional genes (e.g. vinyl chloride reductases, TCE reductase, chloroform reductase) responsible for reductive dechlorination of a broad spectrum of chlorinated solvents.

Aerobic Cometabolism

Several different types of bacteria including methanotrophs and some toluene/phenol utilizing bacteria can co-oxidize TCE, DCE, and vinyl chloride. The QuantArray®-Chlor quantifies functional genes like soluble methane monooxygenase encoding enzymes capable of co-oxidation of chlorinated ethenes.

Aerobic (Co)metabolism of Vinyl Chloride

Ethene oxidizing bacteria are capable of cometabolism of vinyl chloride. In some cases, ethenotrophs can also utilize vinyl chloride as a growth supporting substrate. The QuantArray®-Chlor targets key functional genes in ethene metabolism.

#### How do QuantArrays® work?

The QuantArray<sup>®</sup>-Chlor in many respects is a hybrid technology combining the highly parallel detection of microarrays with the accurate and precise quantification provided by qPCR into a single platform. The key to highly parallel qPCR reactions is the nanoliter fluidics platform for low volume, solution phase qPCR reactions.

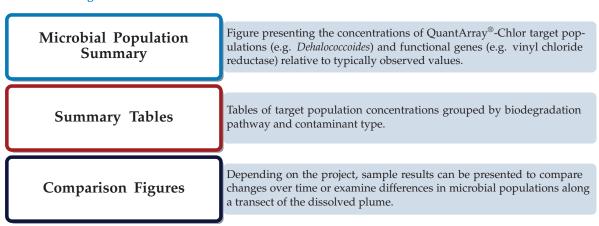
Web: www.microbe.com



#### How are QuantArray® results reported?

One of the primary advantages of the QuantArray®-Chlor is the simultaneous quantification of a broad spectrum of different microorganisms and key functional genes involved in a variety of pathways for chlorinated hydrocarbon biodegradation. However, highly parallel quantification combined with the various metabolic and cometabolic capabilities of different target organisms can complicate data presentation. Therefore, in addition to Summary Tables, QuantArray® results will be presented as Microbial Population Summary and Comparison Figures to aid in data interpretation and subsequent evaluation of site management activities.

#### Types of Tables and Figures:



Web: www.microbe.com



#### Results

Table 1: Summary of the QuantArray®-Chlor results obtained for samples MW-6i, MW-5, MW-6, MW-9, and MW-22.

Sample Date   O2741/2022	Sample Name	MW-6i	MW-5	MW-6	MW-9	MW-22
Dehalococcoides (DHC)	Sample Date	02/24/2022	02/24/2022	02/24/2022	02/24/2022	02/24/2022
tceA Reductase (TĆE)		<u> </u>	<u> </u>		<u> </u>	-
BAV1 Vinyl Chloride Reductase (BVC)   \$5.00E-01   \$5.00E-01   \$5.00E-01   \$2.40E+00   \$5.00E-01   \$0.00E-01   \$2.40E+00   \$2.00E-01   \$2.40E+00   \$2.00E-01   \$2.40E+00   \$2.00E-01   \$2.40E+00   \$2.00E-01   \$2.40E+00   \$2.00E-01   \$2.40E+00   \$2.00E-01   \$2.40E+00   \$2.00E+01   \$2.00E+02   \$2.38E+01   \$1.0E+02   \$2.00E+02   \$2.38E+01   \$2.00E+00   \$2.38E+01   \$2.00E+00   \$2.38E+01   \$2.00E+00   \$2.38E+01   \$2.00E+00   \$2.38E+01   \$2.00E+00   \$2.38E+01   \$2.490E+00   \$2.38E+01   \$2.38E+01   \$2.490E+00   \$2.38E+01   \$2.38E+01   \$2.490E+00   \$2.38E+01   \$2.38E+01   \$2.490E+00   \$2.38E+01   \$	,					
Vinyl Chloride Reductase (VCR)	, ,					
Dehalobacter spp. (DHBt)         5.25E+03         <4.90E+00         2.00E+02         <2.38E+01         <1.10E+02           Dehalobacter DCM (DCM)         <4.80E+00	• • • • • • • • • • • • • • • • • • • •					
Dehalobacter DCM (DCM)         <4.80E+00	` '					
Dehalogenimonas spp. (DHG)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           cerA Reductase (CER)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           trans-1,2-DCE Reductase (TDR)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Desulfiboraterium spp. (DSB)         6.41E+03         1.38E+01         4.47E+03         <2.38E+01         <5.46E+02           Dehalobium chlorocoercia (DECO)         8.33E+02         3.84E+02         2.47E+03         <2.38E+01         <4.90E+00           PCE Reductase (PCE-1)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-1)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Chloroform Reductase (PCE-2)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           1,1 DCA Reductase (DCA)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           1,2 DCA Reductase (DCAR)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Aerobic (Co)Metabolic         <1.30E+02						
cerA Reductase (CER)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           trans-1,2-DcE Reductase (TDR)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Desulfitobacterium spp. (DSB)         6.41E+03         1.38E+01         4.47E+03         <2.38E+01         5.46E+02           Dehalobium chlorocoercia (DECO)         8.33E+02         3.84E+02         2.47E+03         <2.38E+01         5.46E+02           Desulfitromornas spp. (DSM)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-1)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-2)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Chloroform Reductase (DCA)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           1,1 DCA Reductase (DCAR)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Aerobic (Co)Metabolic          <4.80E+00         <4.90E+00         <4.80E+00         <2.23E+01         <4.90E+00           Phenol Hydroxylase (PHE)         1.						
trans-1,2-DCE Reductase (TDR)         <4.80E+00         <4.90E+00         <2.38E+01         <4.90E+00           Desulfitobacterium spp. (DSB)         6.41E+03         1.38E+01         4.47E+03         <2.38E+01         5.46E+02           Dehalobium chlorococria (DECO)         8.33E+02         3.84E+02         2.47E+03         <2.38E+01         3.88E+01           Desulfuromonas spp. (DSM)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-1)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-2)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Chloroform Reductase (CFR)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           1,1 DCA Reductase (DCAA)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Aerobic (CO)Metabolic          <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Phenol Hydroxylase (TGD)         <2.24E+01         6.00E+00         2.22E+01         <2.38E+01         <4.90E+00           Planch Monooxygenase (TGBO)         <4.80E+00						
Desulfitobacterium spp. (DSB)         6.41E+03         1.38E+01         4.47E+03         <2.38E+01         5.46E+02           Dehalobium chlorocoercia (DECO)         8.33E+02         3.84E+02         2.47E+03         <2.38E+01	` '	<4.80E+00	<4.90E+00	<4.80E+00	< 2.38E + 01	<4.90E+00
Dehalobium chlorocoercia (DECO)         8.33E+02         3.84E+02         2.47E+03         <2.38E+01         3.88E+01           Desulfuromonas spp. (DSM)         <4.80E+00	trans-1,2-DCE Reductase (TDR)	<4.80E+00		<4.80E+00		<4.90E+00
Desulfuromonas spp. (DSM)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-1)         <4.80E+00		6.41E+03		4.47E+03		
PCE Reductase (PCE-1)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           PCE Reductase (PCE-2)         <4.80E+00	Dehalobium chlorocoercia (DECO)	8.33E+02		2.47E+03		
PCE Reductase (PCE-2)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Chloroform Reductase (CFR)         <4.80E+00	Desulfuromonas spp. (DSM)	<4.80E+00	<4.90E+00	<4.80E+00	< 2.38E + 01	<4.90E+00
Chloroform Reductase (CFR)       <4.80E+00	PCE Reductase (PCE-1)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
1,1 DCA Reductase (DCA)       <4.80E+00	PCE Reductase (PCE-2)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
1,2 DCA Reductase (DCAR)       <4.80E+00       <4.90E+00       <4.80E+00       <2.38E+01       <4.90E+00         Aerobic (Co)Metabolic       Soluble Methane Monooxygenase (SMMO)       <4.80E+00       <4.90E+00       1.39E+02       <2.38E+01       <4.90E+02         Toluene Dioxygenase (TOD)       2.24E+01       6.00E+00       2.22E+01       <2.38E+01	Chloroform Reductase (CFR)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Aerobic (Co)Metabolic         Soluble Methane Monooxygenase (SMMO)       <4.80E+00	1,1 DCA Reductase (DCA)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Soluble Methane Monooxygenase (SMMO)         <4.80E+00         <4.90E+00         1.39E+02         <2.38E+01         1.24E+02           Toluene Dioxygenase (TOD)         2.24E+01         6.00E+00         2.22E+01         <2.38E+01	1,2 DCA Reductase (DCAR)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Toluene Dioxygenase (TOD)         2.24E+01         6.00E+00         2.22E+01         <2.38E+01         <4.90E+00           Phenol Hydroxylase (PHE)         1.50E+02         <4.90E+00	Aerobic (Co)Metabolic					
Phenol Hydroxylase (PHE)         1.50E+02         <4.90E+00         4.55E+01         <2.38E+01         7.74E+01           Trichlorobenzene Dioxygenase (TCBO)         <4.80E+00	Soluble Methane Monooxygenase (SMMO)	<4.80E+00	<4.90E+00	1.39E+02	<2.38E+01	1.24E+02
Trichlorobenzene Dioxygenase (TCBO)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Toluene Monooxygenase 2 (RDEG)         2.38E+02         <4.90E+00	Toluene Dioxygenase (TOD)	2.24E+01	6.00E+00	2.22E+01	<2.38E+01	<4.90E+00
Toluene Monooxygenase 2 (RDEG)         2.38E+02         <4.90E+00         2.08E+02         <2.38E+01         4.14E+02           Toluene Monooxygenase (RMO)         5.40E+00         <4.90E+00		1.50E+02	<4.90E+00	4.55E+01	<2.38E+01	7.74E+01
Toluene Monooxygenase 2 (RDEG)         2.38E+02         <4.90E+00         2.08E+02         <2.38E+01         4.14E+02           Toluene Monooxygenase (RMO)         5.40E+00         <4.90E+00	Trichlorobenzene Dioxygenase (TCBO)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Ethene Monooxygenase (EtnC)       <4.80E+00       <4.90E+00       <4.80E+00       <2.38E+01       2.73E+02         Epoxyalkane Transferase (EtnE)       4.36E+02       <4.90E+00		2.38E+02	<4.90E+00	2.08E+02	<2.38E+01	4.14E+02
Epoxyalkane Transferase (EtnE)       4.36E+02       <4.90E+00       <4.80E+00       <2.38E+01       1.35E+02         Dichloromethane Dehalogenase (DCMA)       <4.80E+00	Toluene Monooxygenase (RMO)	5.40E+00	<4.90E+00	3.22E+03	<2.38E+01	<4.90E+00
Dichloromethane Dehalogenase (DCMA)         <4.80E+00         <4.90E+00         <4.80E+00         <2.38E+01         <4.90E+00           Other         Total Eubacteria (EBAC)         6.07E+04         5.67E+03         8.89E+04         3.80E+01 (I)         1.94E+04           Sulfate Reducing Bacteria (APS)         1.79E+03         4.74E+02         3.89E+04         <2.38E+01	Ethene Monooxygenase (EtnC)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	2.73E+02
Other         6.07E+04         5.67E+03         8.89E+04         3.80E+01 (I)         1.94E+04           Sulfate Reducing Bacteria (APS)         1.79E+03         4.74E+02         3.89E+04         <2.38E+01	Epoxyalkane Transferase (EtnE)	4.36E+02	<4.90E+00	< 4.80E + 00	<2.38E+01	1.35E+02
Other         6.07E+04         5.67E+03         8.89E+04         3.80E+01 (I)         1.94E+04           Sulfate Reducing Bacteria (APS)         1.79E+03         4.74E+02         3.89E+04         <2.38E+01	Dichloromethane Dehalogenase (DCMA)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Sulfate Reducing Bacteria (APS) 1.79E+03 4.74E+02 3.89E+04 <2.38E+01 2.25E+03						
Sulfate Reducing Bacteria (APS) 1.79E+03 4.74E+02 3.89E+04 <2.38E+01 2.25E+03	Total Eubacteria (EBAC)	6.07E+04	5.67E+03	8.89E+04	3.80E+01 (I)	1.94E+04
		1.79E+03	4.74E+02	3.89E+04	<2.38E+01	2.25E+03
	9	8.73E+01	2.60E+00 (J)	1.41E+03	<2.38E+01	5.00E-01 (J)

Legend:

NA = Not Analyzed I = Inhibited NS = Not Sampled < = Result Not Detected

J = Estimated Gene Copies Below PQL but Above LQL

Web: www.microbe.com



Sample Name	TMW-24	TMW-21	TMW-22	MW-7i	MW-7
Sample Date	02/28/2022	02/28/2022	02/28/2022	03/03/2022	03/03/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Dehalococcoides (DHC)	<5.00E-01	<5.00E-01	7.00E-01	3.70E+00	<5.00E-01
tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Vinyl Chloride Reductase (VCR)	<5.00E-01	<5.00E-01	<5.00E-01	1.00E-01 (J)	<5.00E-01
Dehalobacter spp. (DHBt)	<4.90E+00	9.64E+03	<4.90E+00	<4.50E+00	<4.80E+00
Dehalobacter DCM (DCM)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Dehalogenimonas spp. (DHG)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
cerA Reductase (CER)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
trans-1,2-DCE Reductase (TDR)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Desulfitobacterium spp. (DSB)	<4.90E+00	1.14E+04	<4.90E+00	<4.50E+00	<4.80E+00
Dehalobium chlorocoercia (DECO)	<4.90E+00	2.46E+02	<4.90E+00	<4.50E+00	<4.80E+00
Desulfuromonas spp. (DSM)	5.20E+00	1.41E+02	<4.90E+00	<4.50E+00	<4.80E+00
PCE Reductase (PCE-1)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
PCE Reductase (PCE-2)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Chloroform Reductase (CFR)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
1,1 DCA Reductase (DCA)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
1,2 DCA Reductase (DCAR)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Aerobic (Co)Metabolic					
Soluble Methane Monooxygenase (SMMO)	<4.90E+00	3.31E+02	<4.90E+00	<4.50E+00	<4.80E+00
Toluene Dioxygenase (TOD)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	3.00E-01 (J)
Phenol Hydroxylase (PHE)	<4.90E+00	2.76E+03	1.29E+02	<4.50E+00	2.70E+00 (J)
Trichlorobenzene Dioxygenase (TCBO)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Toluene Monooxygenase 2 (RDEG)	<4.90E+00	2.53E+02	1.60E+00 (J)	<4.50E+00	<4.80E+00
Toluene Monooxygenase (RMO)	<4.90E+00	<5.20E+00	<4.90E+00	1.79E+02	<4.80E+00
Ethene Monooxygenase (EtnC)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Epoxyalkane Transferase (EtnE)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Dichloromethane Dehalogenase (DCMA)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Other					
Total Eubacteria (EBAC)	5.39E+03	2.40E+06	6.99E+04	2.46E+04	5.85E+03
Sulfate Reducing Bacteria (APS)	<4.90E+00	7.69E+03	3.18E+03	4.89E+02	9.80E+00
Methanogens (MGN)	<4.90E+00	<5.20E+00	<4.90E+00	8.00E-01 (J)	1.40E+00 (J)

#### Legend:

NA = Not Analyzed I = Inhibited NS = Not Sampled < = Result Not Detected

J = Estimated Gene Copies Below PQL but Above LQL

4



Table 3: Summary of the QuantArray®-Chlor results obtained for samples MW-5i, MW-8, MW-9, MW-20i, and MW-6D.

Sample Date   03/03/2022   03/04/2022   03	Sample Name	MW-5i	MW-8	MW-9	MW-20i	MW-6D
Dehalococcides (DHC)	Sample Date	03/03/2022	03/04/2022	03/04/2022	03/04/2022	03/04/2022
teca Reductase (TČE)         <5.00E-01         <5.00E-00         <5.00E-00         <5.00E-00         <5.00E-00         <4.90E+00         <4.60E+00         <6.00E+00	Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
BAV1 Vinyl Chloride Reductase (BVC)   S.500E-01   S.	Dehalococcoides (DHC)	<5.00E-01	<5.00E-01	<5.00E-01	2.10E+00	<5.00E-01
Vinyl Chloride Reductase (VCR)         2.00E-01 (J)         < 5.00E-01         < 4.60E+00         < 4.60E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 4.60E+00         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 4.60E+00         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 5.00E+00         < 5.00E+00         < 4.90E+00         < 4.60E+00         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 2.58E+02         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 4.80E+01         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 4.80E+01         < 5.00E+00         < 4.70E+00         < 4.90E+00         < 4.60E+00         < 4.80E+01         < 5.00E+00 </td <td>tceA Reductase (TCE)</td> <td>&lt;5.00E-01</td> <td>&lt;5.00E-01</td> <td>&lt;5.00E-01</td> <td>&lt;5.00E-01</td> <td>&lt;5.00E-01</td>	tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Dehalobacter spp. (DHBt)         1.11E+03         < 5.00E+00         < 4.70E+00         < 4.60E+01         < 4.60E+00           Dehalobacter DCM (DCM)         < 4.80E+00	BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	1.00E-01 (J)	<5.00E-01
Dehalobacter DCM (DCM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Dehalogenimonas spp. (DHG)         <4.80E+00	Vinyl Chloride Reductase (VCR)	2.00E-01 (J)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Dehalogenimonas spp. (DHG)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           cerA Reductase (CER)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           trans-1,2-DCE Reductase (TDR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Desulfitobacterium spp. (DSB)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+01           PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Chloroform Reductase (CFR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1, DCA Reductase (DCAR)         <4.80E+00	Dehalobacter spp. (DHBt)	1.11E+03	<5.00E+00	<4.70E+00	6.01E+01	<4.60E+00
cerA Reductase (CER)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           trans-1,2-DCE Reductase (TDR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Desulfitobacterium spp. (DSB)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.58E+01           Dehalobium chlorocercia (DECO)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           PCE Reductase (PCE-2)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           L) DCA Reductase (DCAA)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Aerobic (Co)Metabolic           <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Toluene Dioxygenase (TOD) </td <td>Dehalobacter DCM (DCM)</td> <td>&lt;4.80E+00</td> <td>&lt; 5.00E + 00</td> <td>&lt;4.70E+00</td> <td>&lt;4.90E+00</td> <td>&lt;4.60E+00</td>	Dehalobacter DCM (DCM)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
trans-1,2-DCE Reductase (TDR)         <4.80E+00         <5.00E+00         <4.90E+00         <4.60E+00           Desulfitobacterium spp. (DSB)         <4.80E+00         <5.00E+00         1.33E+01         1.19E+04         4.58E+01           Dehalobium chlorocoercia (DECO)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         2.58E+02           PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           PCE Reductase (PCE-2)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Chloroform Reductase (DCA)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,1 DCA Reductase (DCAA)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,2 DCA Reductase (DCAR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,2 DCA Reductase (DCAR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,2 DCA Reductase (DCAR)         <4.80E+00         <5.00E+00 <td>Dehalogenimonas spp. (DHG)</td> <td>&lt;4.80E+00</td> <td>&lt; 5.00E + 00</td> <td>&lt;4.70E+00</td> <td>&lt;4.90E+00</td> <td>&lt;4.60E+00</td>	Dehalogenimonas spp. (DHG)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Desulfitobacterium spp. (DSB)         <4.80E+00         <5.00E+00         1.33E+01         1.19E+04         4.58E+01           Dehalobium chlorocoercia (DECO)         <4.80E+00	cerA Reductase (CER)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
Dehalobium chlorocoercia (DECO)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         2.58E+02           Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         5.00E+00         8.04E+01           PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Chloroform Reductase (PCE-2)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,1 DCA Reductase (DCA)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,2 DCA Reductase (DCAR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Aerobic (Co)Metabolic           <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Dehand Hydroxylase (TCD)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Toluene Dioxygenase (TCBO)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Toluene Monooxygenase (RMO)         <4.80E+0	trans-1,2-DCE Reductase (TDR)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Desulfuromonas spp. (DSM)         <4.80E+00         <5.00E+00         <4.70E+00         5.00E+00         <4.60E+00           PCE Reductase (PCE-1)         <4.80E+00	Desulfitobacterium spp. (DSB)	<4.80E+00	<5.00E+00	1.33E+01	1.19E+04	4.58E+01
PCE Reductase (PCE-1)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           PCE Reductase (PCE-2)         <4.80E+00	Dehalobium chlorocoercia (DECO)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	2.58E+02
PCE Reductase (PCE-2)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Chloroform Reductase (CFR)         <4.80E+00	Desulfuromonas spp. (DSM)	<4.80E+00	<5.00E+00	<4.70E+00	5.00E+00	8.04E+01
Chloroform Reductase (CFR)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           1,1 DCA Reductase (DCA)         <4.80E+00	PCE Reductase (PCE-1)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
1,1 DCA Reductase (DCA)       <4.80E+00	PCE Reductase (PCE-2)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
1,2 DCA Reductase (DCAR)       <4.80E+00       <5.00E+00       <4.70E+00       <4.90E+00       1.02E+01         Aerobic (Co)Metabolic       Soluble Methane Monooxygenase (SMMO)       1.61E+01       <5.00E+00       <4.70E+00       1.32E+02       <4.60E+00         Toluene Dioxygenase (TOD)       <4.80E+00	Chloroform Reductase (CFR)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
Aerobic (Co)Metabolic         Soluble Methane Monooxygenase (SMMO)         1.61E+01         <5.00E+00         <4.70E+00         1.32E+02         <4.60E+00           Toluene Dioxygenase (TOD)         <4.80E+00	1,1 DCA Reductase (DCA)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
Soluble Methane Monooxygenase (SMMO)         1.61E+01         <5.00E+00         <4.70E+00         1.32E+02         <4.60E+00           Toluene Dioxygenase (TOD)         <4.80E+00	1,2 DCA Reductase (DCAR)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	1.02E+01
Toluene Dioxygenase (TOD)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Phenol Hydroxylase (PHE)         1.38E+02         <5.00E+00	Aerobic (Co)Metabolic					
Phenol Hydroxylase (PHE)         1.38E+02         <5.00E+00         5.28E+02         3.15E+03         2.35E+03           Trichlorobenzene Dioxygenase (TCBO)         <4.80E+00	Soluble Methane Monooxygenase (SMMO)	1.61E+01	<5.00E+00	<4.70E+00	1.32E+02	<4.60E+00
Trichlorobenzene Dioxygenase (TCBO)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Toluene Monooxygenase 2 (RDEG)         2.38E+02         <5.00E+00	Toluene Dioxygenase (TOD)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Toluene Monooxygenase 2 (RDEG)         2.38E+02         <5.00E+00         3.99E+01         2.45E+03         5.70E+02           Toluene Monooxygenase (RMO)         9.00E+00         <5.00E+00		1.38E+02	<5.00E+00	5.28E+02	3.15E+03	2.35E+03
Toluene Monooxygenase 2 (RDEG)         2.38E+02         <5.00E+00         3.99E+01         2.45E+03         5.70E+02           Toluene Monooxygenase (RMO)         9.00E+00         <5.00E+00	Trichlorobenzene Dioxygenase (TCBO)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Ethene Monooxygenase (EtnC)       1.61E+03       <5.00E+00       <4.70E+00       2.34E+03       4.57E+01         Epoxyalkane Transferase (EtnE)       6.79E+03       <5.00E+00	Toluene Monooxygenase 2 (RDEG)	2.38E+02	<5.00E+00	3.99E+01	2.45E+03	5.70E+02
Epoxyalkane Transferase (EtnE)         6.79E+03         <5.00E+00         <4.70E+00         5.06E+03         1.69E+02           Dichloromethane Dehalogenase (DCMA)         <4.80E+00	Toluene Monooxygenase (RMO)	9.00E+00	< 5.00E + 00	4.43E+03	6.00E+00	5.70E+00
Dichloromethane Dehalogenase (DCMA)         <4.80E+00         <5.00E+00         <4.70E+00         <4.90E+00         <4.60E+00           Other         Total Eubacteria (EBAC)         1.03E+05         5.73E+02 (I)         3.26E+05         4.78E+05         3.98E+05           Sulfate Reducing Bacteria (APS)         1.20E+03         <5.00E+00         <4.70E+00         1.85E+03         <4.60E+00	Ethene Monooxygenase (EtnC)	1.61E+03	< 5.00E + 00	<4.70E+00	2.34E+03	4.57E+01
Other         1.03E+05         5.73E+02 (I)         3.26E+05         4.78E+05         3.98E+05           Sulfate Reducing Bacteria (APS)         1.20E+03         <5.00E+00	Epoxyalkane Transferase (EtnE)	6.79E+03	<5.00E+00	<4.70E+00	5.06E+03	1.69E+02
Total Eubacteria (EBAC)         1.03E+05         5.73E+02 (I)         3.26E+05         4.78E+05         3.98E+05           Sulfate Reducing Bacteria (APS)         1.20E+03         <5.00E+00	Dichloromethane Dehalogenase (DCMA)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	< 4.60E + 00
Sulfate Reducing Bacteria (APS) 1.20E+03 <5.00E+00 <4.70E+00 1.85E+03 <4.60E+00	Other					
		1.03E+05	5.73E+02 (I)	3.26E+05	4.78E+05	3.98E+05
Methanogens (MGN) 1.00E+00 (J) <5.00E+00 1.50E+00 (J) 4.00E-01 (J) 6.00E-01 (J)	Sulfate Reducing Bacteria (APS)	1.20E+03	<5.00E+00	<4.70E+00	1.85E+03	< 4.60E + 00
	Methanogens (MGN)	1.00E+00 (J)	<5.00E+00	1.50E+00 (J)	4.00E-01 (J)	6.00E-01 (J)

### Legend:

NA = Not Analyzed I = Inhibited NS = Not Sampled < = Result Not Detected

J = Estimated Gene Copies Below PQL but Above LQL



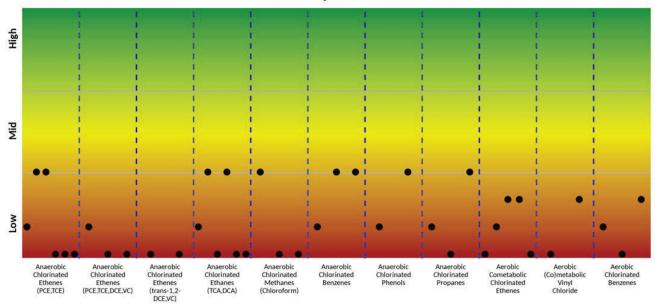


Figure 1: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co)metabolism			
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO		
Chlorinated Ethenes (PCE, TCE, DCE,	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE		
VC)					
Chlorinated Ethenes (trans-1,2-DCE,	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE		
VC)					
Chlorinated Ethanes (TCA and 1,2-	DHC, DHBt, DHG, DSB <sup>1</sup> , DCA,				
DCA)	DCAR				
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR				
Chlorinated Benzenes	DHC, DHBt <sup>2</sup> , DECO				
Chlorinated Phenols	DHC, DSB				
Chlorinated Propanes	DHC, DHG, DSB <sup>1</sup>				

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

10515 Research Drive Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133 Web: www.microbe.com



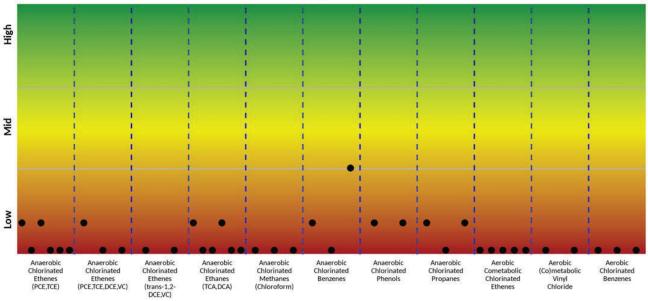


Figure 2: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination Aerobic - (Co)metabolism Chlorinated Ethenes (TCE,DCE,VC)

Chlorinated Ethenes (PCE, TCE) Chlorinated Ethenes (PCE, TCE, DCE, VC) sMMO, TOD, PHE, RDEG, RMO DHC, DHBt, DSB, DSM, PCE-1, PCE-2 DHC, BVC, VCR (Co)metabolic Vinyl Chloride etnC, etnE TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes

VC) Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR

DCA)

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt<sup>2</sup>, DECO Chlorinated Phenols DHC, DSB Chlorinated Propanes DHC, DHG, DSB1

10515 Research Drive Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



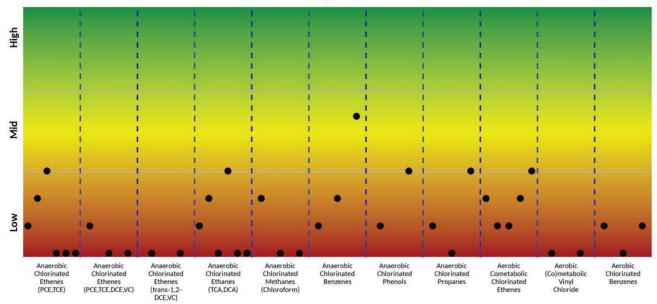


Figure 3: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination Aerobic - (Co)metabolism

Chlorinated Ethenes (PCE, TCE) Chlorinated Ethenes (PCE, TCE, DCE, VC) sMMO, TOD, PHE, RDEG, RMO DHC, DHBt, DSB, DSM, PCE-1, PCE-2 Chlorinated Ethenes (TCE,DCE,VC) DHC, BVC, VCR (Co)metabolic Vinyl Chloride etnC, etnE TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes VC) Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR DCA) Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt<sup>2</sup>, DECO Chlorinated Phenols DHC, DSB Chlorinated Propanes DHC, DHG, DSB1

8

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



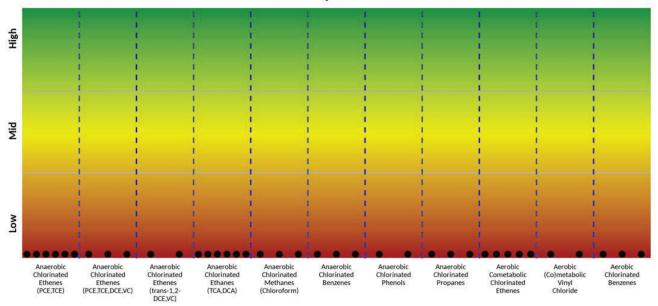


Figure 4: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlo	rination or Dichloroelimination	Aerobic - (Co)metabolism			
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO		
Chlorinated Ethenes (PCE, TCE, DCE,	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE		
VC)		•			
Chlorinated Ethenes (trans-1,2-DCE,	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE		
VC)					

Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR

DCA)

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt2, DECO Chlorinated Phenols DHC, DSB Chlorinated Propanes DHC, DHG, DSB1

10515 Research Drive Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133 Web: www.microbe.com

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



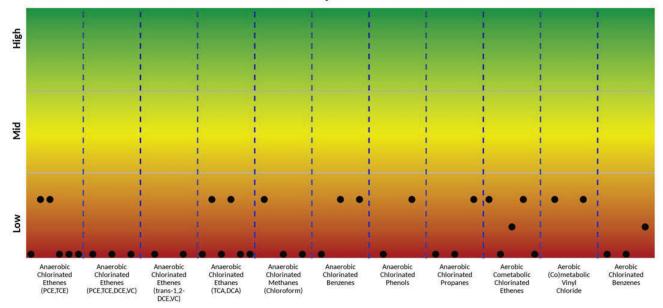


Figure 5: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination Aerobic - (Co)metabolism

Chlorinated Ethenes (PCE, TCE) Chlorinated Ethenes (PCE, TCE, DCE, VC) sMMO, TOD, PHE, RDEG, RMO DHC, DHBt, DSB, DSM, PCE-1, PCE-2 Chlorinated Ethenes (TCE,DCE,VC) DHC, BVC, VCR (Co)metabolic Vinyl Chloride etnC, etnE TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes

VC) Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG, DSB<sup>1</sup>, DCA, DCAR

DCA)

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt<sup>2</sup>, DECO Chlorinated Phenols DHC, DSB Chlorinated Propanes DHC, DHG, DSB1

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



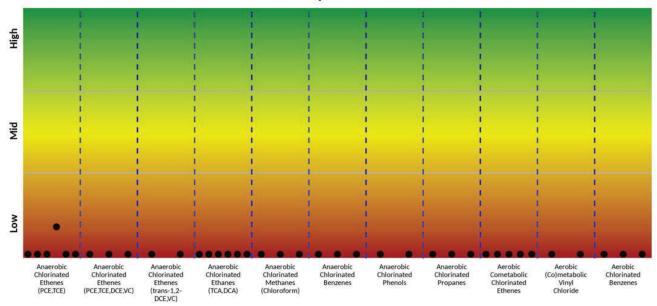


Figure 6: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dech	lorination or Dichloroelimination	Aerobic - (	(Co)metabolism
Chlorinated Ethenes (PCE, TCE)	DHC DHBt DSB DSM PCE-1 PCE-2	Chlorinated Ethenes (TCE DCE VC)	sMMO_TOD_PH

PHE, RDEG, RMO etnC, etnE Chlorinated Ethenes (PCE, TCE, DCE, DHC, BVC, VCR (Co)metabolic Vinyl Chloride TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes

Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR

DCA)

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR DHC, DHBt<sup>2</sup>, DECO DHC, DSB Chlorinated Benzenes Chlorinated Phenols Chlorinated Propanes DHC, DHG, DSB1

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



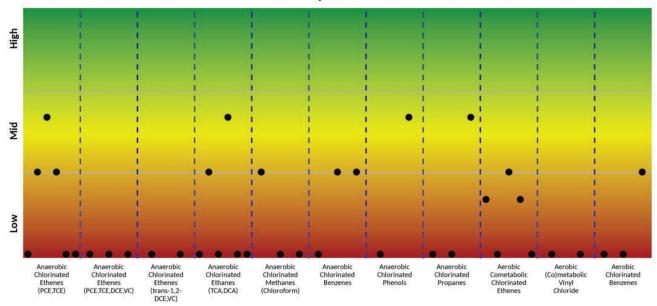


Figure 7: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co	o)metabolism
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE,	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
VC)			
Chlorinated Ethenes (trans-1,2-DCE,	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
VC)			
Chlorinated Ethanes (TCA and 1,2-	DHC, DHBt, DHG, DSB <sup>1</sup> , DCA,		
DCA)	DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt <sup>2</sup> , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB <sup>1</sup>		

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



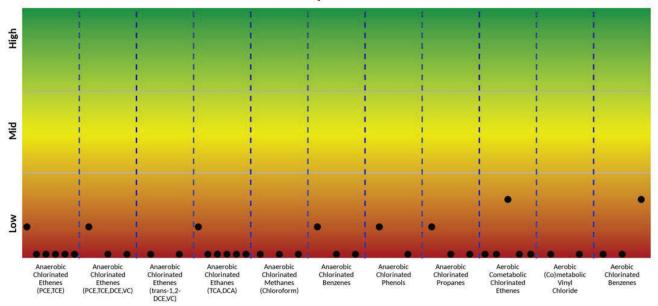


Figure 8: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination			Aerobic - (Co)metabolism			
	Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO		
	Chlorinated Ethenes (PCE, TCE, DCE,	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE		
	VC)					
	Chlorinated Ethenes (trans-1,2-DCE,	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE		
	VC)					
	Chlorinated Ethanes (TCA and 1,2-	DHC, DHBt, DHG, DSB <sup>1</sup> , DCA,				
	DCA)	DCAP				

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt2, DECO Chlorinated Phenols DHC, DSB

Chlorinated Propanes DHC, DHG, DSB1

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



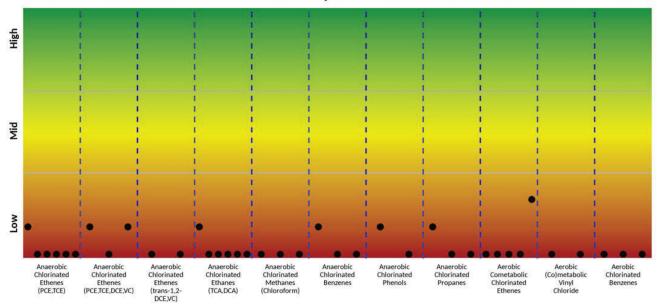


Figure 9: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination			Aerobic - (Co	o)metabolism	
	Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO	
	Chlorinated Ethenes (PCE, TCE, DCE,	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE	
	VC)				
	Chlorinated Ethenes (trans-1,2-DCE,	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE	
	VC)				
	Chlorinated Ethanes (TCA and 1,2-	DHC, DHBt, DHG, DSB <sup>1</sup> , DCA,			
	DCA)	DCAR			
	Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR			
	Chlorinated Benzenes	DHC, DHBt <sup>2</sup> , DECO			
	Chlorinated Phenols	DHC, DSB			
	Chlorinated Propanes	DHC DHG DSB <sup>1</sup>			

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



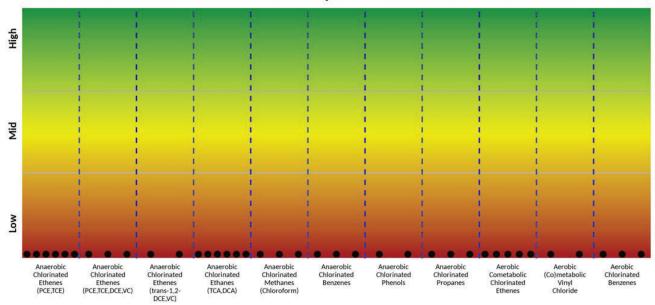


Figure 10: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination Aerobic - (Co)metabolism

Chlorinated Ethenes (PCE, TCE) Chlorinated Ethenes (PCE, TCE, DCE, VC) sMMO, TOD, PHE, RDEG, RMO DHC, DHBt, DSB, DSM, PCE-1, PCE-2 Chlorinated Ethenes (TCE,DCE,VC) DHC, BVC, VCR (Co)metabolic Vinyl Chloride etnC, etnE TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes VC)

Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR DCA)

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt<sup>2</sup>, DECO Chlorinated Phenols DHC, DSB Chlorinated Propanes DHC, DHG, DSB1

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



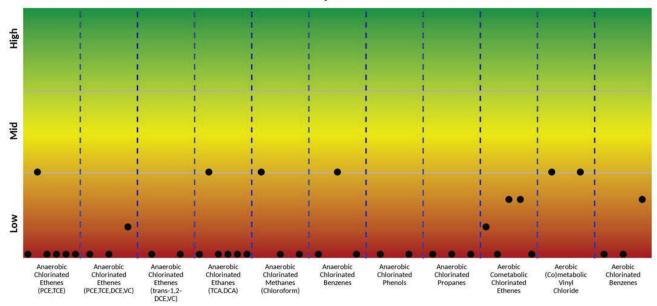


Figure 11: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlor	rination or Dichloroelimination	Aerobic - (Co	o)metabolism
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE,	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
VC)		·	

Chlorinated Ethenes (trans-1,2-DCE, TDR, CER Chlorinated Benzenes TOD, TCBO, PHE VC)

Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG, DSB<sup>1</sup>, DCA, DCA)

Chlorinated Methanes (Chloroform)
Chlorinated Benzenes
Chlorinated Phenols
Chlorinated Propanes
DHC, DHBt², DECO
DHC, DSB
DHC, DHG, DSB¹
DHC, DHG, DSB¹

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



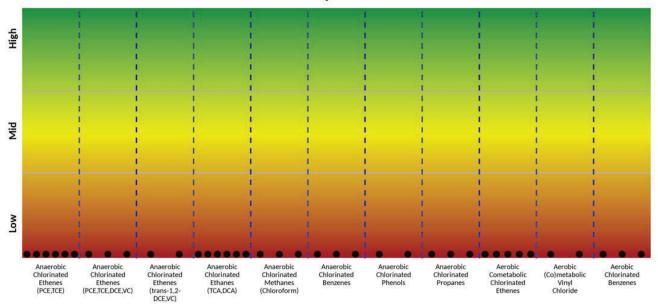


Figure 12: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Chlorinated Benzenes

Anaerobic - Reductive Dechlorination or Dichloroelimination

Chlorinated Ethenes (PCE, TCE)
Chlorinated Ethenes (PCE, TCE, DCE, DHC, DHBt, DSB, DSM, PCE-1, PCE-2
Chlorinated Ethenes (PCE, TCE, DCE, DHC, BVC, VCR
Chlorinated Ethenes (PCE, TCE, DCE, DHC, BVC, VCR
Co)metabolic Vinyl Chloride

Aerobic - (Co)metabolism

sMMO, TOD, PHE, RDEG, RMO
(Co)metabolic Vinyl Chloride
ethC, ethE

Chlorinated Ethenes (trans-1,2-DCE, TDR, CER VC)

DHC, DHBt, DHG, DSB<sup>1</sup>, DCA, DCAR

DCA) DCA

Chlorinated Ethanes (TCA and 1,2-

Chlorinated Methanes (Chloroform)
Chlorinated Benzenes
Chlorinated Phenols
Chlorinated Propanes

DHBt, DCM, CFR
DHC, DHBt², DECO
DHC, DSB
DHC, DHG, DSB¹

10515 Research Drive Knoxville, TN 37932 Phone: 865.573.8188 Fax: 865.573.8133 Web: www.microbe.com

TOD, TCBO, PHE

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



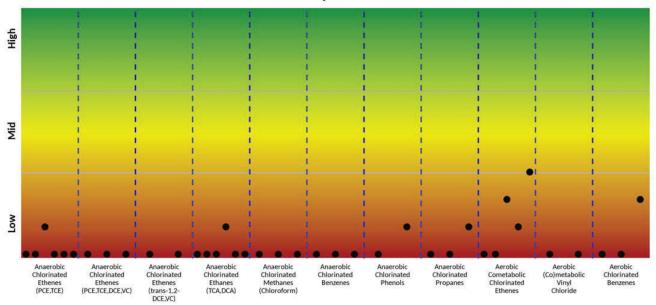


Figure 13: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination Aerobic - (Co)metabolism sMMO, TOD, PHE, RDEG, RMO DHC, DHBt, DSB, DSM, PCE-1, PCE-2 Chlorinated Ethenes (TCE,DCE,VC)

Chlorinated Ethenes (PCE, TCE) Chlorinated Ethenes (PCE, TCE, DCE, VC) DHC, BVC, VCR (Co)metabolic Vinyl Chloride etnC, etnE TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes

VC) Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR

DCA)

Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt<sup>2</sup>, DECO Chlorinated Phenols DHC, DSB Chlorinated Propanes DHC, DHG, DSB1

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



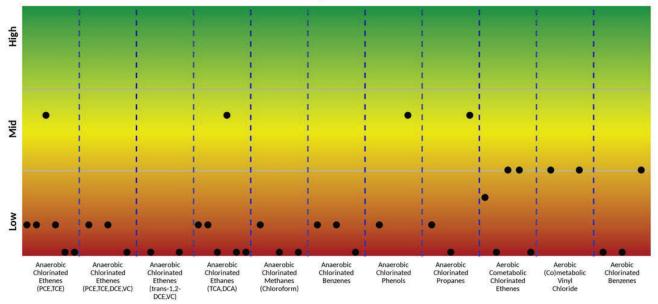


Figure 14: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination

Chlorinated Ethenes (PCE, TCE)
Chlorinated Ethenes (PCE, TCE, DCE, DHC, DHBt, DSB, DSM, PCE-1, PCE-2
Chlorinated Ethenes (PCE, TCE, DCE, DHC, BVC, VCR
Chlorinated Ethenes (PCE, TCE, DCE, DHC, BVC, VCR
Co)metabolic Vinyl Chloride

Aerobic - (Co)metabolism

sMMO, TOD, PHE, RDEG, RMO
(Co)metabolic Vinyl Chloride
ethC, ethE

Chlorinated Ethenes (trans-1,2-DCE, TDR, CER Chlorinated Benzenes TOD, TCBO, PHE VC)

Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG, DSB<sup>1</sup>, DCA, DCA)

Chlorinated Methanes (Chloroform)

Chlorinated Benzenes

Chlorinated Phenols

Chlorinated Propanes

Chlorinated Propanes

DHC, DHBt, DCM, CFR

DHC, DHBt<sup>2</sup>, DECO

DHC, DSB

DHC, DHG, DSB<sup>1</sup>

Fax: 865.5/3.8133 Web: www.microbe.com

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



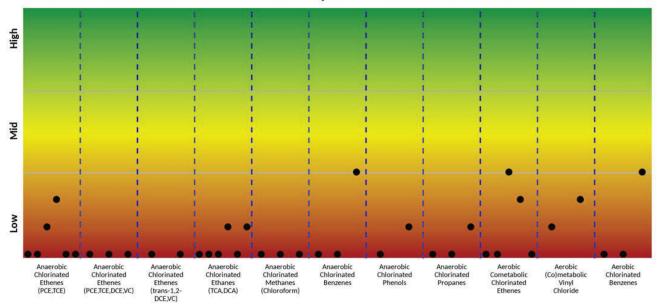


Figure 15: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination Aerobic - (Co)metabolism

Chlorinated Ethenes (PCE, TCE) Chlorinated Ethenes (PCE, TCE, DCE, VC) sMMO, TOD, PHE, RDEG, RMO DHC, DHBt, DSB, DSM, PCE-1, PCE-2 Chlorinated Ethenes (TCE,DCE,VC) DHC, BVC, VCR (Co)metabolic Vinyl Chloride etnC, etnE TDR, CER TOD, TCBO, PHE Chlorinated Ethenes (trans-1,2-DCE, Chlorinated Benzenes VC) Chlorinated Ethanes (TCA and 1,2-DHC, DHBt, DHG,  $DSB^1$ , DCA, DCAR DCA) Chlorinated Methanes (Chloroform) DHBt, DCM, CFR Chlorinated Benzenes DHC, DHBt<sup>2</sup>, DECO Chlorinated Phenols DHC, DSB

DHC, DHG, DSB1

Chlorinated Propanes

<sup>&</sup>lt;sup>1</sup>Desulfitobacterium dichloroeliminans DCA1. <sup>2</sup>Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.



Table 4: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples MW-6i, MW-5, MW-6, MW-9, and MW-22.

Sample Name Sample Date	MW-6i 02/24/2022	MW-5 02/24/2022	MW-6 02/24/2022	MW-9 02/24/2022	MW-22 02/24/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Dehalococcoides (DHC)	2.00E-01	5.00E-01	6.50E+00	<2.40E+00	<5.00E-01
tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<2.40E+00	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	<2.40E+00	<5.00E-01
Vinyl Chloride Reductase (VCR)	<5.00E-01	<5.00E-01	<5.00E-01	< 2.40E + 00	<5.00E-01
Dehalobacter spp. (DHBt)	5.25E+03	<4.90E+00	2.00E+02	<2.38E+01	1.10E+02
Dehalobacter DCM (DCM)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Dehalogenimonas spp. (DHG)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00
Desulfitobacterium spp. (DSB)	6.41E+03	1.38E+01	4.47E+03	<2.38E+01	5.46E+02
Dehalobium chlorocoercia (DECO)	8.33E+02	3.84E+02	2.47E+03	<2.38E+01	3.88E+01
Desulfuromonas spp. (DSM)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00

# Microbial Populations - Reductive Dechlorination

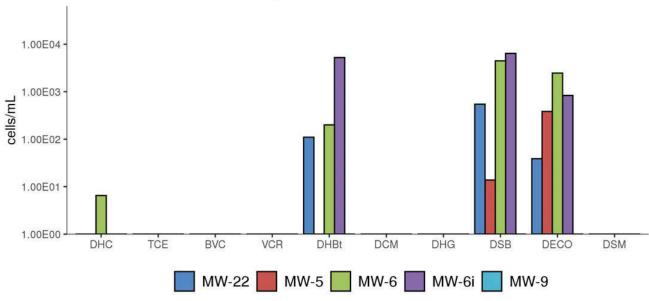


Figure 16: Comparison - microbial populations involved in reductive dechlorination.



Table 5: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples MW-6i, MW-5, MW-6, MW-9, and MW-22.

Sample Name Sample Date	MW-6i 02/24/2022	MW-5 02/24/2022	MW-6 02/24/2022	MW-9 02/24/2022	MW-22 02/24/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Chloroform Reductase (CFR)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00
1,1 DCA Reductase (DCA)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
1,2 DCA Reductase (DCAR)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00
PCE Reductase (PCE-1)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
PCE Reductase (PCE-2)	<4.80E+00	<4.90E+00	< 4.80E + 00	<2.38E+01	<4.90E+00
Dehalogenimonas trans-1,2-DCE Reductase (TDR)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00
Dehalogenimonas cerA Reductase (CER)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00

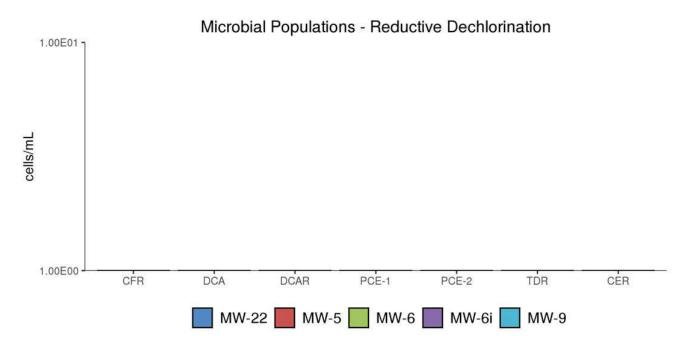


Figure 17: Comparison - microbial populations involved in reductive dechlorination.



Table 6: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples TMW-24, TMW-21, TMW-22, MW-7i, and MW-7.

Sample Name Sample Date	TMW-24 02/28/2022	TMW-21 02/28/2022	TMW-22 02/28/2022	MW-7i 03/03/2022	MW-7 03/03/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Dehalococcoides (DHC)	<5.00E-01	<5.00E-01	7.00E-01	3.70E+00	<5.00E-01
tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Vinyl Chloride Reductase (VCR)	<5.00E-01	<5.00E-01	<5.00E-01	1.00E-01 (J)	<5.00E-01
Dehalobacter spp. (DHBt)	<4.90E+00	9.64E+03	<4.90E+00	<4.50E+00	< 4.80E + 00
Dehalobacter DCM (DCM)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	< 4.80E + 00
Dehalogenimonas spp. (DHG)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Desulfitobacterium spp. (DSB)	<4.90E+00	1.14E+04	<4.90E+00	<4.50E+00	< 4.80E + 00
Dehalobium chlorocoercia (DECO)	<4.90E+00	2.46E+02	<4.90E+00	<4.50E+00	<4.80E+00
Desulfuromonas spp. (DSM)	5.20E+00	1.41E+02	<4.90E+00	<4.50E+00	<4.80E+00

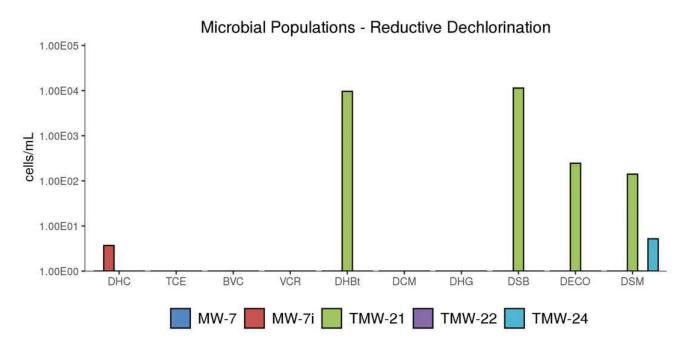


Figure 18: Comparison - microbial populations involved in reductive dechlorination.



Table 7: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples TMW-24, TMW-21, TMW-22, MW-7i, and MW-7.

Sample Name	TMW-24	TMW-21	TMW-22	MW-7i	MW-7
Sample Date	02/28/2022	02/28/2022	02/28/2022	03/03/2022	03/03/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Chloroform Reductase (CFR)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
1,1 DCA Reductase (DCA)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
1,2 DCA Reductase (DCAR)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
PCE Reductase (PCE-1)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
PCE Reductase (PCE-2)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Dehalogenimonas trans-1,2-DCE Reductase (TDR)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Dehalogenimonas cerA Reductase (CER)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00

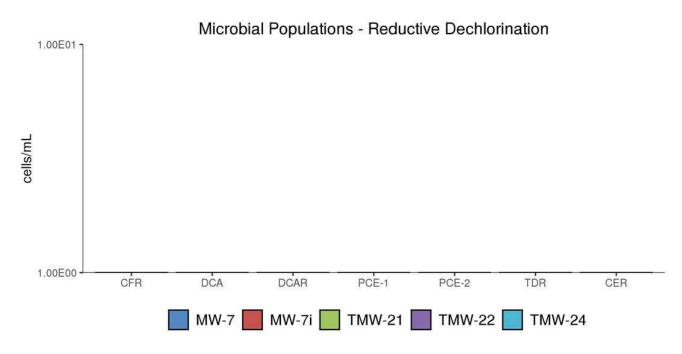


Figure 19: Comparison - microbial populations involved in reductive dechlorination.



Table 8: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples MW-5i, MW-8, MW-9, MW-20i, and MW-6D.

Sample Name	MW-5i	MW-8	MW-9	MW-20i	MW-6D
Sample Date	03/03/2022	03/04/2022	03/04/2022	03/04/2022	03/04/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Dehalococcoides (DHC)	<5.00E-01	<5.00E-01	<5.00E-01	2.10E+00	<5.00E-01
tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	1.00E-01 (J)	<5.00E-01
Vinyl Chloride Reductase (VCR)	2.00E-01 (J)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Dehalobacter spp. (DHBt)	1.11E+03	<5.00E+00	<4.70E+00	6.01E+01	<4.60E+00
Dehalobacter DCM (DCM)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Dehalogenimonas spp. (DHG)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
Desulfitobacterium spp. (DSB)	<4.80E+00	< 5.00E + 00	1.33E+01	1.19E+04	4.58E+01
Dehalobium chlorocoercia (DECO)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	2.58E+02
Desulfuromonas spp. (DSM)	<4.80E+00	< 5.00E + 00	<4.70E+00	5.00E+00	8.04E+01

### Microbial Populations - Reductive Dechlorination 1.00E05 + 1.00E04 -1.00E03 1.00E02 1.00E01 1.00E00 BVC TCE VCR DCM DHG DHBt DECO DSM MW-20i MW-5i MW-6D MW-9

Figure 20: Comparison - microbial populations involved in reductive dechlorination.



Table 9: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples MW-5i, MW-8, MW-9, MW-20i, and MW-6D.

Sample Name Sample Date	MW-5i 03/03/2022	MW-8 03/04/2022	MW-9 03/04/2022	MW-20i 03/04/2022	MW-6D 03/04/2022
Reductive Dechlorination	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Chloroform Reductase (CFR)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
1,1 DCA Reductase (DCA)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
1,2 DCA Reductase (DCAR)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	1.02E+01
PCE Reductase (PCE-1)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
PCE Reductase (PCE-2)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
Dehalogenimonas trans-1,2-DCE Reductase (TDR)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00
Dehalogenimonas cerA Reductase (CER)	<4.80E+00	<5.00E+00	<4.70E+00	<4.90E+00	<4.60E+00

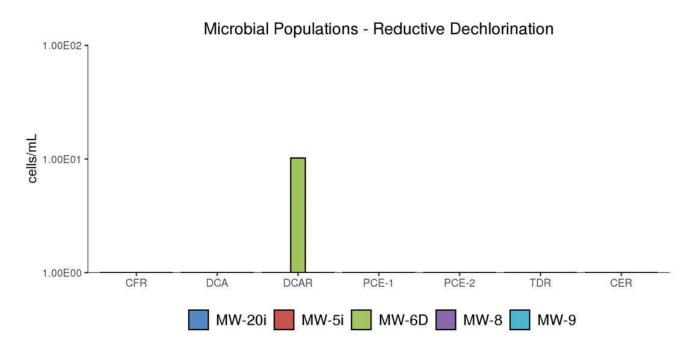


Figure 21: Comparison - microbial populations involved in reductive dechlorination.



Table 10: Summary of the QuantArray®-Chlor results for microorganisms responsible for aerobic (co)metabolism for samples MW-6i, MW-5, MW-6, MW-9, and MW-22.

Sample Name Sample Date	MW-6i 02/24/2022	MW-5 02/24/2022	MW-6 02/24/2022	MW-9 02/24/2022	MW-22 02/24/2022
Aerobic (Co)Metabolic	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Soluble Methane Monooxygenase (SMMO)	<4.80E+00	<4.90E+00	1.39E+02	<2.38E+01	1.24E+02
Toluene Dioxygenase (TOD)	2.24E+01	6.00E+00	2.22E+01	<2.38E+01	<4.90E+00
Phenol Hydroxylase (PHE)	1.50E+02	<4.90E+00	4.55E+01	<2.38E+01	7.74E+01
Trichlorobenzene Dioxygenase (TCBO)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00
Toluene Monooxygenase 2 (RDEG)	2.38E+02	<4.90E+00	2.08E+02	<2.38E+01	4.14E+02
Toluene Monooxygenase (RMO)	5.40E+00	<4.90E+00	3.22E+03	<2.38E+01	<4.90E+00
Ethene Monooxygenase (EtnC)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	2.73E+02
Epoxyalkane Transferase (EtnE)	4.36E+02	<4.90E+00	<4.80E+00	<2.38E+01	1.35E+02
Dichloromethane Dehalogenase (DCMA)	<4.80E+00	<4.90E+00	<4.80E+00	<2.38E+01	<4.90E+00

# Microbial Populations - Aerobic (Co)metabolism

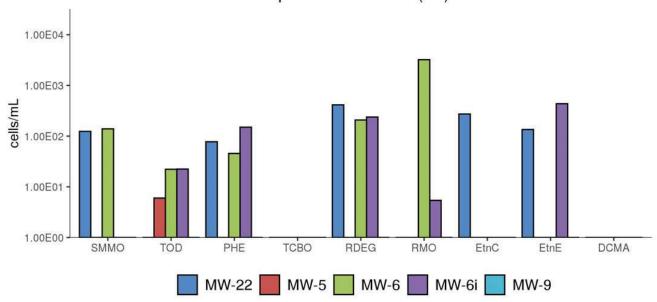


Figure 22: Comparison - microbial populations involved in aerobic (co)metabolism.



Table 11: Summary of the QuantArray®-Chlor results for microorganisms responsible for aerobic (co)metabolism for samples TMW-24, TMW-21, TMW-22, MW-7i, and MW-7.

Sample Name	TMW-24	TMW-21	TMW-22	MW-7i	MW-7
Sample Date	02/28/2022	02/28/2022	02/28/2022	03/03/2022	03/03/2022
Aerobic (Co)Metabolic	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Soluble Methane Monooxygenase (SMMO)	<4.90E+00	3.31E+02	<4.90E+00	<4.50E+00	<4.80E+00
Toluene Dioxygenase (TOD)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	3.00E-01 (J)
Phenol Hydroxylase (PHE)	<4.90E+00	2.76E+03	1.29E+02	<4.50E+00	2.70E+00 (J)
Trichlorobenzene Dioxygenase (TCBO)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Toluene Monooxygenase 2 (RDEG)	<4.90E+00	2.53E+02	1.60E+00 (J)	<4.50E+00	< 4.80E + 00
Toluene Monooxygenase (RMO)	<4.90E+00	<5.20E+00	<4.90E+00	1.79E+02	< 4.80E + 00
Ethene Monooxygenase (EtnC)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00
Epoxyalkane Transferase (EtnE)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	< 4.80E + 00
Dichloromethane Dehalogenase (DCMA)	<4.90E+00	<5.20E+00	<4.90E+00	<4.50E+00	<4.80E+00

# Microbial Populations - Aerobic (Co)metabolism

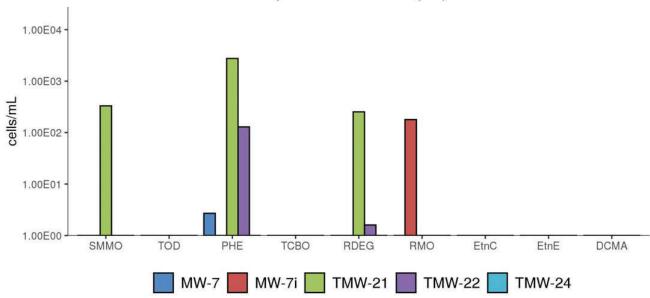


Figure 23: Comparison - microbial populations involved in aerobic (co)metabolism.

28



Table 12: Summary of the QuantArray®-Chlor results for microorganisms responsible for aerobic (co)metabolism for samples MW-5i, MW-8, MW-9 , MW-20i, and MW-6D.

Sample Name	MW-5i	MW-8	MW-9	MW-20i	MW-6D
Sample Date	03/03/2022	03/04/2022	03/04/2022	03/04/2022	03/04/2022
Aerobic (Co)Metabolic	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Soluble Methane Monooxygenase (SMMO)	1.61E+01	<5.00E+00	<4.70E+00	1.32E+02	<4.60E+00
Toluene Dioxygenase (TOD)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Phenol Hydroxylase (PHE)	1.38E+02	< 5.00E + 00	5.28E+02	3.15E+03	2.35E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00
Toluene Monooxygenase 2 (RDEG)	2.38E+02	< 5.00E + 00	3.99E+01	2.45E+03	5.70E+02
Toluene Monooxygenase (RMO)	9.00E+00	< 5.00E + 00	4.43E+03	6.00E+00	5.70E+00
Ethene Monooxygenase (EtnC)	1.61E+03	< 5.00E + 00	<4.70E+00	2.34E+03	4.57E+01
Epoxyalkane Transferase (EtnE)	6.79E+03	< 5.00E + 00	<4.70E+00	5.06E+03	1.69E+02
Dichloromethane Dehalogenase (DCMA)	<4.80E+00	< 5.00E + 00	<4.70E+00	<4.90E+00	<4.60E+00

### Microbial Populations - Aerobic (Co)metabolism 1.00E04 -1.00E03 1.00E03 1.00E01 1.00E00 TOD тсво SMMO PHE RDEG RMO EtnC EtnE DCMA MW-20i MW-5i MW-6D MW-8 MW-9

Figure 24: Comparison - microbial populations involved in aerobic (co)metabolism.



Table 13: Summary of the QuantArray $^{\otimes}$  results for total bacteria and other populations for samples MW-6i, MW-5, MW-6, MW-9, and MW-22.

Sample Name	MW-6i	MW-5	MW-6	MW-9	MW-22
Sample Date	02/24/2022	02/24/2022	02/24/2022	02/24/2022	02/24/2022
Other	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Total Eubacteria (EBAC)	6.07E+04	5.67E+03	8.89E+04	3.80E+01 (I)	1.94E+04
Sulfate Reducing Bacteria (APS)	1.79E+03	4.74E+02	3.89E+04	<2.38E+01	2.25E+03
Methanogens (MGN)	8.73E+01	2.60E+00 (J)	1.41E+03	<2.38E+01	5.00E-01 (J)

# Microbial Populations - Total Bacteria and Other Populations

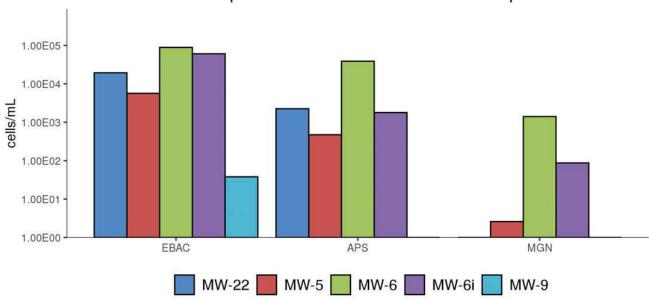


Figure 25: Comparison - microbial populations.



Table 14: Summary of the QuantArray<sup>®</sup> results for total bacteria and other populations for samples TMW-24, TMW-21, TMW-22, MW-7i, and MW-7.

Sample Name	TMW-24	TMW-21	TMW-22	MW-7i	MW-7
Sample Date	02/28/2022	02/28/2022	02/28/2022	03/03/2022	03/03/2022
Other	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Total Eubacteria (EBAC)	5.39E+03	2.40E+06	6.99E+04	2.46E+04	5.85E+03
Sulfate Reducing Bacteria (APS)	<4.90E+00	7.69E+03	3.18E+03	4.89E+02	9.80E+00
Methanogens (MGN)	<4.90E+00	<5.20E+00	<4.90E+00	8.00E-01 (J)	1.40E+00 (J)

# Microbial Populations - Total Bacteria and Other Populations 1.00E071.00E081.00E031.00E011.00

Figure 26: Comparison - microbial populations.



Table 15: Summary of the QuantArray® results for total bacteria and other populations for samples MW-5i, MW-8, MW-9, MW-20i, and MW-6D.

Sample Name	MW-5i	MW-8	MW-9	MW-20i	MW-6D
Sample Date	03/03/2022	03/04/2022	03/04/2022	03/04/2022	03/04/2022
Other	cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Total Eubacteria (EBAC)	1.03E+05	5.73E+02 (I)	3.26E+05	4.78E+05	3.98E+05
Sulfate Reducing Bacteria (APS)	1.20E+03	<5.00E+00	<4.70E+00	1.85E+03	<4.60E+00
Methanogens (MGN)	1.00E+00 (J)	<5.00E+00	1.50E+00 (J)	4.00E-01 (J)	6.00E-01 (J)

# Microbial Populations - Total Bacteria and Other Populations

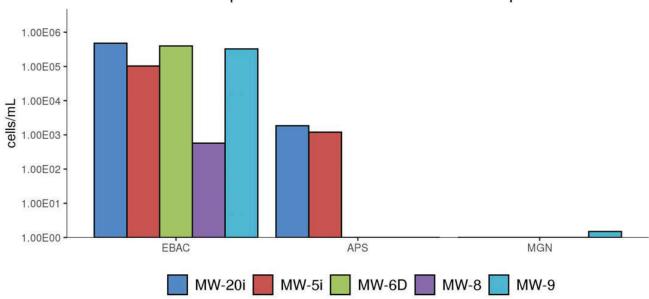


Figure 27: Comparison - microbial populations.



# Interpretation

The overall purpose of the QuantArray®-Chlor is to give site managers the ability to simultaneously yet economically evaluate the potential for biodegradation of a spectrum of common chlorinated contaminants through a multitude of anaerobic and aerobic (co)metabolic pathways in order to provide a clearer and more comprehensive view of contaminant biodegradation. The following discussion describes the interpretation of results in general terms and is meant to serve as a guide.

Reductive Dechlorination - Chlorinated Ethenes: While a number of bacterial cultures including *Dehalococcoides*, *Dehalobacter*, *Desulfitobacterium*, and *Desulfuromonas* spp. capable of utilizing PCE and TCE as growth-supporting electron acceptors have been isolated [1–5], *Dehalococcoides* may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene [6]. In fact, the presence of *Dehalococcoides* has been associated with complete reductive dechlorination to ethene at sites across North America and Europe [7], and Lu et al. [8] have proposed using a *Dehalococcoides* concentration of 1 x 10<sup>4</sup> cells/mL as a screening criterion to identify sites where biological reductive dechlorination is predicted to proceed at "generally useful" rates.

At chlorinated ethene sites, any "stall" leading to the accumulation of daughter products, especially vinyl chloride, would be a substantial concern. While *Dehalococcoides* concentrations greater than  $1 \times 10^4$  cells/mL correspond to ethene production and useful rates of dechlorination, the range of chlorinated ethenes degraded varies by strain within the *Dehalococcoides* genus [6, 9], and the presence of co-contaminants and competitors can have complex impacts on the halorespiring microbial community [10–15]. Therefore, QuantArray®-Chlor also provides quantification of a suite of reductive dehalogenase genes (PCE, TCE, BVC, VCR, CER, and TDR) to more definitively confirm the potential for reductive dechlorination of all chlorinated ethene compounds including vinyl chloride.

Perhaps most importantly, QuantArray®-Chlor quantifies TCE reductase (TCE) and both known vinyl chloride reductase genes (BVC, VCR) from *Dehalococcoides* to conclusively evaluate the potential for complete reductive dechlorination of chlorinated ethenes to nontoxic ethene [16–18]. In addition, the analysis also includes quantification of reductive dehalogenase genes from *Dehalogenimonas* spp. capable of reductive dechlorination of chlorinated ethenes. More specifically, these are the trans-1,2-DCE dehalogenase gene (TDR) from strain WBC-2 [19] and the vinyl chloride reductase gene (CER) from GP, the only known organisms other than *Dehalococcoides* capable of vinyl chloride reduction [20]. Finally, PCE reductase genes responsible for sequential reductive dechlorination of PCE to *cis*-DCE by *Sulfurospirillum* and *Geobacter* spp. are also quantified. In mixed cultures, evidence increasingly suggests that partial dechlorinators like *Sulfurospirillum* and *Geobacter* may be responsible for the majority of reductive dechlorination of PCE to TCE and *cis*-DCE while *Dehalococcoides* functions more as *cis*-DCE and vinyl chloride reducing specialists [10, 21].

Reductive Dechlorination - Chlorinated Ethanes: Under anaerobic conditions, chlorinated ethanes are susceptible to reductive dechlorination by several groups of halorespiring bacteria including *Dehalobacter*, *Dehalogenimonas*, and *Dehalococcoides*. While the reported range of chlorinated ethanes utilized varies by genus, species, and sometimes at the strain level, several general observations can be made regarding biodegradation pathways and daughter product formation. *Dehalobacter* spp. have been isolated that are capable of sequential reductive dechlorination of 1,1,1-TCA through 1,1-DCA to chloroethane [13]. Biodegradation of 1,1,2-TCA by several halorespiring bacteria including *Dehalobacter* and *Dehalogenimonas* spp. proceeds via dichloroelimination producing vinyl chloride [22–24]. Similarly, 1,2-DCA biodegradation by *Dehalobacter*, *Dehalogenimonas*, and *Dehalococcoides* occurs via dichloroelimination producing ethene. While not utilized by many *Desulfitobacterium* isolates, at least one strain, *Desulfitobacterium dichloroeliminans* strain DCA1, is also capable of dichloroelimination of 1,2-DCA [25]. The 1,2-dichloroethane reductive dehalogenase gene (DCAR) from members of *Desulfitobacterium* and *Dehalobacter* is known to dechlorinate 1,2-DCA to ethene, while the 1,1-dichloroethane reductive dehalogenase (DCA) targets the gene responsible for 1,1-DCA dechlorination in some strains of *Dehalobacter*. In addition to chloroform, chloroform reductase (CFR) has also been shown to be responsible for reductive dechlorination of 1,1,1-TCA [26].

Reductive Dechlorination - Chlorinated Methanes: Chloroform is a common co-contaminant at chlorinated solvent sites and can inhibit reductive dechlorination of chlorinated ethenes. Grostern et al. demonstrated that a *Dehalobacter* population was capable of reductive dechlorination of chloroform to produce dichloromethane [27]. The *cfrA* gene encodes the reductase which catalyzes this initial step in chloroform biodegradation [26]. Justicia-Leon et al. have since shown that dichloromethane can support growth of a distinct group of *Dehalobacter* strains via fermentation [28]. The *Dehalobacter* DCM assay targets the 16S rRNA gene of these strains.

Reductive Dechlorination - Chlorinated Benzenes: Chlorinated benzenes are an important class of industrial solvents and chemical intermediates in the production of drugs, dyes, herbicides, and insecticides. The physical-chemical properties of chlorinated benzenes as well as susceptibility to biodegradation are functions of their degree of chlorination and the positions of chlorine substituents. Under anaerobic conditions, reductive dechlorination of higher chlorinated benzenes including hexachlorobenzene (HCB),



pentachlorobenzene (PeCB), tetrachlorobenzene (TeCB) isomers, and trichlorobenzene (TCB) isomers has been well documented [29], although biodegradation of individual compounds and isomers varies between isolates. For example, *Dehalococcoides* strain CBDB1 reductively dechlorinats HCB, PeCB, all three TeCB isomers, 1,2,3-TCB, and 1,2,4-TCB [9, 30]. *Dehalobium chlorocoercia* DF-1 has been shown to be capable of reductive dechlorination of HCB, PeCB, and 1,2,3,5-TeCB [31]. The dichlorobenzene (DCB) isomers and chlorobenzene (CB) were considered relatively recalcitrant under anaerobic conditions. However, new evidence has demonstrated reductive dechlorination of DCBs to CB and CB to benzene [32] with corresponding increases in concentrations of *Dehalobacter* spp. [33].

Reductive Dechlorination - Chlorinated Phenols: Pentachlorophenol (PCP) was one of the most widely used biocides in the U.S. and despite residential use restrictions, is still extensively used industrially as a wood preservative. Along with PCP, the tetrachlorophenol and trichlorophenol isomers were also used as fungicides in wood preserving formulations. 2,4-Dichlorophenol and 2,4,5-TCP were used as chemical intermediates in herbicide production (e.g. 2,4-D) and chlorophenols are known byproducts of chlorine bleaching in the pulp and paper industry. While the range of compounds utilized varies by strain, some *Dehalococcoides* isolates are capable of reductive dechlorination of PCP and other chlorinated phenols. For example, *Dehalococcoides* strain CBDB1 is capable of utilizing PCP, all three tetrachlorophenol (TeCP) congeners, all six trichlorophenol (TCP) congeners, and 2,3-dichlorophenol (2,3-DCP). PCP dechlorination by strain CBDB1 produces a mixture of 3,5-DCP, 3,4-DCP, 2,4-DCP, 3-CP, and 4-CP [34]. In the same study, however, *Dehalococcoides* strain 195 dechlorinated a more narrow spectrum of chlorophenols which included 2,3-DCP, 2,3,4-TCP, and 2,3,6-TCP, but no other TCPs or PCP. Similar to *Dehalococcoides*, some species and strains of *Desulfitobacterium* are capable of utilizing PCP and other chlorinated phenols. *Desulfitobacterium hafniense* PCP-1 is capable of reductive dechlorination of PCP to 3-CP [35]. However, the ability to biodegrade PCP is not universal among *Desulfitobacterium* isolates. *Desulfitobacterium* sp. strain PCE1 and *D. chlororespirans* strain Co23, for example, can utilize some TCP and DCP isomers, but not PCP for growth [2, 36].

Reductive Dechlorination - Chlorinated Propanes: Dehalogenimonas is a recently described bacterial genus of the phylum Chloroflexi which also includes the well-known chloroethene-respiring Dehalococcoides [23]. The Dehalogenimonas isolates characterized to date are also halorespiring bacteria, but utilize a rather unique range of chlorinated compounds as electron acceptors including chlorinated propanes (1,2,3-TCP and 1,2-DCP) and a variety of other vicinally chlorinated alkanes including 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, and 1,2-dichloroethane [23].

Aerobic - Chlorinated Ethene Cometabolism: Under aerobic conditions, several different types of bacteria including methane-oxidizing bacteria (methanotrophs), and many benzene, toluene, ethylbenzene, xylene, and (BTEX)-utilizing bacteria can cometabolize or co-oxidize TCE, DCE, and vinyl chloride [37]. In general, cometabolism of chlorinated ethenes is mediated by monooxygenase enzymes with "relaxed' specificity that oxidize a primary (growth supporting) substrate (e.g. methane) and co-oxidize the chlorinated compound (e.g.TCE). QuantArray®-Chlor provides quantification of a suite of genes encoding oxygenase enzymes capable of co-oxidation of chlorinated ethenes including soluble methane monooxygenase (sMMO). Soluble methane monooxygenases co-oxidize a broad range of chlorinated compounds [38–41] including TCE, cis-DCE, and vinyl chloride. Furthermore, soluble methane monooxygenases are generally believed to support greater rates of aerobic cometabolism [40]. QuantArray®-Chlor also quantifies aromatic oxygenase genes encoding ring hydroxylating toluene monooxygenase genes (RMO, RDEG), toluene dioxygenase (TOD) and phenol hydroxylases (PHE) capable of TCE co-oxidation [42–46]. TCE or a degradation product has been shown to induce expression of toluene monooxygenases in some laboratory studies [43, 47] raising the possibility of TCE cometabolism with an alternative (non-aromatic) growth substrate. Moreover, while a number of additional factors must be considered, recent research under ESTCP Project 201584 has shown positive correlations between concentrations of monooxygenase genes (soluble methane monooxygenase, ring hydroxylating monooxygenases, and phenol hydroxylase) and the rate of TCE degradation [48].

Aerobic - Chlorinated Ethane Cometabolism: While less widely studied than cometabolism of chlorinated ethenes, some chlorinated ethanes are also susceptible to co-oxidation. As mentioned previously, soluble methane monooxygenases (sMMO) exhibit very relaxed specificity. In laboratory studies, sMMO has been shown to co-oxidize a number of chlorinated ethanes including 1,1,1-TCA and 1,2-DCA [38, 40].

Aerobic - Vinyl Chloride Cometabolism: Beginning in the early 1990s, numerous microcosm studies demonstrated aerobic oxidation of vinyl chloride under MNA conditions without the addition of exogenous primary substrates. Since then, strains of



Mycobacterium, Nocardioides, Pseudomonas, Ochrobactrum, and Ralstonia species have been isolated which are capable of aerobic growth on both ethene and vinyl chloride (see Mattes et al. [49] for a review). The initial steps in the pathway are the monooxygenase (etnABCD) catalyzed conversion of ethene and vinyl chloride to their respective epoxyalkanes (epoxyethane and chlorooxirane), followed by epoxyalkane:CoM transferase (etnE) mediated conjugation and breaking of the epoxide [50].

Aerobic - Chlorinated Benzenes: In general, chlorobenzenes with four or less chlorine groups are susceptible to aerobic biodegradation and can serve as growth-supporting substrates. Toluene dioxygenase (TOD) has a relatively relaxed substrate specificity and mediates the incorporation of both atoms of oxygen into the aromatic ring of benzene and substituted benzenes (toluene and chlorobenzene). Comparison of TOD levels in background and source zone samples from a CB-impacted site suggested that CBs promoted growth of TOD-containing bacteria [51]. In addition, aerobic biodegradation of some trichlorobenzene and even tetrachlorobenzene isomers is initiated by a group of related trichlorobenzene dioxygenase genes (TCBO). Finally, phenol hydroxylases catalyze the continued oxidation and in some cases, the initial oxidation of a variety of monoaromatic compounds. In an independent study, significant increases in numbers of bacteria containing PHE genes corresponded to increases in biodegradation of DCB isomers [51].

Aerobic - Chlorinated Methanes: Many aerobic methylotrophic bacteria, belonging to diverse genera (*Hyphomicrobium, Methylobacterium, Methylophilus, Pseudomonas, Paracoccus*, and *Alibacter*) have been isolated which are capable of utilizing dichloromethane (DCM) as a growth substrate. The DCM metabolic pathway in methylotrophic bacteria is initiated by a dichloromethane dehalogenase (DCMA) gene. DCMA is responsible for aerobic biodegradation of dichloromethane by methylotrophs by first producing formaldehyde which is then further oxidized [52]. As discussed in previous sections, soluble methane monooxygenase (sMMO) exhibits relaxed specificity and co-oxidizes a broad spectrum of chlorinated hydrocarbons. In addition to chlorinated ethenes, sMMO has been shown to co-oxidize chloroform in laboratory studies [38, 41].



# References

- 1. Gerritse, J. et al. Influence of different electron donors and acceptors on dehalorespiration of tetrachloroethene by Desulfitobacterium frappieri TCE1. Applied and Environmental Microbiology 65, 5212–5221 (1999).
- 2. Gerritse, J. *et al. Desulfitobacterium* sp. strain PCE1, an anaerobic bacterium that can grow by reductive dechlorination of tetrachloroethene or ortho-chlorinated phenols. *Archives of Microbiology* **165**, 132–140 (1996).
- 3. Holliger, C., Schraa, G., Stams, A. & Zehnder, A. A highly purified enrichment culture couples the reductive dechlorination of tetrachloroethene to growth. *Applied and Environmental Microbiology* **59**, 2991–2997 (1993).
- 4. Krumholz, L. R., Sharp, R. & Fishbain, S. S. A freshwater anaerobe coupling acetate oxidation to tetrachloroethylene dehalogenation. *Applied and Environmental Microbiology* **62**, 4108–4113 (1996).
- Loffler, F. E., Sanford, R. A. & Tiedje, J. M. Initial Characterization of a Reductive Dehalogenase from Desulfitobacterium chlororespirans Co23. Applied and Environmental Microbiology 62, 3809–3813 (1996).
- Maymó-Gatell, X., Anguish, T. & Zinder, S. H. Reductive dechlorination of chlorinated ethenes and 1, 2dichloroethane by "Dehalococcoides ethenogenes" 195. Applied and Environmental Microbiology 65, 3108–3113 (1999).
- 7. Hendrickson, E. R. *et al.* Molecular analysis of *Dehalococcoides* 16S ribosomal DNA from chloroethene-contaminated sites throughout North America and Europe. *Applied and Environmental Microbiology* **68**, 485–495 (2002).
- 8. Lu, X., Wilson, J. T. & Kampbell, D. H. Relationship between *Dehalococcoides DNA* in ground water and rates of reductive dechlorination at field scale. *Water Research* **40**, 3131–3140 (2006).
- 9. Adrian, L., Szewzyk, U., Wecke, J. & Görisch, H. Bacterial dehalorespiration with chlorinated benzenes. *Nature* **408**, 580–583 (2000).
- Amos, B. K., Suchomel, E. J., Pennell, K. D. & Löffler, F. E. Spatial and temporal distributions of Geobacter lovleyi and Dehalococcoides spp. during bioenhanced PCE-NAPL dissolution. *Environmental Science & Technology* 43, 1977–1985 (2009).
- 11. Duhamel, M. & Edwards, E. A. Growth and yields of dechlorinators, acetogens, and methanogens during reductive dechlorination of chlorinated ethenes and dihaloelimination of 1, 2-dichloroethane. *Environmental Science & Technology* **41**, 2303–2310 (2007).
- 12. Duhamel, M. *et al.* Comparison of anaerobic dechlorinating enrichment cultures maintained on tetrachloroethene, trichloroethene, /textitcis-dichloroethene and vinyl chloride. *Water Research* **36**, 4193–4202 (2002).
- Grostern, A. & Edwards, E. A. A 1, 1, 1-trichloroethane-degrading anaerobic mixed microbial culture enhances biotransformation of mixtures of chlorinated ethenes and ethanes. *Applied and Environmental Microbiology* 72, 7849–7856 (2006).
- 14. Huang, D. & Becker, J. G. Determination of intrinsic monod kinetic parameters for two heterotrophic tetrachloroethene (PCE)-respiring strains and insight into their application. *Biotechnology and Bioengineering* **104**, 301–311 (2009).
- 15. Mayer-Blackwell, K. *et al.* 1, 2-Dichloroethane exposure alters the population structure, metabolism, and kinetics of a trichloroethene-dechlorinating dehalococcoides mccartyi consortium. *Environmental Science & Technology* **50**, 12187–12196 (2016).
- 16. Krajmalnik-Brown, R. *et al.* Genetic identification of a putative vinyl chloride reductase in Dehalococcoides sp. strain BAV1. *Applied and Environmental Microbiology* **70**, 6347–6351 (2004).
- 17. Müller, J. A. *et al.* Molecular identification of the catabolic vinyl chloride reductase from *Dehalococcoides* sp. strain VS and its environmental distribution. *Applied and Environmental Microbiology* **70**, 4880–4888 (2004).
- 18. Ritalahti, K. M. *et al.* Quantitative PCR targeting 16S rRNA and reductive dehalogenase genes simultaneously monitors multiple *Dehalococcoides* strains. *Applied and Environmental Microbiology* **72**, 2765–2774 (2006).



- 19. Molenda, O., Quaile, A. T. & Edwards, E. A. Dehalogenimonas sp. strain WBC-2 genome and identification of its trans-dichloroethene reductive dehalogenase, TdrA. *Applied and Environmental Microbiology* **82**, 40–50 (2016).
- 20. Yang, Y. *et al.* Grape pomace compost harbors organohalide-respiring Dehalogenimonas species with novel reductive dehalogenase genes. *The ISME Journal* **11**, 2767 (2017).
- 21. Maillard, J. *et al.* Reductive dechlorination of tetrachloroethene by a stepwise catalysis of different organohalide respiring bacteria and reductive dehalogenases. *Biodegradation* **22**, 949–960 (2011).
- 22. Grostern, A. & Edwards, E. A. Growth of Dehalobacter and Dehalococcoides spp. during degradation of chlorinated ethanes. *Applied and Environmental Microbiology* **72**, 428–436 (2006).
- 23. Moe, W. M., Yan, J., Nobre, M. F., da Costa, M. S. & Rainey, F. A. *Dehalogenimonas lykanthroporepellens* gen. nov., sp. nov., a reductively dehalogenating bacterium isolated from chlorinated solvent-contaminated groundwater. *International Journal of Systematic and Evolutionary Microbiology* **59**, 2692–2697 (2009).
- 24. Yan, J., Rash, B., Rainey, F. & Moe, W. Isolation of novel bacteria within the Chloroflexi capable of reductive dechlorination of 1, 2, 3-trichloropropane. *Environmental Microbiology* **11**, 833–843 (2009).
- 25. De Wildeman, S., Diekert, G., Van Langenhove, H. & Verstraete, W. Stereoselective microbial dehalorespiration with vicinal dichlorinated alkanes. *Applied and Environmental Microbiology* **69**, 5643–5647 (2003).
- 26. Tang, S. & Edwards, E. A. Identification of *Dehalobacter* reductive dehalogenases that catalyse dechlorination of chloroform, 1,1,1-trichloroethane and 1,1-dichloroethane. *Phil. Trans. R. Soc. B* **368**, 20120318 (2013).
- 27. Grostern, A., Duhamel, M., Dworatzek, S. & Edwards, E. A. Chloroform respiration to dichloromethane by a *Dehalobacter* population. *Environmental Microbiology* **12**, 1053–1060 (2010).
- 28. Justicia-Leon, S. D., Ritalahti, K. M., Mack, E. E. & Löffler, F. E. Dichloromethane fermentation by a *Dehalobacter* sp. in an enrichment culture derived from pristine river sediment. *Applied and Environmental Microbiology* **78**, 1288–1291 (2012).
- 29. Field, J. A. & Sierra-Alvarez, R. Microbial degradation of chlorinated benzenes. Biodegradation 19, 463–480 (2008).
- 30. Jayachandran, G., Görisch, H. & Adrian, L. Dehalorespiration with hexachlorobenzene and pentachlorobenzene by *Dehalococcoides* sp. strain CBDB1. *Archives of Microbiology* **180**, 411–416 (2003).
- 31. Wu, Q. et al. Dechlorination of chlorobenzenes by a culture containing bacterium DF-1, a PCB dechlorinating microorganism. Environmental Science & Technology 36, 3290–3294 (2002).
- 32. Fung, J. M. *et al.* Reductive dehalogenation of dichlorobenzenes and monochlorobenzene to benzene in microcosms. *Environmental Science & Technology* **43**, 2302–2307 (2009).
- 33. Nelson, J. L., Fung, J. M., Cadillo-Quiroz, H., Cheng, X. & Zinder, S. H. A role for *Dehalobacter* spp. in the reductive dehalogenation of dichlorobenzenes and monochlorobenzene. *Environmental Science & Technology* **45**, 6806–6813 (2011).
- 34. Adrian, L., Hansen, S. K., Fung, J. M., Görisch, H. & Zinder, S. H. Growth of *Dehalococcoides* strains with chlorophenols as electron acceptors. *Environmental Science & Technology* **41**, 2318–2323 (2007).
- 35. Bouchard, B. *et al.* Isolation and characterization of *Desulfitobacterium frappieri* sp. nov., an anaerobic bacterium which reductively dechlorinates pentachlorophenol to 3-chlorophenol. *International Journal of Systematic and Evolutionary Microbiology* **46**, 1010–1015 (1996).
- 36. Sanford, R. A., Cole, J. R., Löffler, F. & Tiedje, J. M. Characterization of *Desulfitobacterium chlororespirans* sp. nov., which grows by coupling the oxidation of lactate to the reductive dechlorination of 3-chloro-4-hydroxybenzoate. *Applied and Environmental Microbiology* **62**, 3800–3808 (1996).
- 37. Field, J. & Sierra-Alvarez, R. Biodegradability of chlorinated solvents and related chlorinated aliphatic compounds. *Reviews in Environmental Science and Biotechnology* **3**, 185–254 (2004).



- 38. Chang, H.-L. & Alvarez-Cohen, L. Biodegradation of individual and multiple chlorinated aliphatic hydrocarbons by methane-oxidizing cultures. *Applied and Environmental Microbiology* **62**, 3371–3377 (1996).
- 39. Colby, J., Stirling, D. I. & Dalton, H. The soluble methane mono-oxygenase of Methylococcus capsulatus (Bath). Its ability to oxygenate n-alkanes, n-alkenes, ethers, and alicyclic, aromatic and heterocyclic compounds. *Biochemical Journal* **165**, 395–402 (1977).
- 40. Oldenhuis, R., Oedzes, J. Y., Van der Waarde, J. & Janssen, D. B. Kinetics of chlorinated hydrocarbon degradation by Methylosinus trichosporium OB3b and toxicity of trichloroethylene. *Applied and Environmental Microbiology* **57**, 7–14 (1991).
- 41. Van Hylckama, V. J., De Koning, W. & Janssen, D. B. Transformation kinetics of chlorinated ethenes by Methylosinus trichosporium OB3b and detection of unstable epoxides by on-line gas chromatography. *Applied and Environmental Microbiology* **62**, 3304–3312 (1996).
- 42. Futamata, H., Harayama, S. & Watanabe, K. Group-specific monitoring of phenol hydroxylase genes for a functional assessment of phenol-stimulated trichloroethylene bioremediation. *Applied and Environmental Microbiology* **67**, 4671–4677 (2001).
- 43. McClay, K., Streger, S. H. & Steffan, R. J. Induction of toluene oxidation activity in Pseudomonas mendocina KR1 and Pseudomonas sp. strain ENVPC5 by chlorinated solvents and alkanes. *Applied and Environmental Microbiology* **61,** 3479–3481 (1995).
- 44. Newman, L. M. & Wackett, L. P. Trichloroethylene oxidation by purified toluene 2-monooxygenase: products, kinetics, and turnover-dependent inactivation. *Journal of Bacteriology* **179**, 90–96 (1997).
- 45. Byrne, A. M. & Olsen, R. H. Cascade regulation of the toluene-3-monooxygenase operon (tbuA1UBVA2C) of *Burkholderia pickettii* PKO1: role of the tbuA1 promoter (PtbuA1) in the expression of its cognate activator, TbuT. *Journal of Bacteriology* **178**, 6327–6337 (1996).
- 46. Wackett, L. P. & Gibson, D. T. Degradation of trichloroethylene by toluene dioxygenase in whole-cell studies with Pseudomonas putida F1. *Applied and Environmental Microbiology* **54**, 1703–1708 (1988).
- 47. Leahy, J. G., Byrne, A. M. & Olsen, R. H. Comparison of factors influencing trichloroethylene degradation by toluene-oxidizing bacteria. *Applied and Environmental Microbiology* **62**, 825–833 (1996).
- 48. Wiedemeier, T. H., Wilson, J. T., Freedman, D. L. & Lee, B. *Providing Additional Support for MNA by Including Quantitative Lines of Evidence for Abiotic Degradation and Co-metabolic Oxidation of Chlorinated Ethylenes* tech. rep. (TH Wiedemeier and Associates, Inc. Sedalia United States, 2017).
- 49. Mattes, T. E., Alexander, A. K. & Coleman, N. V. Aerobic biodegradation of the chloroethenes: pathways, enzymes, ecology, and evolution. *FEMS Microbiology Reviews* **34**, 445–475 (2010).
- 50. Coleman, N. V. & Spain, J. C. Epoxyalkane: coenzyme M transferase in the ethene and vinyl chloride biodegradation pathways of *Mycobacterium* strain JS60. *Journal of Bacteriology* **185**, 5536–5545 (2003).
- 51. Dominguez, R. F. *et al.* Aerobic bioremediation of chlorobenzene source-zone soil in flow-through columns: performance assessment using quantitative PCR. *Biodegradation* **19**, 545–553 (2008).
- 52. La Roche, S. D. & Leisinger, T. Sequence analysis and expression of the bacterial dichloromethane dehalogenase structural gene, a member of the glutathione S-transferase supergene family. *Journal of Bacteriology* **172**, 164–171 (1990).



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133





Client: Scott Ross Phone: 803-201-9662

AECOM

101 Research Dr

Columbia, SC 29203

Fax:

Client Project #: 60635197 Client Project Name: Signify North America

Purchase Order #: 137415

Test results provided for: CENSUS

Charles Slater

Reviewed By:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

### MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932

Tel. (865) 573-8188 Fax. (865) 573-8133

Client: **AECOM** 

098TL MI Project Number: Project: Signify North America 12/20/2022 Date Received:

### Sample Information

			·		
Client Sample ID:		MW-10	ERD-OBSW-1S	MW-10I	ERD-OBSW-1I
Sample Date:		12/19/2022	12/19/2022	12/19/2022	12/19/2022
Units:		cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		OR/CS	OR/CS	OR/CS	OR/CS
chlorinating Bacteria  Dehalococcoides	DHC	<1.40E+00	<5.00E-01	<7.00E-01	<7.70E+00
tceA Reductase	TCE	<1.40E+00	<5.00E-01	<7.00E-01	<7.70E+00
BAV1 Vinyl Chloride Reductase	BVC	<1.40E+00	<5.00E-01	<7.00E-01	<7.70E+00
Vinyl Chloride Reductase	VCR	<1.40E+00	<5.00E-01	<7.00E-01	<7.70E+00
Dehalobacter spp.	DHBt	<1.43E+01	1.17E+04	1.24E+03	<7.69E+01

### Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited

**CENSUS** 

< = Result not detected

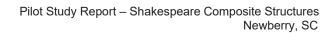
#### **Quality Assurance/Quality Control Data**

Samples Received	12/20/2022
------------------	------------

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	12/20/2022	12/29/2022	0 °C	93%	non-detect	non-detect
DHC	12/20/2022	12/29/2022	0 °C	107%	non-detect	non-detect
TCE	12/20/2022	12/29/2022	0 °C	96%	non-detect	non-detect
VCR	12/20/2022	12/29/2022	0 °C	99%	non-detect	non-detect
DHBt	12/20/2022	12/29/2022	0 °C	106%	non-detect	non-detect

						☐ Historical Interpretive (35%)			Other:			_	-	-			$\perp$	
\$						ive (			*(Expression Option)*			_	+	-			+	
7						pret			(Toluene/Xylene-Anserobic)	_		_	+	-			+	
51.0						Inter			ASSA				_				$\perp$	
2.					low	rical			(Napthalene-aerobic)				_	-	-			
6					o fol	listo			PHE (Phenol Hydroxylase)									
crobialinsights	Dr	707	E	ne:	<ul><li>☐ More samples to follow</li><li>☐ No Additional Samples</li></ul>				RDEG (Toluene Monooxygenase)									
5	10515 Research Dr	865-573-8188	www.microbe.com	Please Check One:	samp	(9			RMO (Toluene Monooxygenase)									
No.	5 Res	865-573-8188	micro	e Che	Nore No Ac	☐ Comprehensive Interpretive(15%)			PM1 (MTBE aerobic)									
E	1051	865-E	www.	Pleas		retive		0	(ammonia oxidizing bacteria)									
ovide						terp		gen	DNF (Dentriflers-nirS and nirK)									
be pre					2 10	le In		sm/	OWWS									
ation						ensiv	_	jani	(Rethanotopha) (ROM									
nform						rehe	e.con	torg	MGN (Methanogens)				$\Box$		1			-1
at all i						omp	icrob	rge	(Sulfate Reducing Bacteria-APS)									120/12
ve th						О	e@m	le ta	EBAC (Total) ARR				$\vdash$	+	+	$\vdash$	+	0
perati							ervio	ct th	DSB (Desulfitobacterium)				H		+		+	67
INVOICE TO: (For invoices paid by a third party it is imperative that all information be provided)  Name:  Company:							am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com	CENSUS: Please select the target organism/gene	MSG (Desulfuromonas)							-		5
party						☐ Microbial Insights Level IV (25% surcharge)	custo	3Se	Mark to the second second	-				_	+		+	Date
third						% sure	mail:	Plea	DHG (Dehalogenimonas)	1	X	×	X	+	+	$\vdash$	+-	Ö_
paid by a th						V (25%	urs el	US:	(bvc, tce, vcr) DHBt (Dehalobacter)	10		<u></u>		_	+		+	T
s paid						Shell	er ho	INSI	DHC Functional genes	1	^	人	X		_	$\vdash$		3
voices		+				hts Le	, Aft	3	DHC (Dehalococcoides)	X	X	×	X	_	-		4	L
For In				o.		Insigl	M-F		QuantArray BGC	-					-			3
				Purchase Order No.	9	obial	EST,	(0)	GIZEN VSZD	-					-			.;.
E TC				Ord	Subcontract No.	Micro	b md	Analyses	QuantArray Petro	-								Received by:
OIC e: pany	Address:			hase	Subcontract MI Quote No.		5:00	ınalı	QuantArray Chlor						-			ecei
INVOICE Name: Company:	Addr	email:	Fax:	Purc	Subc	arge)	am to		NGS									œ
						surch	(9:00		ATJ9									
		<				☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights ☐ All other available FDDs (15% surcharge)	Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00		Potal Number of Containers	-	_	_	-					1
		COM	11			aw da	5) 573			L	1-	1-	1-	+	+		+	1
	m	2					at (869		xintsM	13	3	3	3					12-18-25
	12	1 5				s Lev	00			0	0	0	10	$\neg$				2
	20	AE com				sight	, the C		Time Sampled	1130	250	0141	1515					
	12	AFE				oial In	g out				_	-	-		_			Date
V	7 7			5		Standard (default)   Microbial Ins	. filling	=	Date Sampled	12-19-21	10:1							
12055	ZV	120550		12055			ses or	natio	holamo2 oto0	12	-		D					
2	10 +	30		N	110	4	nalys	orm					H		T	$\vdash$		
	UMB LA	200		1-	25	iult)	the a	Sample Information	Ф		V		TI-					1
13	12/2	7-1		TISON THE	69	(defa	about	ldm	Nam		1	H	3					1,3
AE CON	000	Sco. 1	3	10	500	dard	ons	Sa	Sample Name	0	BSL	01	Sie					L'Sac /
VIST	75	80.00		V		Stand	quest		Sar	- 5	0-6	5	A					100 M
						Standard (default)	any			MU-10	ER-0854-1	Mus-101	দিয়ে তাইজে-					K
				Ľ			s with		May he delegated as	-	7	6	7					6
0				nage	:: me:	 	act us		D Ise On	1					1			ed by
REPORT TO: Name: Company:	SS	%		ot Ma	ct Na	rt Typ	cont		MIID (Laboratory Use Only)	18								uishe
REPORT Name: Company:	Address:	email: Phone:	Fax:	Project Manager:	Project Name: Project No.:	Report Type:	Jease		(Labo	60								Relinquished by:
		COURT (CALL)			Control Control				The state of the s	-	_					L	ALC: UNKNOWN	

\*\*Saturday delivery: See sampling protocol for alternate shipping address. Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable. It is vital that chain of custody is filled out confectly & that all relative information is provided.



#### **Attachment G**

Laboratory Reports of Analysis and Chain-of-Custody Records for VOCs and Other Parameters



### **Report of Analysis**

#### **AECOM**

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Shakespeare - Signify

Project Number: 60635197

Lot Number: WH20094

Date Completed:09/07/2021 Revision Date: 09/14/2021

09/14/2021 10:01 AM
Approved and released by:

Harrah K Lucas

Project Manager I: Hannah K. Lucas





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

### PACE ANALYTICAL SERVICES, LLC

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

# Case Narrative AECOM Lot Number: WH20094

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

This report supersedes and replaces any prior reports issued under this lot number. The volatiles list was updated per client request.

GC/MS Volatiles: No issues

Dissolve Gases: No issues

Metals: No issues

#### **Inorganic Non-metals:**

- Nitrate was detected in the method blank just above the detection limit. Associated results are qualified "B".
- Recoveries of several anions were below limits in the matrix spike/matrix spike duplicate performed on sample WH20094-004. As all relative percent differences were within limits, this is attributed to the sample matrix. Associated results are qualified "S".

## PACE ANALYTICAL SERVICES, LLC

## Sample Summary AECOM

Lot Number: WH20094

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-2	Aqueous	08/19/2021 1630	08/20/2021
002	TMW-31	Aqueous	08/20/2021 0950	08/20/2021
003	TMW-29	Aqueous	08/20/2021 1040	08/20/2021
004	MW-10I	Aqueous	08/20/2021 1145	08/20/2021
005	ERD-OBSW-1I	Aqueous	08/20/2021 1235	08/20/2021
006	MW-10	Aqueous	08/20/2021 1355	08/20/2021
007	MW-10-DUP	Aqueous	08/20/2021 1355	08/20/2021
800	ERD-OBSW-1S	Aqueous	08/20/2021 1500	08/20/2021
009	ISCO-OBWS-1S	Aqueous	08/20/2021 1620	08/20/2021

(9 samples)

## PACE ANALYTICAL SERVICES, LLC

## Detection Summary AECOM

Lot Number: WH20094

Sampl	le Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-2	Aqueous		300.0	2.3		mg/L	8
001	MW-2		Nitrate - N	300.0	0.078	В	mg/L	8
001	MW-2	·	Dissolved Iron	6010D	0.050	J	mg/L	12
002	TMW-31	Aqueous		300.0	6.1		mg/L	14
002	TMW-31	Aqueous		SM 2540C-	41		mg/L	14
002	TMW-31	·	cis-1,2-Dichloroethene	8260D	8.5		ug/L	15
002	TMW-31	•	Trichloroethene	8260D	920		ug/L	16
003	TMW-29	Aqueous		300.0	3.1		mg/L	17
003	TMW-29	Aqueous		8260D	24		ug/L	18
003	TMW-29	Aqueous	Styrene	8260D	50		ug/L	18
003	TMW-29	•	Trichloroethene	8260D	12		ug/L	19
004	MW-10I	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	24		mg CaCO3/L	20
004	MW-10I	Aqueous	Bicarbonate Alkalinity	SM 2320B-	24		mg/L	20
004	MW-10I	Aqueous	Chloride	300.0	9.2	S	mg/L	20
004	MW-10I	Aqueous	Nitrate - N	300.0	1.1	BS	mg/L	20
004	MW-10I	Aqueous	Trichloroethene	8260D	870		ug/L	22
005	ERD-OBSW-1I	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	24		mg CaCO3/L	26
005	ERD-OBSW-1I	Aqueous	Bicarbonate Alkalinity	SM 2320B-	24		mg/L	26
005	ERD-OBSW-1I	Aqueous	Chloride	300.0	8.1		mg/L	26
005	ERD-OBSW-1I	Aqueous	Nitrate - N	300.0	0.98	В	mg/L	26
005	ERD-OBSW-1I	Aqueous	Nitrite - N	300.0	0.0098	J	mg/L	26
005	ERD-OBSW-1I	Aqueous	Chlorobenzene	8260D	4.9	J	ug/L	27
005	ERD-OBSW-1I	Aqueous	Trichloroethene	8260D	1000		ug/L	28
005	ERD-OBSW-1I	Aqueous	Methane	RSK - 175	2.9	J	ug/L	29
005	ERD-OBSW-1I	Aqueous	Iron	6010D	0.48		mg/L	31
006	MW-10	Aqueous	Chloride	300.0	37		mg/L	32
006	MW-10	Aqueous	Nitrate - N	300.0	1.2	В	mg/L	32
006	MW-10	Aqueous	Sulfate	300.0	0.25	J	mg/L	32
006	MW-10	Aqueous	1,2-Dichloroethane	8260D	3.6		ug/L	33
006	MW-10	Aqueous	cis-1,2-Dichloroethene	8260D	2.9		ug/L	33
006	MW-10	Aqueous	Trichloroethene	8260D	740		ug/L	34
006	MW-10	Aqueous	Iron	6010D	0.087	J	mg/L	37
007	MW-10-DUP	Aqueous	Chlorobenzene	8260D	3.5		ug/L	38
007	MW-10-DUP	Aqueous	1,2-Dichloroethane	8260D	3.5		ug/L	38
007	MW-10-DUP	Aqueous	cis-1,2-Dichloroethene	8260D	2.5		ug/L	38
007	MW-10-DUP	Aqueous	Trichloroethene	8260D	790		ug/L	39
800	ERD-OBSW-1S	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	21		mg CaCO3/L	40
800	ERD-OBSW-1S	Aqueous	Bicarbonate Alkalinity	SM 2320B-	21		mg/L	40
800	ERD-OBSW-1S	Aqueous	Chloride	300.0	69		mg/L	40
800	ERD-OBSW-1S	Aqueous	Nitrate - N	300.0	1.8	В	mg/L	40
800	ERD-OBSW-1S	Aqueous	Sulfate	300.0	1.4		mg/L	40
800	ERD-OBSW-1S	Aqueous	Chlorobenzene	8260D	0.97		ug/L	41
800	ERD-OBSW-1S	Aqueous	1,4-Dichlorobenzene	8260D	0.45	J	ug/L	41
800	ERD-OBSW-1S	Aqueous	1,2-Dichloroethane	8260D	0.51		ug/L	41
800	ERD-OBSW-1S	Aqueous	cis-1,2-Dichloroethene	8260D	0.65		ug/L	41

#### **Detection Summary (Continued)**

Lot Number: WH20094

Sampl	e Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
800	ERD-OBSW-1S	Aqueous	Trichloroethene	8260D	240		ug/L	42
800	ERD-OBSW-1S	Aqueous	Methane	RSK - 175	3.1	J	ug/L	43
800	ERD-OBSW-1S	Aqueous	Dissolved Iron	6010D	0.13		mg/L	44
800	ERD-OBSW-1S	Aqueous	Iron	6010D	0.21		mg/L	45
009	ISCO-OBWS-1S	Aqueous	Chloride	300.0	5.7		mg/L	46
009	ISCO-OBWS-1S	Aqueous	TDS	SM 2540C-	67		mg/L	46
009	ISCO-OBWS-1S	Aqueous	Chloroform	8260D	5.9		ug/L	47
009	ISCO-OBWS-1S	Aqueous	cis-1,2-Dichloroethene	8260D	6.7		ug/L	47
009	ISCO-OBWS-1S	Aqueous	Trichloroethene	8260D	960		ug/L	48

(54 detections)

#### Inorganic non-metals

Client: AECOM Laboratory ID: WH20094-001 Description: MW-2 Matrix: Aqueous Date Sampled:08/19/2021 1630 Date Received: 08/20/2021 Dilution Run Prep Method Analytical Method Analysis Date Analyst Prep Date Batch (Alkalinity @) SM 2320B-2011 08/27/2021 0127 AAB 13519 1 1 (Bicarbonate) SM 2320B-2011 1 08/27/2021 0127 AAB 1 (Carbonate AI) SM 2320B-2011 1 08/27/2021 0127 AAB 1 (Chloride) 300.0 1 08/21/2021 1319 AMR 13032 1 (Nitrate - N) 300.0 1 08/21/2021 1319 AMR 13034 1 (Nitrite - N) 300.0 1 08/21/2021 1319 AMR 13036 1 (Sulfate) 300.0 1 08/21/2021 1319 AMR 13037 1 (TDS) SM 2540C-2011 1 08/26/2021 2308 SJL 13498 1 (TOC) SM 5310C-2011 1 08/27/2021 0017 GDC 13440 CAS Analytical Parameter Number Method Result Q LOQ DL Units Run Alkalinity @ pH 4.5 su SM 2320B-2011 ND 20 20 mg CaCO3/L 1 Bicarbonate Alkalinity SM 2320B-2011 ND 20 mg/L 1 20 SM 2320B-2011 ND 20 Carbonate Alkalinity mg/L 1 20 Chloride 300.0 2.3 1.0 mg/L 1 0.25 300.0 0.078 Nitrate - N В 0.020 0.0050 mg/L 1 Nitrite - N 300.0 ND 0.020 0.0050 mg/L 1 Sulfate ND 0.25 300.0 1.0 mg/L 1

SM 2540C-2011

SM 5310C-2011

ND

ND

25

1.0

25

1.0

mg/L

mg/L

1

1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

**TDS** 

TOC

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

Client: AECOM

Laboratory ID: WH20094-001

Description: MW-2

Run Prep Method

Matrix: Aqueous

S = MS/MSD failure

Date Sampled:08/19/2021 1630 Date Received:08/20/2021

5030B

Analytical Method Dilution Analysis Date Analyst Prep Date Batch 8260D 1 08/27/2021 1806 ECB 15202

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Rur
Acetone	67-64-1	8260D	ND	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
I,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	0.50	0.40	ug/L	1
rans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
rans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
1-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
I,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Foluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1
, ,	79-00-5	8260D	ND	0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

W = Reported on wet weight basis

Client: AECOM Laboratory ID: WH20094-001 Description: MW-2 Matrix: Aqueous Date Sampled:08/19/2021 1630 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 08/27/2021 1806 ECB 15202 CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Trichloroethene 79-01-6 8260D ND 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D ND 75-69-4 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 1330-20-7 Xylenes (total) 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 100 70-130 1,2-Dichloroethane-d4 101 70-130 Toluene-d8 98 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

#### **Dissolved Gases**

Client: AECOM Laboratory ID: WH20094-001
Description: MW-2 Matrix: Aqueous

Date Sampled:08/19/2021 1630 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 08/27/2021 1011 TML 13554

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	ND	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

#### **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-001
Description: MW-2 Matrix: Aqueous

Date Sampled:08/19/2021 1630 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/25/2021 1418 KSH2 08/25/2021 0320 13075

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 0.050 J 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ Pace Analytical Services, LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

#### **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-001
Description: MW-2 Matrix: Aqueous

Date Sampled:08/19/2021 1630 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/25/2021 1002 JMH 08/24/2021 1053 13076

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 6010D 0.10 Iron 7439-89-6 ND 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Inorganic non-metals

Client: AECOM Laboratory ID: WH20094-002
Description: TMW-31 Matrix: Aqueous
Date Sampled:08/20/2021 0950
Date Received: 08/20/2021

RunPrep MethodAnalytical MethodDilutionAnalysis Date AnalystPrep DateBatch1(Chloride) 300.0108/24/2021 1836AMR132431(TDS) SM 2540C-2011108/27/2021 2252SJL13648

Parameter	CAS Analytical Number Method	Result Q	LOQ	DL	Units	Run
Chloride	300.0	6.1	1.0	0.25	mg/L	1
TDS	SM 2540C-2011	41	25	25	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM

Laboratory ID: WH20094-002

Description: TMW-31

Matrix: Aqueous

Date Sampled:08/20/2021 0950

Date Received: 08/20/2021

Bromodichloromethane

2-Butanone (MEK)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform

Bromomethane (Methyl bromide)

Chloromethane (Methyl chloride)

1,2-Dibromo-3-chloropropane (DBCP)

Parameter Acetone Benzene

Bromoform

Cyclohexane

Ethylbenzene 2-Hexanone Isopropylbenzene Methyl acetate

Methyl tertiary butyl ether (MTBE)

1,1,2-Trichloro-1,2,2-Trifluoroethane

4-Methyl-2-pentanone

1,1,2,2-Tetrachloroethane

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1.1.2-Trichloroethane

Methylcyclohexane

Methylene chloride

Tetrachloroethene

Styrene

Dibromochloromethane
1,2-Dibromoethane (EDB)
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethene
cis-1,2-Dichloroethene
trans-1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch
1 5030B 8260D 10 08/27/2021 1855 ECB 15202

,	,	Trep Bate	15202			
CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
67-64-1	8260D	ND	100	40	ug/L	1
71-43-2	8260D	ND	5.0	4.0	ug/L	1
75-27-4	8260D	ND	5.0	4.0	ug/L	1
75-25-2	8260D	ND	5.0	4.0	ug/L	1
74-83-9	8260D	ND	5.0	4.0	ug/L	1
78-93-3	8260D	ND	100	20	ug/L	1
75-15-0	8260D	ND	5.0	4.0	ug/L	1
56-23-5	8260D	ND	5.0	4.0	ug/L	1
108-90-7	8260D	ND	5.0	4.0	ug/L	1
75-00-3	8260D	ND	5.0	4.0	ug/L	1
67-66-3	8260D	ND	5.0	4.0	ug/L	1
74-87-3	8260D	ND	5.0	4.0	ug/L	1
110-82-7	8260D	ND	5.0	4.0	ug/L	1
96-12-8	8260D	ND	5.0	4.0	ug/L	1
124-48-1	8260D	ND	5.0	4.0	ug/L	1
106-93-4	8260D	ND	5.0	4.0	ug/L	1
95-50-1	8260D	ND	5.0	4.0	ug/L	1
541-73-1	8260D	ND	5.0	4.0	ug/L	1
106-46-7	8260D	ND	5.0	4.0	ug/L	1
75-71-8	8260D	ND	5.0	4.0	ug/L	1
75-34-3	8260D	ND	5.0	4.0	ug/L	1
107-06-2	8260D	ND	5.0	4.0	ug/L	1
75-35-4	8260D			4.0	ug/L	1
156-59-2	8260D			4.0		1
	8260D		5.0	4.0	ug/L	1
78-87-5	8260D	ND	5.0	4.0	ug/L	1
10061-01-5	8260D	ND	5.0	4.0	ug/L	1
10061-02-6	8260D	ND	5.0	4.0	ug/L	1
100-41-4	8260D	ND	5.0	4.0	ug/L	1
591-78-6	8260D	ND	100	20	ug/L	1
98-82-8	8260D	ND		4.0	ug/L	1
79-20-9	8260D	ND	10	4.0	ug/L	1
	CAS Number 67-64-1 71-43-2 75-27-4 75-25-2 74-83-9 78-93-3 75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4 156-59-2 156-60-5 78-87-5 10061-01-5 10061-02-6 100-41-4 591-78-6	CAS Number         Analytical Method           67-64-1         8260D           71-43-2         8260D           75-27-4         8260D           75-25-2         8260D           74-83-9         8260D           78-93-3         8260D           75-15-0         8260D           56-23-5         8260D           108-90-7         8260D           75-00-3         8260D           67-66-3         8260D           74-87-3         8260D           10-82-7         8260D           96-12-8         8260D           104-48-1         8260D           95-50-1         8260D           541-73-1         8260D           550-1         8260D           75-71-8         8260D           75-34-3         8260D           75-35-4         8260D           156-59-2         8260D           156-60-5         8260D           10061-01-5         8260D           10061-02-6         8260D           100-41-4         8260D           98-82-8         8260D	CAS Number         Analytical Method         Result Q           67-64-1         8260D         ND           71-43-2         8260D         ND           75-27-4         8260D         ND           75-25-2         8260D         ND           74-83-9         8260D         ND           78-93-3         8260D         ND           75-15-0         8260D         ND           56-23-5         8260D         ND           108-90-7         8260D         ND           75-00-3         8260D         ND           67-66-3         8260D         ND           74-87-3         8260D         ND           108-90-7         8260D         ND           75-00-3         8260D         ND           108-90-7         8260D         ND           108-90-7         8260D         ND           75-8-1         8260D         ND           100-82-7         8260D         ND           96-12-8         8260D         ND           106-93-4         8260D         ND           95-50-1         8260D         ND           541-73-1         8260D         ND	CAS Number         Analytical Method         Result Q         LOQ           67-64-1         8260D         ND         100           71-43-2         8260D         ND         5.0           75-27-4         8260D         ND         5.0           75-25-2         8260D         ND         5.0           74-83-9         8260D         ND         5.0           78-93-3         8260D         ND         5.0           78-93-3         8260D         ND         5.0           75-15-0         8260D         ND         5.0           56-23-5         8260D         ND         5.0           108-90-7         8260D         ND         5.0           75-00-3         8260D         ND         5.0           75-00-3         8260D         ND         5.0           74-87-3         8260D         ND         5.0           74-87-3         8260D         ND         5.0           106-93-4         8260D         ND         5.0           124-48-1         8260D         ND         5.0           95-50-1         8260D         ND         5.0           75-71-8         8260D         ND	CAS Number         Analytical Method         Result Q         LOQ         DL           67-64-1         8260D         ND         100         40           71-43-2         8260D         ND         5.0         4.0           75-27-4         8260D         ND         5.0         4.0           75-25-2         8260D         ND         5.0         4.0           78-93-3         8260D         ND         5.0         4.0           108-90-7         8260D         ND         5.0         4.0           108-90-7         8260D         ND         5.0         4.0           75-00-3         8260D         ND         5.0         4.0           74-87-3         8260D         ND         5.0         4.0           74-87-3         8260D         ND         5.0         4.0           10-82-7         8260D         ND <td< td=""><td>CAS Number         Analytical Method         Result Q         LOQ         DL         Units           67-64-1         8260D         ND         100         40         ug/L           71-43-2         8260D         ND         5.0         4.0         ug/L           75-27-4         8260D         ND         5.0         4.0         ug/L           75-25-2         8260D         ND         5.0         4.0         ug/L           78-93-3         8260D         ND         5.0         4.0         ug/L           78-93-3         8260D         ND         5.0         4.0         ug/L           75-15-0         8260D         ND         5.0         4.0         ug/L           56-23-5         8260D         ND         5.0         4.0         ug/L           108-90-7         8260D         ND         5.0         4.0         ug/L           67-66-3         8260D         ND         5.0         4.0         ug/L           74-87-3         8260D         ND         5.0         4.0         ug/L           96-12-8         8260D         ND         5.0         4.0         ug/L           10-82-7         8260D</td></td<>	CAS Number         Analytical Method         Result Q         LOQ         DL         Units           67-64-1         8260D         ND         100         40         ug/L           71-43-2         8260D         ND         5.0         4.0         ug/L           75-27-4         8260D         ND         5.0         4.0         ug/L           75-25-2         8260D         ND         5.0         4.0         ug/L           78-93-3         8260D         ND         5.0         4.0         ug/L           78-93-3         8260D         ND         5.0         4.0         ug/L           75-15-0         8260D         ND         5.0         4.0         ug/L           56-23-5         8260D         ND         5.0         4.0         ug/L           108-90-7         8260D         ND         5.0         4.0         ug/L           67-66-3         8260D         ND         5.0         4.0         ug/L           74-87-3         8260D         ND         5.0         4.0         ug/L           96-12-8         8260D         ND         5.0         4.0         ug/L           10-82-7         8260D

LOQ = Limit of Quantitation

B = Detected in the method blank

D = Not detected at or above the DL

N = Recovery is out of criteria

H = Out of holding time

B = Detected in the method blank

E = Quantitation of compound exceeded the calibration range

D = Detection Limit

Q = Surrogate failure

D = Estimated result < LOQ and ≥ DL

L = LCS/LCSD failure

S = MS/MSD failure

8260D

ND

5.0

100

50

5.0

5.0

5.0

5.0

5.0

10

5.0

5.0

5.0

4.0

20

4.0

4.0

4.1

4.0

4.0

4.0

4.2

4.0

4.0

4.0

ug/L

1

1

1

1

1

1

1

1

1

1

1

1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

1634-04-4

108-10-1

108-87-2

100-42-5

127-18-4

108-88-3

76-13-1

71-55-6

79-00-5

120-82-1

79-34-5

75-09-2

Client: AECOM Laboratory ID: WH20094-002 Description: TMW-31 Matrix: Aqueous Date Sampled:08/20/2021 0950 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 08/27/2021 1855 ECB 15202 CAS Analytical Parameter Result Q LOQ DL Units Run Number Method Trichloroethene 79-01-6 8260D 920 5.0 ug/L 1 4.0 Trichlorofluoromethane 8260D 75-69-4 ND 5.0 ug/L 1 4.0 Vinyl chloride 75-01-4 8260D ND 5.0 ug/L 1 4.0 1330-20-7 Xylenes (total) 8260D ND 10 ug/L 4.0 1 Run 1 Acceptance

Limits

70-130

70-130

70-130

% Recovery

98

93

92

Q

LOQ = Limit of Quantitation

B = Detected in the method blank

E = Quantitation of compound exceeded the calibration range

DL = Detection Limit

Q = Surrogate failure

ND = Not detected at or above the DL

N = Recovery is out of criteria

P = The RPD between two GC columns exceeds 40%

J = Estimated result < LOQ and ≥ DL

L = LCS/LCSD failure

S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Surrogate

Toluene-d8

Bromofluorobenzene

1,2-Dichloroethane-d4

#### Inorganic non-metals

Client: AECOM
Description: TMW-29
Matrix: Aqueous
Date Sampled:08/20/2021 1040
Date Received: 08/20/2021

RunPrep MethodAnalytical MethodDilutionAnalysis Date AnalystPrep DateBatch1(Chloride) 300.0108/24/2021 1933AMR132431(TDS) SM 2540C-2011108/27/2021 2252SJL13648

Parameter	CAS Analytical Number Method	Result Q	LOQ	DL	Units	Run
Chloride	300.0	3.1	1.0	0.25	mg/L	1
TDS	SM 2540C-2011	ND	25	25	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM

Laboratory ID: WH20094-003

Matrix: Aqueous

S = MS/MSD failure

Description: TMW-29

Date Sampled:08/20/2021 1040

5030B

Date Received: 08/20/2021

Run Prep Method

Analytical Method Dilution Analysis Date Analyst Prep Date Batch 8260D 08/27/2021 1831 ECB 15202

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Rur
Acetone	67-64-1	8260D	24	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	0.50	0.40	ug/L	1
rans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
rans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	50	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Foluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1
	, 1 55 5	8260D	ND	0.00	0.40	~g/ L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

W = Reported on wet weight basis

Client: AECOM Laboratory ID: WH20094-003 Description: TMW-29 Matrix: Aqueous Date Sampled:08/20/2021 1040 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 08/27/2021 1831 ECB 15202 CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Trichloroethene 79-01-6 8260D 12 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D ND 75-69-4 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 1330-20-7 Xylenes (total) 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 102 70-130 1,2-Dichloroethane-d4 99 70-130

70-130

97

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

Toluene-d8

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Inorganic non-metals

Client: AEC	MC				Laboratory ID: WH20094-004				
Description: MW-1	Ol Matrix: Aqueous								
Date Sampled:08/20	)/2021 1145								
Date Received: 08/20	)/2021								
Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch				
1	(Alkalinity @) SM 2320B-2011	1	08/27/2021 0142 AAB		13519				
1	(Bicarbonate ) SM 2320B-2011	1	08/27/2021 0142 AAB						
1	(Carbonate AI) SM 2320B-2011	1	08/27/2021 0142 AAB						
1	(Chloride) 300.0	1	08/21/2021 1338 AMR		13032				
1	(Nitrate - N) 300.0	1	08/21/2021 1338 AMR		13034				
1	(Nitrite - N) 300.0	1	08/21/2021 1338 AMR		13036				
1	(Sulfate) 300.0	1	08/21/2021 1338 AMR		13037				
1	(TOC) SM 5310C-2011	1	08/27/2021 0031 GDC		13440				
			CAS Analytical						

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	24		20	20	mg CaCO3/L	1
Bicarbonate Alkalinity		SM 2320B-2011	24		20	20	mg/L	1
Carbonate Alkalinity		SM 2320B-2011	ND		20	20	mg/L	1
Chloride		300.0	9.2	S	1.0	0.25	mg/L	1
Nitrate - N		300.0	1.1	BS	0.020	0.0050	mg/L	1
Nitrite - N		300.0	ND		0.020	0.0050	mg/L	1
Sulfate		300.0	ND	S	1.0	0.25	mg/L	1
TOC		SM 5310C-2011	ND		1.0	1.0	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Client: AECOM

Description: MW-10I

Date Sampled:08/20/2021 1145

Laboratory ID: WH20094-004

Matrix: Aqueous

L = LCS/LCSD failure

S = MS/MSD failure

J = Estimated result < LOQ and  $\geq$  DL

Date Received: 08/20/2021

Run Prep Method 5030B Analytical Method Dilution 8260D

Analysis Date Analyst 08/27/2021 1920 ECB

Prep Date

Batch 15202

Parameter	CAS Number	Analytical Method	Result C	LOQ	DL	Units	Ru
Acetone	67-64-1	8260D	ND	100	40	ug/L	1
Benzene	71-43-2	8260D	ND	5.0	4.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	5.0	4.0	ug/L	1
Bromoform	75-25-2	8260D	ND	5.0	4.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	5.0	4.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	100	20	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	5.0	4.0	ug/L	
Carbon tetrachloride	56-23-5	8260D	ND	5.0	4.0	ug/L	
Chlorobenzene	108-90-7	8260D	ND	5.0	4.0	ug/L	
Chloroethane	75-00-3	8260D	ND	5.0	4.0	ug/L	
Chloroform	67-66-3	8260D	ND	5.0	4.0	ug/L	
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	5.0	4.0	ug/L	
Cyclohexane	110-82-7	8260D	ND	5.0	4.0	ug/L	
,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	5.0	4.0	ug/L	
Dibromochloromethane	124-48-1	8260D	ND	5.0	4.0	ug/L	
,2-Dibromoethane (EDB)	106-93-4	8260D	ND	5.0	4.0	ug/L	
,2-Dichlorobenzene	95-50-1	8260D	ND	5.0	4.0	ug/L	
,3-Dichlorobenzene	541-73-1	8260D	ND	5.0	4.0	ug/L	
,4-Dichlorobenzene	106-46-7	8260D	ND	5.0	4.0	ug/L	
Pichlorodifluoromethane	75-71-8	8260D	ND	5.0	4.0	ug/L	
,1-Dichloroethane	75-34-3	8260D	ND	5.0	4.0	ug/L	
,2-Dichloroethane	107-06-2	8260D	ND	5.0	4.0	ug/L	
,1-Dichloroethene	75-35-4	8260D	ND	5.0	4.0	ug/L	
is-1,2-Dichloroethene	156-59-2	8260D	ND	5.0	4.0	ug/L	
ans-1,2-Dichloroethene	156-60-5	8260D	ND	5.0	4.0	ug/L	
,2-Dichloropropane	78-87-5	8260D	ND	5.0	4.0	ug/L	
is-1,3-Dichloropropene	10061-01-5	8260D	ND	5.0	4.0	ug/L	
ans-1,3-Dichloropropene	10061-02-6	8260D	ND	5.0	4.0	ug/L	
thylbenzene	100-41-4	8260D	ND	5.0	4.0	ug/L	
-Hexanone	591-78-6	8260D	ND	100	20	ug/L	
sopropylbenzene	98-82-8	8260D	ND	5.0	4.0	ug/L	
Methyl acetate	79-20-9	8260D	ND	10	4.0	ug/L	
1ethyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	5.0	4.0	ug/L	
-Methyl-2-pentanone	108-10-1	8260D	ND	100	20	ug/L	
1ethylcyclohexane	108-87-2	8260D	ND	50	4.0	ug/L	
Methylene chloride	75-09-2	8260D	ND	5.0	4.0	ug/L	
tyrene	100-42-5	8260D	ND	5.0	4.1	ug/L	
,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	5.0	4.0	ug/L	
etrachloroethene	127-18-4	8260D	ND	5.0	4.0	ug/L	
oluene	108-88-3	8260D	ND	5.0	4.0	ug/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	10	4.2	ug/L	
,2,4-Trichlorobenzene	120-82-1	8260D	ND	5.0	4.0	ug/L	
,1,1-Trichloroethane	71-55-6	8260D	ND	5.0	4.0	ug/L	
,1,2-Trichloroethane	79-00-5	8260D	ND	5.0	4.0	ug/L	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

Client: AECOM Laboratory ID: WH20094-004 Description: MW-10I Matrix: Aqueous Date Sampled:08/20/2021 1145 Date Received: 08/20/2021 Analysis Date Analyst Run Prep Method Analytical Method Dilution Prep Date Batch 1 5030B 8260D 08/27/2021 1920 ECB 15202 CAS Analytical Parameter Result Q LOQ DL Units Run Number Method Trichloroethene 79-01-6 8260D 870 5.0 ug/L 1 4.0 Trichlorofluoromethane 8260D 75-69-4 ND 5.0 ug/L 1 4.0 Vinyl chloride 75-01-4 8260D ND 5.0 ug/L 1 4.0

8260D

ND

10

4.0

ug/L

1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits		
Bromofluorobenzene		102	70-130		
1,2-Dichloroethane-d4		100	70-130		
Toluene-d8		98	70-130		

1330-20-7

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

Xylenes (total)

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

#### **Dissolved Gases**

Client: AECOM Laboratory ID: WH20094-004 Description: MW-10I

Date Sampled:08/20/2021 1145 Date Received: 08/20/2021

Matrix: Aqueous

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch RSK - 175 08/27/2021 1027 TML 13554

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	ND	10	2.5	ug/L	1

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit  $\mbox{ J = Estimated result < LOQ and } \geq \mbox{ DL}$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES** Metals

Client: AECOM

Description: MW-10I

Matrix: Aqueous

Date Sampled:08/20/2021 1145 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/25/2021 1436 KSH2 08/25/2021 0320 13075

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 ND 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ Pace Analytical Services, LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

#### **ICP-AES** Metals

Client: AECOM

Description: MW-10I

Matrix: Aqueous

Date Sampled:08/20/2021 1145 Date Received:08/20/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/25/2021 1006
 JMH
 08/24/2021 1053
 13076

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 6010D 0.10 Iron 7439-89-6 ND 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ Pace Analytical Services, LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

#### Inorganic non-metals

Client: AECC	M				Laboratory ID: WH20094-005					
Description: ERD-0	Description: ERD-OBSW-1I Matrix: Aqueous									
Date Sampled:08/20/	2021 1235									
Date Received: 08/20/	2021									
Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch					
1	(Alkalinity @) SM 2320B-2011	1	08/27/2021 0147 AAB		13519					
1	(Bicarbonate ) SM 2320B-2011	1	08/27/2021 0147 AAB							
1	(Carbonate Al) SM 2320B-2011	1	08/27/2021 0147 AAB							
1	(Chloride) 300.0	1	08/21/2021 1435 AMR		13032					
1	(Nitrate - N) 300.0	1	08/21/2021 1435 AMR		13034					
1	(Nitrite - N) 300.0	1	08/21/2021 1435 AMR		13036					
1	(Sulfate) 300.0	1	08/21/2021 1435 AMR		13037					
1	(TOC) SM 5310C-2011	1	08/27/2021 0044 GDC		13440					
			CAC Analytical							

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	24		20	20	mg CaCO3/L	1
Bicarbonate Alkalinity		SM 2320B-2011	24		20	20	mg/L	1
Carbonate Alkalinity		SM 2320B-2011	ND		20	20	mg/L	1
Chloride		300.0	8.1		1.0	0.25	mg/L	1
Nitrate - N		300.0	0.98	В	0.020	0.0050	mg/L	1
Nitrite - N		300.0	0.0098	J	0.020	0.0050	mg/L	1
Sulfate		300.0	ND		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	ND		1.0	1.0	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Client: AECOM

Description: ERD-OBSW-1I

Laboratory ID: WH20094-005 Matrix: Aqueous

Date Sampled:08/20/2021 1235

Date Received: 08/20/2021

5030B

Run Prep Method

Analytical Method Dilution Analysis Date Analyst Prep Date Batch 8260D 08/27/2021 1733 ECB 15201

Parameter		CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone		67-64-1	8260D	ND		100	40	ug/L	1
Benzene		71-43-2	8260D	ND		5.0	4.0	ug/L	1
Bromodichloromethane		75-27-4	8260D	ND		5.0	4.0	ug/L	1
Bromoform		75-25-2	8260D	ND		5.0	4.0	ug/L	1
Bromomethane (Methyl bromid	le)	74-83-9	8260D	ND		5.0	4.0	ug/L	1
2-Butanone (MEK)		78-93-3	8260D	ND		100	20	ug/L	1
Carbon disulfide		75-15-0	8260D	ND		5.0	4.0	ug/L	1
Carbon tetrachloride		56-23-5	8260D	ND		5.0	4.0	ug/L	1
Chlorobenzene		108-90-7	8260D	4.9	J	5.0	4.0	ug/L	1
Chloroethane		75-00-3	8260D	ND		5.0	4.0	ug/L	1
Chloroform		67-66-3	8260D	ND		5.0	4.0	ug/L	1
Chloromethane (Methyl chlorid	e)	74-87-3	8260D	ND		5.0	4.0	ug/L	1
Cyclohexane	•	110-82-7	8260D	ND		5.0	4.0	ug/L	1
1,2-Dibromo-3-chloropropane (	(DBCP)	96-12-8	8260D	ND		5.0	4.0	ug/L	1
Dibromochloromethane	ζ==-,	124-48-1	8260D	ND		5.0	4.0	ug/L	1
1,2-Dibromoethane (EDB)		106-93-4	8260D	ND		5.0	4.0	ug/L	1
1,2-Dichlorobenzene		95-50-1	8260D	ND		5.0	4.0	ug/L	1
1,3-Dichlorobenzene		541-73-1	8260D	ND		5.0	4.0	ug/L	1
1,4-Dichlorobenzene		106-46-7	8260D	ND		5.0	4.0	ug/L	1
Dichlorodifluoromethane		75-71-8	8260D	ND		5.0	4.0	ug/L	1
1,1-Dichloroethane		75-34-3	8260D	ND		5.0	4.0	ug/L	1
1,2-Dichloroethane		107-06-2	8260D	ND		5.0	4.0	ug/L	1
1,1-Dichloroethene		75-35-4	8260D	ND		5.0	4.0	ug/L	1
cis-1,2-Dichloroethene		156-59-2	8260D	ND		5.0	4.0	ug/L	1
trans-1,2-Dichloroethene		156-60-5	8260D	ND		5.0	4.0	ug/L	1
1,2-Dichloropropane		78-87-5	8260D	ND		5.0	4.0	ug/L	1
cis-1,3-Dichloropropene		10061-01-5	8260D	ND		5.0	4.0	ug/L	1
trans-1,3-Dichloropropene		10061-02-6	8260D	ND		5.0	4.0	ug/L	1
Ethylbenzene		100-41-4	8260D	ND		5.0	4.0	ug/L	1
2-Hexanone		591-78-6	8260D	ND		100	20	ug/L	1
Isopropylbenzene		98-82-8	8260D	ND		5.0	4.0	ug/L	1
Methyl acetate		79-20-9	8260D	ND		10	4.0	ug/L	1
Methyl tertiary butyl ether (MTE	SE/	1634-04-4	8260D	ND		5.0	4.0	ug/L	1
4-Methyl-2-pentanone	JL)	108-10-1	8260D	ND		100	20	ug/L	1
Methylcyclohexane		108-87-2	8260D	ND		50	4.0	ug/L	1
Methylene chloride		75-09-2	8260D	ND		5.0		_	1
•						5.0	4.0	ug/L	
Styrene 1,1,2,2-Tetrachloroethane		100-42-5 79-34-5	8260D 8260D	ND ND		5.0	4.1	ug/L	1
							4.0	ug/L	1
Tetrachloroethene		127-18-4	8260D	ND		5.0	4.0	ug/L	1
Toluene	thono	108-88-3	8260D	ND		5.0	4.0	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroe	шапе	76-13-1	8260D	ND		10	4.2	ug/L	1
1,2,4-Trichlorobenzene		120-82-1	8260D	ND		5.0	4.0	ug/L	1
1,1,1-Trichloroethane		71-55-6	8260D	ND		5.0	4.0	ug/L	1
1,1,2-Trichloroethane		79-00-5	8260D	ND		5.0	4.0	ug/L	1
OQ = Limit of Quantitation  ID = Not detected at or above the DL  H = Out of holding time	B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis		compound exceeded the		-	= Detection Lir Estimated resi	mit ult < LOQ and ≥ DL	L = LCS/L	ogate failur LCSD failu ISD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: AECOM Laboratory ID: WH20094-005 Description: ERD-OBSW-1I Matrix: Aqueous Date Sampled:08/20/2021 1235 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 08/27/2021 1733 ECB 15201 CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Trichloroethene 79-01-6 8260D 1000 5.0 4.0 ug/L 1 ug/L Trichlorofluoromethane 8260D 75-69-4 ND 5.0 1 4.0 Vinyl chloride 75-01-4 8260D ND 5.0 ug/L 1 4.0

Xylenes (total)	1330-20-7	8260D	ND	10	4.0	ug/L	1
Surrogate	Run 1 Acceptar Q % Recovery Limits						
Bromofluorobenzene	90 70-130	)					
1,2-Dichloroethane-d4	100 70-130	)					
Toluene-d8	101 70-130	)					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

#### **Dissolved Gases**

Client: AECOM Laboratory ID: WH20094-005

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:08/20/2021 1235 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch RSK - 175 1 08/27/2021 1043 TML 13554

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	2.9 J	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-005

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:08/20/2021 1235 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/25/2021 1439 KSH2 08/25/2021 0320 13075

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 ND 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-005

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:08/20/2021 1235 Date Received:08/20/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/25/2021 1017
 JMH
 08/24/2021 1053
 13076

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 6010D 0.10 Iron 7439-89-6 0.48 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Inorganic non-metals

			<u> </u>							
Client: AECO	M	Laboratory ID: WH20094-006								
Description: MW-10	)						Matrix:	Aqueous	S	
Date Sampled:08/20/2	2021 1355									
Date Received: 08/20/2	2021									
Run Prep Method	Analytical Method	Dilution	Δna	lysis Date Analyst	Prep	Date	Batch			
1	(Alkalinity @) SM 2320B-2011	1		7/2021 0154 AAB	Пер	Date	13519			
1	(Bicarbonate ) SM 2320B-2011	1	08/27	7/2021 0154 AAB						
1	(Carbonate Al) SM 2320B-2011	1	08/27	7/2021 0154 AAB						
1	(Chloride) 300.0	1	08/21	I/2021 1454 AMR			13032			
1	(Nitrate - N) 300.0	1	08/21	I/2021 1454 AMR			13034			
1	(Nitrite - N) 300.0	1	08/21	I/2021 1454 AMR			13036			
1	(Sulfate) 300.0	1	08/21	I/2021 1454 AMR			13037			
1	(TOC) SM 5310C-2011	1	08/27	7/2021 0057 GDC			13440			
			CAS	Analytical						
Parameter		Nur	nber	Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su	1			SM 2320B-2011	ND		20	20	mg CaCO3/L	1
Bicarbonate Alkalinity	,			SM 2320B-2011	ND		20	20	mg/L	1
Carbonate Alkalinity				SM 2320B-2011	ND		20	20	mg/L	1
Chloride				300.0	37		1.0	0.25	mg/L	1

300.0

300.0

300.0

SM 5310C-2011

1.2 B

ND

ND

0.25 J

0.020

0.020

1.0

1.0

0.0050

0.0050

0.25

1.0

mg/L

mg/L

mg/L

mg/L

1

1

1

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	$J = Estimated result < LOQ and \ge DL$	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Nitrate - N

Nitrite - N

Sulfate

TOC

Client: AECOM

Description: MW-10

Laboratory ID: WH20094-006 Matrix: Aqueous

S = MS/MSD failure

Date Sampled:08/20/2021 1355

Date Received: 08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 2 5030B 8260D 5 08/31/2021 1651 ECB 15206

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	50	20	ug/L	2
Benzene	71-43-2	8260D	ND	2.5	2.0	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND	2.5	2.0	ug/L	2
Bromoform	75-25-2	8260D	ND	2.5	2.0	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	2.5	2.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND	50	10	ug/L	2
Carbon disulfide	75-15-0	8260D	ND	2.5	2.0	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND	2.5	2.0	ug/L	2
Chlorobenzene	108-90-7	8260D	ND	2.5	2.0	ug/L	2
Chloroethane	75-00-3	8260D	ND	2.5	2.0	ug/L	2
Chloroform	67-66-3	8260D	ND	2.5	2.0	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	2.5	2.0	ug/L	2
Cyclohexane	110-82-7	8260D	ND	2.5	2.0	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	2.5	2.0	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND	2.5	2.0	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	2.5	2.0	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND	2.5	2.0	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND	2.5	2.0	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND	2.5	2.0	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND	2.5	2.0	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND	2.5	2.0	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	3.6	2.5	2.0	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND	2.5	2.0	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	2.9	2.5	2.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND	2.5	2.0	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND	2.5	2.0	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	2.5	2.0	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	2.5	2.0	ug/L	2
Ethylbenzene	100-41-4	8260D	ND	2.5	2.0	ug/L	2
2-Hexanone	591-78-6	8260D	ND	50	10	ug/L	2
Isopropylbenzene	98-82-8	8260D	ND	2.5	2.0	ug/L	2
Methyl acetate	79-20-9	8260D	ND	5.0	2.0	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	2.5	2.0	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND	50	10	ug/L	2
Methylcyclohexane	108-87-2	8260D	ND	25	2.0	ug/L	2
Methylene chloride	75-09-2	8260D	ND	2.5	2.0	ug/L	2
Styrene	100-42-5	8260D	ND	2.5	2.1	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	2.5	2.0	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND	2.5	2.0	ug/L	2
Toluene	108-88-3	8260D	ND	2.5	2.0	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	5.0	2.1	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	2.5	2.0	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND	2.5	2.0	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260D	ND	2.5	2.0	ug/L	2

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

W = Reported on wet weight basis

Client: AECOM Laboratory ID: WH20094-006 Description: MW-10 Matrix: Aqueous Date Sampled:08/20/2021 1355 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Batch Prep Date 2 5030B 8260D 08/31/2021 1651 ECB 15206 CAS Analytical Parameter LOQ DL Units Number Result Q Run Method Trichloroethene 79-01-6 8260D 740 2.5 ug/L 2 2.0 Trichlorofluoromethane 8260D 2 75-69-4 ND 2.5 ug/L 2.0 Vinyl chloride 75-01-4 8260D ND 2.5 ug/L 2

Xylenes (total)	1330-20	)-7 8260D	ND	5.0	2.0	ug/L	2
Surrogate	Run 2 A Q % Recovery	cceptance Limits					
Bromofluorobenzene	109	70-130					
1,2-Dichloroethane-d4	101	70-130					
Toluene-d8	103	70-130					

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit J = Estimated result < LOQ and  $\geq$  DL

2.0

#### **Dissolved Gases**

Client: AECOM

Description: MW-10

Laboratory ID: WH20094-006

Matrix: Aqueous

Date Sampled:08/20/2021 1355 Date Received:08/20/2021

Run Prep Method

Analytical Method Dilution Analysis Date Analyst Prep Date Batch RSK - 175 1 08/27/2021 1108 TML 13554

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	ND	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

#### **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-006

Description: MW-10 Matrix: Aqueous

6010D

Date Sampled:08/20/2021 1355 Date Received: 08/20/2021

3005A

Run Prep Method

1

Analytical Method Dilution Analysis Date Analyst Prep Date Batch

08/25/2021 1451 KSH2

08/25/2021 0320 13075

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 ND 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ (\mbox{formerly Shealy Environmental Services, Inc.})$ 

## **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-006

Description: MW-10 Matrix: Aqueous

Date Sampled:08/20/2021 1355 Date Received: 08/20/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/25/2021 1020
 JMH
 08/24/2021 1053
 13076

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 6010D 0.087 J Iron 7439-89-6 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Volatile Organic Compounds by GC/MS

Client: AECOM

Description: MW-10-DUP

Laboratory ID: WH20094-007 Matrix: Aqueous

L = LCS/LCSD failure

S = MS/MSD failure

J = Estimated result < LOQ and  $\geq$  DL

Date Sampled:08/20/2021 1355 Date Received:08/20/2021

Run Prep Method 1 5030B Analytical Method Dilution 8260D 5

Analysis Date Analyst 08/27/2021 1707 ECB

Prep Date

Batch 15201

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Ru
Acetone	67-64-1	8260D	ND	50	20	ug/L	1
Benzene	71-43-2	8260D	ND	2.5	2.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	2.5	2.0	ug/L	1
Bromoform	75-25-2	8260D	ND	2.5	2.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	2.5	2.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	50	10	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	2.5	2.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	2.5	2.0	ug/L	1
Chlorobenzene	108-90-7	8260D	3.5	2.5	2.0	ug/L	1
Chloroethane	75-00-3	8260D	ND	2.5	2.0	ug/L	1
Chloroform	67-66-3	8260D	ND	2.5	2.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	2.5	2.0	ug/L	1
Cyclohexane	110-82-7	8260D	ND	2.5	2.0	ug/L	1
,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	2.5	2.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	2.5	2.0	ug/L	1
,2-Dibromoethane (EDB)	106-93-4	8260D	ND	2.5	2.0	ug/L	1
,2-Dichlorobenzene	95-50-1	8260D	ND	2.5	2.0	ug/L	1
,3-Dichlorobenzene	541-73-1	8260D	ND	2.5	2.0	ug/L	1
,4-Dichlorobenzene	106-46-7	8260D	ND	2.5	2.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	2.5	2.0	ug/L	1
,1-Dichloroethane	75-34-3	8260D	ND	2.5	2.0	ug/L	1
,2-Dichloroethane	107-06-2	8260D	3.5	2.5	2.0	ug/L	1
,1-Dichloroethene	75-35-4	8260D	ND	2.5	2.0	ug/L	1
is-1,2-Dichloroethene	156-59-2	8260D	2.5	2.5	2.0	ug/L	1
rans-1,2-Dichloroethene	156-60-5	8260D	ND	2.5	2.0	ug/L	1
,2-Dichloropropane	78-87-5	8260D	ND	2.5	2.0	ug/L	1
sis-1,3-Dichloropropene	10061-01-5	8260D	ND	2.5	2.0	ug/L	1
rans-1,3-Dichloropropene	10061-02-6	8260D	ND	2.5	2.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	2.5	2.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND	50	10	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	2.5	2.0	ug/L	1
Methyl acetate	79-20-9	8260D	ND	5.0	2.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	2.5	2.0	ug/L	1
-Methyl-2-pentanone	108-10-1	8260D	ND	50	10	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	25	2.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND	2.5	2.0	ug/L	1
Styrene	100-42-5	8260D	ND	2.5	2.1	ug/L	1
,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	2.5	2.0	ug/L	1
etrachloroethene	127-18-4	8260D	ND	2.5	2.0	ug/L	1
oluene	108-88-3	8260D	ND	2.5	2.0	ug/L	1
,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	5.0	2.1	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	2.5	2.0	ug/L	1
,1,1-Trichloroethane	71-55-6	8260D	ND	2.5	2.0	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	2.5	2.0	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: WH20094-007 Description: MW-10-DUP Matrix: Aqueous Date Sampled:08/20/2021 1355 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 08/27/2021 1707 ECB 15201 CAS Analytical

Parameter	Number	Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	790	2.5	2.0	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	2.5	2.0	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	2.5	2.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	5.0	2.0	ug/L	1
	Run 1 Accept	ance					

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		90	70-130
1,2-Dichloroethane-d4		99	70-130
Toluene-d8		101	70-130

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# Inorganic non-metals

	Client: AECOI	M				Laboratory ID: WH20094-008	
De	escription: ERD-C	BSW-1S				Matrix: Aqueous	
Date	Sampled:08/20/2	2021 1500					
Date	Received: 08/20/2	2021					
Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch	
1		(Alkalinity @) SM 2320B-2011	1	08/27/2021 0200 AAB		13519	
1		(Bicarbonate ) SM 2320B-2011	1	08/27/2021 0200 AAB			
1		(Carbonate AI) SM 2320B-2011	1	08/27/2021 0200 AAB			
1		(Chloride) 300.0	1	08/21/2021 1513 AMR		13032	
1		(Nitrate - N) 300.0	1	08/21/2021 1513 AMR		13034	
1		(Nitrite - N) 300.0	1	08/21/2021 1513 AMR		13036	
1		(Sulfate) 300.0	1	08/21/2021 1513 AMR		13037	
1		(TOC) SM 5310C-2011	1	08/27/2021 0136 GDC		13440	
				CAS Analytical			

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	21		20	20	mg CaCO3/L	1
Bicarbonate Alkalinity		SM 2320B-2011	21		20	20	mg/L	1
Carbonate Alkalinity		SM 2320B-2011	ND		20	20	mg/L	1
Chloride		300.0	69		1.0	0.25	mg/L	1
Nitrate - N		300.0	1.8	В	0.020	0.0050	mg/L	1
Nitrite - N		300.0	ND		0.020	0.0050	mg/L	1
Sulfate		300.0	1.4		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	ND		1.0	1.0	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM

Description: ERD-OBSW-1S

Laboratory ID: WH20094-008 Matrix: Aqueous

Date Sampled:08/20/2021 1500

5030B

5030B

Date Received: 08/20/2021

Run Prep Method

1

2

Analytical Method Dilution Analysis Date Analyst 8260D 1 08/27/2021 1641 ECB 8260D 5 08/31/2021 1716 ECB

Prep Date Batch 15201

15206

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND		10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND		0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND		0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	0.97		0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND		0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND		0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	0.45	J	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	0.51		0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	0.65		0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND		10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND		5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND		0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND		0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: WH20094-008 Description: ERD-OBSW-1S Matrix: Aqueous Date Sampled:08/20/2021 1500 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Batch Prep Date 5030B 8260D 08/27/2021 1641 ECB 15201 1 2 5 15206 5030B 8260D 08/31/2021 1716 ECB CAS Analytical Parameter Number Method Result Q LOQ DL Units Run 8260D 1,1,2-Trichloroethane 79-00-5 ND 0.50 ug/L 1 0.40 Trichloroethene 79-01-6 8260D 240 2.5 ug/L 2 2.0 Trichlorofluoromethane 75-69-4 8260D ND 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 1 ug/L 0.40 8260D Xylenes (total) 1330-20-7 ND 1.0 ug/L 0.40 1 Run 1 Acceptance Run 2 Acceptance % Recovery % Recovery Surrogate Q Limits Bromofluorobenzene 88 70-130 104 70-130

70-130

70-130

101

100

70-130

70-130

98

101

LOQ = Limit of QuantitationB = Detected in the method blankE = Quantitation of compound exceeded the calibration rangeDL = Detection LimitQ = Surrogate failureND = Not detected at or above the DLN = Recovery is out of criteriaP = The RPD between two GC columns exceeds 40%J = Estimated result < LOQ and ≥ DL</td>L = LCS/LCSD failureH = Out of holding timeW = Reported on wet weight basisS = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

1,2-Dichloroethane-d4

Toluene-d8

#### **Dissolved Gases**

Client: AECOM
Description: ERD-OBSW-1S

DBSW-1S Laboratory ID: WH20094-008
Matrix: Aqueous

Date Sampled:08/20/2021 1500 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 08/27/2021 1124 TML 13554

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	3.1 J	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ (\mbox{formerly Shealy Environmental Services, Inc.})$ 

## **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-008

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:08/20/2021 1500 Date Received: 08/20/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/25/2021 1454 KSH2
 08/25/2021 0320 13075

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 0.13 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

## **ICP-AES** Metals

Client: AECOM Laboratory ID: WH20094-008

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:08/20/2021 1500 Date Received:08/20/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/25/2021 1024 JMH 08/24/2021 1053 13076

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 6010D 0.10 Iron 7439-89-6 0.21 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Inorganic non-metals

Client: AECOM
Description: ISCO-OBWS-1S
Matrix: Aqueous
Date Sampled:08/20/2021 1620
Date Received: 08/20/2021

RunPrep MethodAnalytical MethodDilutionAnalysis Date AnalystPrep DateBatch1(Chloride) 300.0108/24/2021 1952AMR132431(TDS) SM 2540C-2011108/27/2021 2252SJL13648

Parameter	CAS Analytical Number Method	Result Q	LOQ	DL	Units	Run
Chloride	300.0	5.7	1.0	0.25	mg/L	1
TDS	SM 2540C-2011	67	25	25	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM Description: ISCO-OBWS-1S

Date Sampled:08/20/2021 1620 Date Received: 08/20/2021

Laboratory ID: WH20094-009

 $J = Estimated result < LOQ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

Matrix: Aqueous

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 08/27/2021 1824 ECB 15201

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	100	40	ug/L	1
Benzene	71-43-2	8260D	ND	5.0	4.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	5.0	4.0	ug/L	1
Bromoform	75-25-2	8260D	ND	5.0	4.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	5.0	4.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	100	20	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	5.0	4.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	5.0	4.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	5.0	4.0	ug/L	1
Chloroethane	75-00-3	8260D	ND	5.0	4.0	ug/L	1
Chloroform	67-66-3	8260D	5.9	5.0	4.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	5.0	4.0	ug/L	1
Cyclohexane	110-82-7	8260D	ND	5.0	4.0	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	5.0	4.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	5.0	4.0	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	5.0	4.0	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	5.0	4.0	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	5.0	4.0	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	5.0	4.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	5.0	4.0	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	5.0	4.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	5.0	4.0	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	5.0	4.0	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	6.7	5.0	4.0	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	5.0	4.0	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	5.0	4.0	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	5.0	4.0	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	5.0	4.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	5.0	4.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND	100	20	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	5.0	4.0	ug/L	1
Methyl acetate	79-20-9	8260D	ND	10	4.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	5.0	4.0	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	100	20	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	50	4.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND	5.0	4.0	ug/L	1
Styrene	100-42-5	8260D	ND	5.0	4.1	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	5.0	4.0	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	5.0	4.0	ug/L	1
Toluene	108-88-3	8260D	ND	5.0	4.0	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	10	4.2	ug/L	1
1.2.4-Trichlorobenzene	120-82-1	8260D	ND	5.0	4.0	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	5.0	4.0	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	5.0	4.0	ug/L	1
LOQ = Limit of Quantitation B = Detected in the met	and blank E - Quantitation of	compound exceeded th	o calibration rango	DI Detection Li	mit	O - Surro	ogate failur

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL N = Recovery is out of criteria

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: WH20094-009 Description: ISCO-OBWS-1S Matrix: Aqueous Date Sampled:08/20/2021 1620 Date Received: 08/20/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 08/27/2021 1824 ECB 15201 CAS Analytical Parameter Result Q LOQ DL Units Run Number Method Trichloroethene 79-01-6 8260D 960 5.0 ug/L 1 4.0 Trichlorofluoromethane 8260D 75-69-4 ND 5.0 ug/L 1 4.0 Vinyl chloride 75-01-4 8260D ND 5.0 ug/L 1 4.0 1330-20-7 Xylenes (total) 8260D ND 10 ug/L 4.0 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 91 70-130 1,2-Dichloroethane-d4 101 70-130 Toluene-d8 102 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure QC Summary

# Inorganic non-metals - MB

Sample ID: WQ13032-001

Batch: 13032 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND		1	1.0	0.25	ma/L	08/21/2021 1223

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - LCS

Sample ID: WQ13032-002

Batch: 13032 Analytical Method: 300.0

20

Chloride

Matrix: Aqueous

103

90-110

08/21/2021 1300

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
Farameter	(Hig/L)	(Hig/L)		ווע	70 IXEC	LIIIIII	Alialysis Date

21

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MS

Sample ID: WH20094-004MS

Batch: 13032 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	9.2	10	16	N	1	68	90-110	08/21/2021 1357

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: WH20094-004MD

Batch: 13032

Matrix: Aqueous

	Dateii.	13032
Analytical	Method:	300.0

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Chloride	9.2	10	16	N	1	69	0.70	90-110	20	08/21/2021 1416

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: WQ13034-001

Batch: 13034 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	0.0056	J	1	0.020	0.0050	mg/L	08/21/2021 1223

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ13034-002

Batch: 13034

Matrix: Aqueous

	Dateii.	10004
Analytical	Method:	300.0

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.80	0.85		1	106	90-110	08/21/2021 1300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MS

Sample ID: WH20094-004MS

Batch: 13034

Matrix: Aqueous

Analytical	Method:	300.0

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	1.1	0.40	1.4	N	1	70	90-110	08/21/2021 1357

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: WH20094-004MD

Batch: 13034 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	1.1	0.40	1.4	Ν	1	69	0.20	90-110	20	08/21/2021 1416

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: WQ13036-001

Batch: 13036 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.0050	mg/L	08/21/2021 1223

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ13036-002

Batch: 13036

Matrix: Aqueous

Analytical Method: 300.0

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	0.80	0.81		1	102	90-110	08/21/2021 1300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MS

Sample ID: WH20094-004MS

Batch: 13036 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	ND	0.40	0.42		1	106	90-110	08/21/2021 1357

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: WH20094-004MD

Batch: 13036 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrite - N	ND	0.40	0.43		1	107	1.1	90-110	20	08/21/2021 1416

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: WQ13037-001

Batch: 13037 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND		1	1.0	0.25	mg/L	08/21/2021 1223

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: WQ13037-002

Batch: 13037

Matrix: Aqueous

	Dutcii.	13037
Analytical	Method:	300.0

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	20	21		1	106	90-110	08/21/2021 1300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MS

Sample ID: WH20094-004MS

Batch: 13037 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	ND	10	7.1	N	1	71	90-110	08/21/2021 1357

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MSD

Sample ID: WH20094-004MD

Batch: 13037 Analytical Method: 300.0 Matrix: Aqueous

_ Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Sulfate	ND	10	6.9	N	1	69	3.7	90-110	20	08/21/2021 1416

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: WQ13243-001

Batch: 13243 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND	_	1	1.0	0.25	mg/L	08/24/2021 1159

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ13243-002

Batch: 13243

Matrix: Aqueous

	Dateii.	13243
Analytical	Method:	300.0

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	20	21		1	103	90-110	08/24/2021 1237

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MS

Sample ID: WH20094-009MS

Batch: 13243

Matrix: Aqueous

Baton: 102	
Analytical Method: 300	0

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	5.7	10	16		1	102	90-110	08/24/2021 2011

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MSD

Sample ID: WH20094-009MD

Batch: 13243 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD		% RPD Limit	Analysis Date	
Chloride	5.7	10	16		1	102	0.25	90-110	20	08/24/2021 2030	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: WQ13440-001

Batch: 13440

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	08/26/2021 1916

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

## Inorganic non-metals - LCS

Sample ID: WQ13440-002

Batch: 13440

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	19		1	97	90-110	08/26/2021 1929

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: WQ13498-001

Batch: 13498

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TDS	ND		1	25	25	mg/L	08/26/2021 2308

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ13498-002

Batch: 13498

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TDS	1500	1500		1	100	90-110	08/26/2021 2308

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - Duplicate

Sample ID: WH20094-001DU

Batch: 13498

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Result (mg/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
TDS	ND	ND		1	0.00	20	08/26/2021 2308

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ13519-002

Batch: 13519

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike					
	Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	98	1	98	90-110	08/27/2021 0029

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: WQ13648-001

Batch: 13648

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TDS	ND		1	25	25	mg/L	08/27/2021 2114

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ13648-002

Batch: 13648

Analytical Method: SM 2540C-2011

Matrix: Aqueous

December	Spike Amount	Result	0	<b>5</b>	0/ Doo	%Rec	Analysis Data
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
TDS	1500	1500		1	100	90-110	08/27/2021 2114

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15201-001 Batch: 15201

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	08/27/2021 1125
Benzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Bromodichloromethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Bromoform	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	08/27/2021 1125
2-Butanone (MEK)	ND		1	10	2.0	ug/L	08/27/2021 1125
Carbon disulfide	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Chlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Chloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Chloroform	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Cyclohexane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Dibromochloromethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Ethylbenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
2-Hexanone	ND		1	10	2.0	ug/L	08/27/2021 1125
Isopropylbenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Methyl acetate	ND		1	1.0	0.40	ug/L	08/27/2021 1125
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	08/27/2021 1125
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	08/27/2021 1125
Methylcyclohexane	ND		1	5.0	0.40	ug/L	08/27/2021 1125
Methylene chloride	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Styrene	ND		1	0.50	0.41	ug/L	08/27/2021 1125
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Tetrachloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
Toluene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	08/27/2021 1125
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1125
, ,			•			3	3.5. = 1. = 3 = 1 · 1. <b>= 3</b>

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

# Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15201-001 Batch: 15201

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	08/27/2021 1125
Trichlorofluoromethane	ND	1	0.50	0.40	ug/L	08/27/2021 1125
Vinyl chloride	ND	1	0.50	0.40	ug/L	08/27/2021 1125
Xylenes (total)	ND	1	1.0	0.40	ug/L	08/27/2021 1125
Surrogate	Q % Red	Acceptance Limit	е			
Bromofluorobenzene	88	70-130				
1,2-Dichloroethane-d4	99	70-130				
Toluene-d8	100	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15201-002 Batch: 15201 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
5	Amount	Result			0/ 5	%Rec	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	100		1	102	60-140	08/27/2021 1025
Benzene	50	49		1	99	70-130	08/27/2021 1025
Bromodichloromethane	50	50		1	100	70-130	08/27/2021 1025
Bromoform	50	48		1	96	70-130	08/27/2021 1025
Bromomethane (Methyl bromide)	50	46		1	91	70-130	08/27/2021 1025
2-Butanone (MEK)	100	110		1	112	70-130	08/27/2021 1025
Carbon disulfide	50	49		1	97	70-130	08/27/2021 1025
Carbon tetrachloride	50	49		1	97	70-130	08/27/2021 1025
Chlorobenzene	50	50		1	100	70-130	08/27/2021 1025
Chloroethane	50	40		1	80	70-130	08/27/2021 1025
Chloroform	50	51		1	102	70-130	08/27/2021 1025
Chloromethane (Methyl chloride)	50	40		1	80	60-140	08/27/2021 1025
Cyclohexane	50	41		1	83	70-130	08/27/2021 1025
1,2-Dibromo-3-chloropropane (DBCP)	50	52		1	104	70-130	08/27/2021 1025
Dibromochloromethane	50	55		1	110	70-130	08/27/2021 1025
1,2-Dibromoethane (EDB)	50	51		1	103	70-130	08/27/2021 1025
1,2-Dichlorobenzene	50	51		1	102	70-130	08/27/2021 1025
1,3-Dichlorobenzene	50	51		1	101	70-130	08/27/2021 1025
1,4-Dichlorobenzene	50	49		1	97	70-130	08/27/2021 1025
Dichlorodifluoromethane	50	40		1	81	60-140	08/27/2021 1025
1,1-Dichloroethane	50	49		1	99	70-130	08/27/2021 1025
1,2-Dichloroethane	50	49		1	98	70-130	08/27/2021 1025
1,1-Dichloroethene	50	51		1	101	70-130	08/27/2021 1025
cis-1,2-Dichloroethene	50	53		1	107	70-130	08/27/2021 1025
trans-1,2-Dichloroethene	50	52		1	104	70-130	08/27/2021 1025
1,2-Dichloropropane	50	47		1	94	70-130	08/27/2021 1025
cis-1,3-Dichloropropene	50	53		1	107	70-130	08/27/2021 1025
trans-1,3-Dichloropropene	50	46		1	92	70-130	08/27/2021 1025
Ethylbenzene	50	52		1	105	70-130	08/27/2021 1025
2-Hexanone	100	89		1	89	70-130	08/27/2021 1025
Isopropylbenzene	50	56		1	112	70-130	08/27/2021 1025
Methyl acetate	50	48		1	97	70-130	08/27/2021 1025
Methyl tertiary butyl ether (MTBE)	50	54		1	107	70-130	08/27/2021 1025
4-Methyl-2-pentanone	100	88		1	88	70-130	08/27/2021 1025
Methylcyclohexane	50	50		1	99	70-130	08/27/2021 1025
Methylene chloride	50	51		1	101	70-130	08/27/2021 1025
Styrene	50	50		1	100	70-130	08/27/2021 1025
1,1,2,2-Tetrachloroethane	50	48		1	96	70-130	08/27/2021 1025
Tetrachloroethene	50	49		1	99	70-130	08/27/2021 1025
Toluene	50	51		1	102	70-130	08/27/2021 1025
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	49		1	98	70-130	08/27/2021 1025
1,2,4-Trichlorobenzene	50	54		1	107	70-130	08/27/2021 1025
1,1,1-Trichloroethane	50	49		1	99	70-130	08/27/2021 1025
1,1,2-Trichloroethane	50	49		1	98	70-130	08/27/2021 1025

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

# Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15201-002 Batch: 15201

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
50	50	1	100	70-130	08/27/2021 1025
50	44	1	88	70-130	08/27/2021 1025
50	41	1	82	70-130	08/27/2021 1025
100	110	1	109	70-130	08/27/2021 1025
Q % Rec	Acceptance Limit				
89	70-130				
89	70-130				
85	70-130				
	Amount (ug/L)  50  50  50  100  Q % Rec  89  89	Amount (ug/L) Q  50 50 50 44 50 41 100 110  Q % Rec Limit  89 70-130 89 70-130	Amount (ug/L)	Amount (ug/L) Q Dil % Rec  50 50 1 100  50 44 1 88  50 41 1 82  100 110 1 109  Acceptance Limit  89 70-130  89 70-130	Amount (ug/L) Q Dil % Rec Limit  50 50 1 100 70-130 50 44 1 88 70-130 50 41 1 82 70-130 100 110 1 109 70-130  Q % Rec Limit  89 70-130 89 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15202-001 Batch: 15202

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	08/27/2021 1041
Benzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Bromodichloromethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Bromoform	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	08/27/2021 1041
2-Butanone (MEK)	ND		1	10	2.0	ug/L	08/27/2021 1041
Carbon disulfide	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Chlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Chloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Chloroform	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Cyclohexane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Dibromochloromethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Ethylbenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
2-Hexanone	ND		1	10	2.0	ug/L	08/27/2021 1041
Isopropylbenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Methyl acetate	ND		1	1.0	0.40	ug/L	08/27/2021 1041
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	08/27/2021 1041
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	08/27/2021 1041
Methylcyclohexane	ND		1	5.0	0.40	ug/L	08/27/2021 1041
Methylene chloride	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Styrene	ND		1	0.50	0.41	ug/L	08/27/2021 1041
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Tetrachloroethene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
Toluene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	08/27/2021 1041
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	08/27/2021 1041

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

# Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15202-001 Batch: 15202

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

	Q Dil	LOQ	DL	Units	Analysis Date
ND	1	0.50	0.40	ug/L	08/27/2021 1041
ND	1	0.50	0.40	ug/L	08/27/2021 1041
ND	1	0.50	0.40	ug/L	08/27/2021 1041
ND	1	1.0	0.40	ug/L	08/27/2021 1041
Q % Rec	Acceptance Limit				
104	70-130				
103	70-130				
101	70-130				
	ND ND ND Q % Rec 104 103	ND       1         ND       1         ND       1         Acceptance Limit         104       70-130         103       70-130	ND 1 0.50 ND 1 0.50 ND 1 1.0  Q % Rec Limit  104 70-130 103 70-130	ND 1 0.50 0.40 ND 1 0.50 0.40 ND 1 1.0 0.40  Q % Rec Limit  104 70-130 103 70-130	ND 1 0.50 0.40 ug/L ND 1 0.50 0.40 ug/L ND 1 1.0 0.40 ug/L  Q % Rec Limit  104 70-130 103 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15202-002 Batch: 15202 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike					0/ D	
Parameter	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	 79		1	79	60-140	08/27/2021 0938
Benzene	50	47		1	94	70-130	08/27/2021 0938
Bromodichloromethane	50	48		1	97	70-130	08/27/2021 0938
Bromoform	50	47		1	94	70-130	08/27/2021 0938
Bromomethane (Methyl bromide)	50	49		1	98	70-130	08/27/2021 0938
2-Butanone (MEK)	100	110		1	113	70-130	08/27/2021 0938
Carbon disulfide	50	44		1	88	70-130	08/27/2021 0938
Carbon tetrachloride	50	47		1	93	70-130	08/27/2021 0938
Chlorobenzene	50	46		1	93	70-130	08/27/2021 0938
Chloroethane	50	52		1	104	70-130	08/27/2021 0938
Chloroform	50	49		1	98	70-130	08/27/2021 0938
Chloromethane (Methyl chloride)	50	52		1	104	60-140	08/27/2021 0938
Cyclohexane	50	44		1	88	70-130	08/27/2021 0938
1,2-Dibromo-3-chloropropane (DBCP)	50	48		1	96	70-130	08/27/2021 0938
Dibromochloromethane	50	48		1	96	70-130	08/27/2021 0938
1,2-Dibromoethane (EDB)	50	49		1	98	70-130	08/27/2021 0938
1,2-Dichlorobenzene	50	46		1	91	70-130	08/27/2021 0938
1,3-Dichlorobenzene	50	45		1	90	70-130	08/27/2021 0938
1,4-Dichlorobenzene	50	45		1	90	70-130	08/27/2021 0938
Dichlorodifluoromethane	50	61		1	122	60-140	08/27/2021 0938
1,1-Dichloroethane	50	48		1	96	70-130	08/27/2021 0938
1,2-Dichloroethane	50	49		1	98	70-130	08/27/2021 0938
1,1-Dichloroethene	50	47		1	93	70-130	08/27/2021 0938
cis-1,2-Dichloroethene	50	48		1	95	70-130	08/27/2021 0938
trans-1,2-Dichloroethene	50	46		1	93	70-130	08/27/2021 0938
1,2-Dichloropropane	50	49		1	99	70-130	08/27/2021 0938
cis-1,3-Dichloropropene	50	50		1	100	70-130	08/27/2021 0938
trans-1,3-Dichloropropene	50	49		1	98	70-130	08/27/2021 0938
Ethylbenzene	50	47		1	94	70-130	08/27/2021 0938
2-Hexanone	100	110		1	105	70-130	08/27/2021 0938
Isopropylbenzene	50	46		1	93	70-130	08/27/2021 0938
Methyl acetate	50	51		1	103	70-130	08/27/2021 0938
Methyl tertiary butyl ether (MTBE)	50	46		1	92	70-130	08/27/2021 0938
4-Methyl-2-pentanone	100	110		1	107	70-130	08/27/2021 0938
Methylcyclohexane	50	47		1	94	70-130	08/27/2021 0938
Methylene chloride	50	47		1	95	70-130	08/27/2021 0938
Styrene	50	50		1	100	70-130	08/27/2021 0938
1,1,2,2-Tetrachloroethane	50	50		1	100	70-130	08/27/2021 0938
Tetrachloroethene	50	45		1	89	70-130	08/27/2021 0938
Toluene	50	47		1	93	70-130	08/27/2021 0938
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	48		1	<b>9</b> 5	70-130	08/27/2021 0938
1,2,4-Trichlorobenzene	50	44		1	88	70-130	08/27/2021 0938
1,1,1-Trichloroethane	50	48		1	<b>9</b> 5	70-130	08/27/2021 0938
1,1,2-Trichloroethane	50	50		1	99	70-130	08/27/2021 0938

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

# Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15202-002 Batch: 15202

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	45	1	91	70-130	08/27/2021 0938
Trichlorofluoromethane	50	51	1	102	70-130	08/27/2021 0938
Vinyl chloride	50	50	1	99	70-130	08/27/2021 0938
Xylenes (total)	100	94	1	94	70-130	08/27/2021 0938
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	96	70-130				
1,2-Dichloroethane-d4	99	70-130				
Toluene-d8	93	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15206-001 Batch: 15206

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	08/31/2021 0925
Benzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Bromodichloromethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Bromoform	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	08/31/2021 0925
2-Butanone (MEK)	ND		1	10	2.0	ug/L	08/31/2021 0925
Carbon disulfide	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Chlorobenzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Chloroethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Chloroform	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Cyclohexane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Dibromochloromethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Ethylbenzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
2-Hexanone	ND		1	10	2.0	ug/L	08/31/2021 0925
Isopropylbenzene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Methyl acetate	ND		1	1.0	0.40	ug/L	08/31/2021 0925
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	08/31/2021 0925
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	08/31/2021 0925
Methylcyclohexane	ND		1	5.0	0.40	ug/L	08/31/2021 0925
Methylene chloride	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Styrene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Tetrachloroethene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Toluene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	08/31/2021 0925
1,2,4-Trichlorobenzene	ND		1	0.50	0.42	ug/L	08/31/2021 0925
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L ug/L	08/31/2021 0925
1,1,2-Trichloroethane	ND		1 1	0.50	0.40		08/31/2021 0925
1,1,2-THCHIOLOGUIANE	ND		ı	0.50	0.40	ug/L	00/31/2021 0923

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

# Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15206-001 Batch: 15206

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Vinyl chloride	ND		1	0.50	0.40	ug/L	08/31/2021 0925
Xylenes (total)	ND		1	1.0	0.40	ug/L	08/31/2021 0925
Surrogate	Q % Rec		otance mit				
Bromofluorobenzene	101	70	-130				
1,2-Dichloroethane-d4	93	70	-130				
Toluene-d8	95	70	-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15206-002 Batch: 15206 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
5	Amount	Result			0/ 5	%Rec	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	130		1	127	60-140	08/31/2021 0825
Benzene	50	46		1	91	70-130	08/31/2021 0825
Bromodichloromethane	50	46		1	93	70-130	08/31/2021 0825
Bromoform	50	43		1	86	70-130	08/31/2021 0825
Bromomethane (Methyl bromide)	50	50		1	100	70-130	08/31/2021 0825
2-Butanone (MEK)	100	120		1	116	70-130	08/31/2021 0825
Carbon disulfide	50	46		1	92	70-130	08/31/2021 0825
Carbon tetrachloride	50	48		1	<b>9</b> 5	70-130	08/31/2021 0825
Chlorobenzene	50	44		1	88	70-130	08/31/2021 0825
Chloroethane	50	49		1	97	70-130	08/31/2021 0825
Chloroform	50	48		1	96	70-130	08/31/2021 0825
Chloromethane (Methyl chloride)	50	50		1	100	60-140	08/31/2021 0825
Cyclohexane	50	44		1	89	70-130	08/31/2021 0825
1,2-Dibromo-3-chloropropane (DBCP)	50	43		1	87	70-130	08/31/2021 0825
Dibromochloromethane	50	45		1	91	70-130	08/31/2021 0825
1,2-Dibromoethane (EDB)	50	45		1	90	70-130	08/31/2021 0825
1,2-Dichlorobenzene	50	45		1	89	70-130	08/31/2021 0825
1,3-Dichlorobenzene	50	43		1	86	70-130	08/31/2021 0825
1,4-Dichlorobenzene	50	43		1	85	70-130	08/31/2021 0825
Dichlorodifluoromethane	50	64		1	127	60-140	08/31/2021 0825
1,1-Dichloroethane	50	48		1	96	70-130	08/31/2021 0825
1,2-Dichloroethane	50	47		1	93	70-130	08/31/2021 0825
1,1-Dichloroethene	50	48		1	97	70-130	08/31/2021 0825
cis-1,2-Dichloroethene	50	47		1	94	70-130	08/31/2021 0825
trans-1,2-Dichloroethene	50	47		1	95	70-130	08/31/2021 0825
1,2-Dichloropropane	50	47		1	93	70-130	08/31/2021 0825
cis-1,3-Dichloropropene	50	47		1	95	70-130	08/31/2021 0825
trans-1,3-Dichloropropene	50	46		1	92	70-130	08/31/2021 0825
Ethylbenzene	50	45		1	90	70-130	08/31/2021 0825
2-Hexanone	100	95		1	95	70-130	08/31/2021 0825
Isopropylbenzene	50	47		1	94	70-130	08/31/2021 0825
Methyl acetate	50	48		1	97	70-130	08/31/2021 0825
Methyl tertiary butyl ether (MTBE)	50	44		1	89	70-130	08/31/2021 0825
4-Methyl-2-pentanone	100	92		1	92	70-130	08/31/2021 0825
Methylcyclohexane	50	47		1	94	70-130	08/31/2021 0825
Methylene chloride	50	47		1	95	70-130	08/31/2021 0825
Styrene	50	47		1	94	70-130	08/31/2021 0825
1,1,2,2-Tetrachloroethane	50	47		1	94	70-130	08/31/2021 0825
Tetrachloroethene	50	44		1	87	70-130	08/31/2021 0825
Toluene	50	45		1	90	70-130	08/31/2021 0825
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	50		1	99	70-130	08/31/2021 0825
1,2,4-Trichlorobenzene	50	44		1	89	70-130	08/31/2021 0825
1,1,1-Trichloroethane	50	49		1	97	70-130	08/31/2021 0825
1,1,2-Trichloroethane	50	46		1	93	70-130	08/31/2021 0825

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

# Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15206-002 Batch: 15206

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	45	1	89	70-130	08/31/2021 0825
Trichlorofluoromethane	50	55	1	109	70-130	08/31/2021 0825
Vinyl chloride	50	52	1	103	70-130	08/31/2021 0825
Xylenes (total)	100	93	1	93	70-130	08/31/2021 0825
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	91	70-130				
1,2-Dichloroethane-d4	96	70-130				
Toluene-d8	92	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: WQ13554-001

Batch: 13554 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	08/27/2021 0952
Ethene	ND		1	10	2.5	ug/L	08/27/2021 0952
Methane	ND		1	10	2.5	ug/L	08/27/2021 0952

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P =

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Dissolved Gases - LCS

Sample ID: WQ13554-002

Batch: 13554 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	550	560		1	101	70-130	08/27/2021 0920
Ethene	520	530		1	102	70-130	08/27/2021 0920
Methane	300	290		1	100	70-130	08/27/2021 0920

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Dissolved Gases - LCSD

Sample ID: WQ13554-003

Batch: 13554 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Ethane	550	570		1	103	1.4	70-130	30	08/27/2021 0938
Ethene	520	530		1	104	1.2	70-130	30	08/27/2021 0938
Methane	300	300		1	101	1.6	70-130	30	08/27/2021 0938

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### ICP-AES Metals - MB

Sample ID: WQ13075-001 Batch: 13075

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 08/25/2021 0320

Parameter	Result	Q	Dil	LO	Q DL	Units	Analysis Date
Dissolved Iron	ND		1	0.1	0 0.040	mg/L	08/26/2021 1017

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

### ICP-AES Metals - LCS

Sample ID: WQ13075-002 Batch: 13075 Matrix: Aqueous Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 08/25/2021 0320

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	20	21		1	104	80-120	08/26/2021 1021

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### ICP-AES Metals - MS

Sample ID: WH20094-001MS

Batch: 13075

Matrix: Aqueous

Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 08/25/2021 0320

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	0.050	20	20		1	99	75-125	08/25/2021 1421

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MSD

Sample ID: WH20094-001MD

Batch: 13075

Matrix: Aqueous Prep Method: 3005A

Prep Date: 08/25/2021 0320

Analytical Method: 6010D

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Dissolved Iron	0.050	20	20		1	100	0.42	75-125	20	08/25/2021 1425	_

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### ICP-AES Metals - MB

Sample ID: WQ13076-001 Batch: 13076

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 08/24/2021 1053

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	0.10	0.040	mg/L	08/25/2021 0911

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

### ICP-AES Metals - LCS

Sample ID: WQ13076-002 Batch: 13076

3076 Prep Method: 3005A

Prep Date: 08/24/2021 1053

Matrix: Aqueous

Analytical Method: 6010D

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Iron	20	21		1	105	80-120	08/25/2021 0914

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Chain of Custody and Miscellaneous Documents

PACE ANALYTICAL SERVICES, LLC 108 Vantage Point Drive • West Columbia, SC 29172 Telephone No. 803-791-9709 Fax No. 803-791-9111 www.pacelabs.com

Number 124410

みをむか		0	2	5.5	18	18-102/2	29		Gentle 4	
101 Research Some		Sampler's Signature	furs		Analysis	Analysis (Attach list if more space is needed)	more apac	e îs need	(3)	Paga / of
Sage No.	Zio Coole 27,203	Priple Name Justh Butter	Justin B.	Her				الماتر	and hos	- Marian
Project No. 60635197	RO No.	Rysod Que	Matrix	No of Containous by Preservative Type				elsM.	اماه <sub>ي</sub> ا مارجو	
Semple 1D / Description Semple 1D / Description Continues to axial semple may be axiabled an one fine.)	On'setion Date(s)	Collection Time 30 Co.	eneway way pros sucomby	07 5006 17994 204 20407 20407	Panks Col	750 1000	207	esia.	E011	Remarks / Cooler (.D.
MW-1	1761/8	1630 6	×.	×.×.	×	×	×	×	X	
	Shoty .	3 05.80	X 2	7	×	×	×			
TMW-29	State	9 Ohoi	×	ጣ	×	×	×			
	Stroke	1145 6	×	5115	×	×	×	×	×	
M-1T	12/02/8	1235 6	<u>ب</u>	1115	×	×	×	×	×	
	-		3,	اما - -	×	×	~	×	×	
300-	Stotu	7 5301	×		×					
	8/20/24	2 0051	۳ ×	2 - 5	×	×	×	×	×	
15co-08m5-15	shoty.	1, 250 6	×	6	×	×	×			
Forn Around Tune Required (Prior has socional required for expedited 1911)  (2) Standard Tunsh (Specify)		Semple Disposal U Rohm to Glevif	Ferman by the	Serupte Dispose/	enicer able — D. Skin Friftant		C. Poison	(1 Unknown	OC Requires	GC Requirements (Specify)
. Hahinquished by Call He		Shoke	7.00 7.00	1. Pecemed by	0	1			5/2/2	Jane 715
2. Reinavierally J. H. E.		1 Here has	7,877	2. Received by					Sate	Timp
3, Reunquistind by		Sare	Тле	3. Received by					Date	TANG
4. Rethquished by		Osne	Tone	4. Laboratory received by	Jack .	161	ON THE		CA CALL	2/2/ 100 /
Note: All securities are relatined for four weeks	d for four week	ts from receipt		LARUSEOMY	-	1			200	Them Blond

Document Number: M5000N2-01



#### Samples Receipt Checklist (SRC) (ME0018C-15) Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020 Page 1 of 1

### Sample Receipt Checklist (SRC)

Client: AECOM	Cooler Inspected by/date: ISM / 08/20/2021 Lot #: WH20094
Means of receipt: Pa	ace
Yes ✓ No	Were custody seals present on the cooler?
	2. If custody seals were present, were they intact and unbroken?
pH Strip (D: 21-852	Chlorine Strip ID: NA Tested by: 18M
Original temperature upon 2.8 /2.8 °C NA /N	n receipt / Derived (Corrected) temperature upon receipt
Method: ✓ Temperature	Blank Against Bottles (R Gun ID: 5 IR Gun Correction Factor: 0 °C
	Wet Ice  lee Packs  Dry ice  None
Yes No NA	3. If temperature of any cooler exceeded 6 000, was Project Manager Notified?
Yes No NA	4. Is the commercial courier's packing slip attached to this form?
✓ Yes □ No	5. Were proper custody procedures (relinquished/received) followed?
✓ Yes No	6. Were sample IDs listed on the COC?
✓ Yes No	7. Were sample IDs listed on all sample containers?
✓ Yes No	8. Was collection date & time listed on the COC?
✓ Yes No	Was collection date & time listed on all sample containers?
✓ Yes No	10. Did all container label information (ID, date, time) agree with the COC?
✓ Yes No	11. Were tests to be performed listed on the COC?
☑Yes □No	12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
✓ Yes □ No	13. Was adequate sample volume available?
☐ Yes 🗸 No	14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes No	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes No NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (1/2" or 6mm in diameter)
	in any of the VOA vials?
	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
YesNo ✓NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐Yes ☐No ☑NA	19. Were all applicable NH <sub>3</sub> /TKN/cyanide/pheno!/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
	20. Were client consolidate water 6 and and dilution 1400 (co. 1)
∐Yes □No ☑NA	correctly transcribed from the COC into the comment section in LIMS?
7 Yes No	21. Was the quote number listed on the container label? If yes, Quote # 24900
Sample Preservation (I	Must be completed for any sample(s) incorrectly preserved or with headspace.)
Sample(s) NA	were received incorrectly preserved and were adjusted accordingly
in sample receiving with	mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA
Time of preservation NA	. If more than one prescryative is needed, please note in the comments below.
Sample(s) NA	were received with bubbles >6 mm in diameter.
Samples(s) NA	were received with TRC > 0.5 mg/L (1f #19 is no ) and were
adjusted accordingly in sai	mple receiving with sodium thiosulfate (No <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Shealy ID: NA
SR barcode labels applied	by; JSM Date: 08/23/2021
Comments;	



# **Report of Analysis**

#### **AECOM**

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Shakespeare Project Number: 60635197 Lot Number: **WJ29086** 

Date Completed: 11/30/2021

Harrah K Lucas

12/01/2021 4:05 PM
Approved and released by:
Project Manager I: **Hannah K. Lucas** 





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approved.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

# Case Narrative AECOM Lot Number: WJ29086

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, Fecal Coliform SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, Solid Chemical Material: TOC Walkley-Black.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

#### **Volatiles**

The laboratory control sample (LCS) associated with batch 22389 had 1,2,4-trichlorobenzene recovered below the acceptance limits.

The continuing calibration verification (CCV) associated with samples -001, -002, -003 and -004 recovered below acceptance limits. There were no detections for this compound in the associated samples. A LOQ standard was analyzed and the compound was detected, demonstrating there was adequate sensitivity to identify the analyte if it were present.

Sample -002 had trichloroethene recovered above the instrument's calibration range in the initial analysis. The sample was analyzed at a dilution outside of the 14-day holding time and the detections were confirmed. The initial results have been reported.

Samples -003 and -004 were diluted due to the sample matrix. The reporting limit has been raised accordingly. The samples was analyzed outside of analytical holding time due to instrumentation malfunction that did not inject samples in initial analysis.

#### **Dissolved Gases**

The laboratory control sample (LCS) associated with batch 22265 had methane and ethane recovered above the acceptance limits. This could potentially result in a high bias on analytical results. There were no detections for this compound in the samples associated with this batch; therefore, data quality is not impacted.

#### Inorganic non-metals

Sample -002 and -003 were diluted 5X due to the sample matrix. The reporting limit has been raised accordingly.

# Sample Summary AECOM

Lot Number: WJ29086

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-10I	Aqueous	10/29/2021 1050	10/29/2021
002	ISERD-OBSW-10I	Aqueous	10/29/2021 1150	10/29/2021
003	MW-10	Aqueous	10/29/2021 1310	10/29/2021
004	ISERD-OBSW-10	Aqueous	10/29/2021 1405	10/29/2021

(4 samples)

# Detection Summary AECOM

Lot Number: WJ29086

Samal	o Samplo ID	Motrix	Paramotor	Method	Result	Q	Units	Paga
	e Sample ID	Matrix	Parameter			U		Page
001	MW-10I		Alkalinity @ pH 4.5 su	SM 2320B-	36		mg CaCO3/L	14
001	MW-10I	-	Bicarbonate Alkalinity	SM 2320B-	36		mg/L	14
001	MW-10I	•	Chloride	300.0	39		mg/L	14
001	MW-10I	Aqueous		300.0	0.32	J	mg/L	14
001	MW-10I	Aqueous		SM 5310C-	13		mg/L	14
001	MW-10I	-	Acetone	8260D	8.9	J	ug/L	15
001	MW-10I	•	Chloroform	8260D	0.67		ug/L	15
001	MW-10I		1,2-Dichloroethane	8260D	0.95		ug/L	15
001	MW-10I	Aqueous	cis-1,2-Dichloroethene	8260D	1.8		ug/L	15
001	MW-10I	Aqueous	Trichloroethene	8260D	1100	Ε	ug/L	16
001	MW-10I	Aqueous	Dissolved Iron	6010D	0.79		mg/L	18
001	MW-10I	Aqueous	Iron	6010D	6.4		mg/L	19
002	ISERD-OBSW-10I	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	180		mg CaCO3/L	20
002	ISERD-OBSW-10I	Aqueous	Bicarbonate Alkalinity	SM 2320B-	170		mg/L	20
002	ISERD-OBSW-10I	Aqueous	Chloride	300.0	9.0		mg/L	20
002	ISERD-OBSW-10I	Aqueous	TOC	SM 5310C-	460		mg/L	20
002	ISERD-OBSW-10I	Aqueous	Acetone	8260D	7.3	J	ug/L	21
002	ISERD-OBSW-10I	Aqueous	Chloroform	8260D	1.1		ug/L	21
002	ISERD-OBSW-10I	Aqueous	1,2-Dichloroethane	8260D	0.61		ug/L	21
002	ISERD-OBSW-10I	Aqueous	cis-1,2-Dichloroethene	8260D	1.6		ug/L	21
002	ISERD-OBSW-10I	Aqueous	Methyl acetate	8260D	2.2		ug/L	21
002	ISERD-OBSW-10I	Aqueous	Methylene chloride	8260D	2.3		ug/L	21
002	ISERD-OBSW-10I	Aqueous	Trichloroethene	8260D	520	Ε	ug/L	22
002	ISERD-OBSW-10I	Aqueous	Methane	RSK - 175	15	L	ug/L	23
002	ISERD-OBSW-10I	Aqueous	Dissolved Iron	6010D	0.70		mg/L	24
002	ISERD-OBSW-10I	Aqueous	Iron	6010D	1.2		mg/L	25
003	MW-10	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	190		mg CaCO3/L	26
003	MW-10	•	Bicarbonate Alkalinity	SM 2320B-	160		mg/L	26
003	MW-10	Aqueous	Carbonate Alkalinity	SM 2320B-	25		mg/L	26
003	MW-10	Agueous	Chloride	300.0	29		mg/L	26
003	MW-10	Aqueous	Sulfate	300.0	2.5	J	mg/L	26
003	MW-10	Aqueous	TOC	SM 5310C-	4800		mg/L	26
003	MW-10	•	Trichloroethene	8260D	600	Н	ug/L	28
003	MW-10	•	Methane	RSK - 175	9.1	JL	ug/L	29
003	MW-10		Dissolved Iron	6010D	0.46	0_	mg/L	30
003	MW-10	Aqueous		6010D	1.2		mg/L	31
004	ISERD-OBSW-10		Alkalinity @ pH 4.5 su	SM 2320B-	54		mg CaCO3/L	32
004	ISERD-OBSW-10	•	Bicarbonate Alkalinity	SM 2320B-	54		mg/L	32
	ISERD-OBSW-10		Chloride	300.0	83		mg/L	32
004 004	ISERD-OBSW-10	-	Nitrate - N	300.0	0.026		mg/L	32
	ISERD-OBSW-10	Aqueous		300.0	0.026	J	mg/L	32
004 004	ISERD-OBSW-10	Aqueous		300.0 SM 5310C-	0.29 71	J	mg/L	32 32
		•						
004	ISERD-OBSW-10		Trichloroethene Dissolved Iron	8260D 6010D	410 0.68	Н	ug/L mg/L	34 36
004	ISERD-OBSW-10	•					•	
004	ISERD-OBSW-10	Aqueous	11 (1)	6010D	1.1		mg/L	37

# **Detection Summary (Continued)**

Lot Number: WJ29086

Sample Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page

(45 detections)

# Inorganic non-metals

Client: AECO	M				Laboratory ID	: WJ29086	-001	
Description: MW-1	01				Matrix	: Aqueous		
Date Sampled:10/29/	2021 1050							
Date Received: 10/29/	2021							
Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch			
1	(Alkalinity @) SM 2320B-2011	1	11/07/2021 0259 AAB		21750			
1	(Bicarbonate ) SM 2320B-2011	1	11/07/2021 0259 AAB					
1	(Carbonate Al) SM 2320B-2011	1	11/07/2021 0259 AAB					
1	(Chloride) 300.0	1	10/31/2021 0055 AMR		21283			
1	(Nitrate - N) 300.0	1	10/31/2021 0055 AMR		21286			
1	(Nitrite - N) 300.0	1	10/31/2021 0055 AMR		21288			
1	(Sulfate) 300.0	1	10/31/2021 0055 AMR		21284			
3	(TOC) SM 5310C-2011	1	11/19/2021 0300 AAB		23034			
Parameter			CAS Analytical Method	Result Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5	SU		SM 2320B-2011	36	20	20	mg CaCO3/L	<del></del>

Parameter	CAS Number	Analytical Method	Result (	Q LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	36	20	20	mg CaCO3/L	1
Bicarbonate Alkalinity		SM 2320B-2011	36	20	20	mg/L	1
Carbonate Alkalinity		SM 2320B-2011	ND	20	20	mg/L	1
Chloride		300.0	39	1.0	0.25	mg/L	1
Nitrate - N		300.0	ND	0.020	0.0050	mg/L	1
Nitrite - N		300.0	ND	0.020	0.0050	mg/L	1
Sulfate		300.0	0.32	J 1.0	0.25	mg/L	1
TOC		SM 5310C-2011	13	1.0	1.0	mg/L	3

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of \ compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Client: AECOM

Laboratory ID: WJ29086-001

Description: MW-10I

Date Sampled:10/29/2021 1050

Matrix: Aqueous

Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 1 11/12/2021 1552 CAW 22328

67-64-1 71-43-2 75-27-4 75-25-2 74-83-9 78-93-3 75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4 156-59-2	8260D 8260D	8.9 J ND	10 0.50 0.	4.0 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	
75-27-4 75-25-2 74-83-9 78-93-3 75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND N	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 2.0 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
75-25-2 74-83-9 78-93-3 75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND N	0.50 0.50 10 0.50 0.50 0.50 0.50 0.50 0.	0.40 0.40 2.0 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
74-83-9 78-93-3 75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND N	0.50 10 0.50 0.50 0.50 0.50 0.50 0.50 0.	0.40 2.0 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
78-93-3 75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND ND O.67 ND	10 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	2.0 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
75-15-0 56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND O.67 ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
56-23-5 108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND O.67 ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1
108-90-7 75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND 0.67 ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1 1
75-00-3 67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND 0.67 ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1 1
67-66-3 74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	0.67 ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1 1
74-87-3 110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND N	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1 1
110-82-7 96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND N	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1 1
96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND ND ND ND ND ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1
96-12-8 124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND ND ND ND ND ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1 1
124-48-1 106-93-4 95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND ND ND ND ND	0.50 0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1 1
95-50-1 541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND ND ND 0.95	0.50 0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1 1 1
541-73-1 106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND ND ND 0.95	0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L ug/L	1 1 1
106-46-7 75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D 8260D	ND ND ND 0.95	0.50 0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L ug/L	1 1 1
75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D 8260D	ND ND 0.95	0.50 0.50 0.50 0.50	0.40 0.40 0.40 0.40	ug/L ug/L ug/L ug/L	1 1
75-71-8 75-34-3 107-06-2 75-35-4	8260D 8260D 8260D 8260D	ND ND 0.95	0.50 0.50 0.50	0.40 0.40 0.40	ug/L ug/L ug/L	1
75-34-3 107-06-2 75-35-4	8260D 8260D 8260D	ND 0.95	0.50 0.50	0.40 0.40	ug/L ug/L	
107-06-2 75-35-4	8260D 8260D	0.95	0.50	0.40	ug/L	
75-35-4	8260D					
156-59-2	9260D		0.50	0.40	ug/L	1
	02000	1.8	0.50	0.40	ug/L	1
156-60-5	8260D	ND	0.50	0.40	ug/L	1
78-87-5	8260D	ND	0.50	0.40	ug/L	1
061-01-5	8260D	ND	0.50	0.40	ug/L	1
061-02-6	8260D	ND	0.50	0.40	ug/L	1
100-41-4	8260D	ND	0.50	0.40	ug/L	1
591-78-6	8260D	ND	10	2.0	ug/L	1
98-82-8	8260D	ND	0.50	0.40	ug/L	1
79-20-9	8260D	ND	1.0	0.40	ug/L	1
634-04-4		ND				1
108-10-1		ND	10			1
108-87-2	8260D	ND	5.0			1
		ND			=	1
						1
						1
						1
					=	1
					=	1
						1
						1
71-55-6	02000	110	0.50		=	1
	1634-04-4 108-10-1 108-87-2 75-09-2 100-42-5 79-34-5 127-18-4 108-88-3 76-13-1 120-82-1 71-55-6	108-10-1       8260D         108-87-2       8260D         75-09-2       8260D         100-42-5       8260D         79-34-5       8260D         127-18-4       8260D         108-88-3       8260D         76-13-1       8260D         120-82-1       8260D	108-10-1       8260D       ND         108-87-2       8260D       ND         75-09-2       8260D       ND         100-42-5       8260D       ND         79-34-5       8260D       ND         127-18-4       8260D       ND         108-88-3       8260D       ND         76-13-1       8260D       ND         120-82-1       8260D       ND	108-10-1       8260D       ND       10         108-87-2       8260D       ND       5.0         75-09-2       8260D       ND       0.50         100-42-5       8260D       ND       0.50         79-34-5       8260D       ND       0.50         127-18-4       8260D       ND       0.50         108-88-3       8260D       ND       0.50         76-13-1       8260D       ND       1.0         120-82-1       8260D       ND       0.50         71-55-6       8260D       ND       0.50	108-10-1         8260D         ND         10         2.0           108-87-2         8260D         ND         5.0         0.40           75-09-2         8260D         ND         0.50         0.40           100-42-5         8260D         ND         0.50         0.41           79-34-5         8260D         ND         0.50         0.40           127-18-4         8260D         ND         0.50         0.40           108-88-3         8260D         ND         0.50         0.40           76-13-1         8260D         ND         1.0         0.42           120-82-1         8260D         ND         0.50         0.40           71-55-6         8260D         ND         0.50         0.40	1634-04-4       8260D       ND       0.50       0.40       ug/L         108-10-1       8260D       ND       10       2.0       ug/L         108-87-2       8260D       ND       5.0       0.40       ug/L         75-09-2       8260D       ND       0.50       0.40       ug/L         100-42-5       8260D       ND       0.50       0.41       ug/L         79-34-5       8260D       ND       0.50       0.40       ug/L         127-18-4       8260D       ND       0.50       0.40       ug/L         108-88-3       8260D       ND       0.50       0.40       ug/L         76-13-1       8260D       ND       1.0       0.42       ug/L         120-82-1       8260D       ND       0.50       0.40       ug/L

ND = Not detected at or above the DL H = Out of holding time

LOQ = Limit of Quantitation

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM Laboratory ID: WJ29086-001 Description: MW-10I Matrix: Aqueous Date Sampled: 10/29/2021 1050 Date Received: 10/29/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 11/12/2021 1552 CAW 22328 CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Trichloroethene 79-01-6 8260D 1100 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D ND 75-69-4 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 1330-20-7 Xylenes (total) 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance

Limits

70-130

70-130

70-130

LOQ = Limit of QuantitationB = Detected in the method blankE = Quantitation of compound exceeded the calibration rangeDL = Detection LimitQ = Surrogate failureND = Not detected at or above the DLN = Recovery is out of criteriaP = The RPD between two GC columns exceeds 40%J = Estimated result < LOQ and  $\geq$  DLL = LCS/LCSD failureH = Out of holding timeW = Reported on wet weight basisS = MS/MSD failure

Q

% Recovery

100

103

101

Surrogate

Toluene-d8

Bromofluorobenzene

1,2-Dichloroethane-d4

### **Dissolved Gases**

Client: AECOM Laboratory ID: WJ29086-001 Description: MW-10I

Date Sampled:10/29/2021 1050 Date Received: 10/29/2021

Matrix: Aqueous

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch RSK - 175 11/12/2021 0826 TML 22265

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND L	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	ND L	10	2.5	ug/L	1

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit  $\mbox{ J = Estimated result < LOQ and } \geq \mbox{ DL}$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM Laboratory ID: WJ29086-001

Description: MW-10I Matrix: Aqueous

Date Sampled:10/29/2021 1050 Date Received: 10/29/2021

3005A

Run Prep Method

1

Analytical Method Dilution Analysis Date Analyst Prep Date Batch 6010D 1 11/05/2021 1204 KSH2 11/04/2021 0914 21232

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 0.10 7439-89-6 0.79 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM Laboratory ID: WJ29086-001

Description: MW-10I Matrix: Aqueous

Date Sampled:10/29/2021 1050 Date Received:10/29/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 11/05/2021 1247 KSH2
 11/04/2021 0914 21231

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 7439-89-6 6010D Iron 6.4 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

	Client: AECO	M				Laboratory ID: WJ29086-002	
De	escription: ISERD	0-OBSW-10I				Matrix: Aqueous	
Date	Sampled:10/29/2	2021 1150					
Date I	Received: 10/29/2	2021					
Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch	
1		(Alkalinity @) SM 2320B-2011	1	11/07/2021 0306 AAB		21750	
1		(Bicarbonate ) SM 2320B-2011	1	11/07/2021 0306 AAB			
1		(Carbonate Al) SM 2320B-2011	1	11/07/2021 0306 AAB			
1		(Chloride) 300.0	5	10/31/2021 0114 AMR		21283	
1		(Nitrate - N) 300.0	5	10/31/2021 0114 AMR		21286	
1		(Nitrite - N) 300.0	5	10/31/2021 0114 AMR		21288	
1		(Sulfate) 300.0	5	10/31/2021 0114 AMR		21284	
3		(TOC) SM 5310C-2011	25	11/19/2021 0313 AAB		23034	

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	180	20	20	mg CaCO3/L	1
Bicarbonate Alkalinity		SM 2320B-2011	170	20	20	mg/L	1
Carbonate Alkalinity		SM 2320B-2011	ND	20	20	mg/L	1
Chloride		300.0	9.0	5.0	1.3	mg/L	1
Nitrate - N		300.0	ND	0.10	0.025	mg/L	1
Nitrite - N		300.0	ND	0.10	0.025	mg/L	1
Sulfate		300.0	ND	5.0	1.3	mg/L	1
TOC		SM 5310C-2011	460	25	25	mg/L	3

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Client: AECOM

Description: ISERD-OBSW-10I

Date Sampled:10/29/2021 1150

Laboratory ID: WJ29086-002

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

Matrix: Aqueous

Date Received: 10/29/2021 Run Prep Method

5030B

Analytical Method Dilution Analysis Date Analyst 8260D

11/12/2021 1615 CAW

Prep Date

Batch 22328

Parameter	CAS Number	Analytical Method	Result	Q LO	Q	DL	Units	Ru
Acetone	67-64-1	8260D	7.3	J 1	0	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.5	50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.5	50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.5	50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.5	0	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	1	0	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.5	0	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.5	0	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.5	50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.5	50	0.40	ug/L	1
Chloroform	67-66-3	8260D	1.1	0.5	50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.5	50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.5	50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.5	50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.5	0	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.5	0	0.40	ug/L	-
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.5	50	0.40	ug/L	-
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.5	50	0.40	ug/L	-
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.5	50	0.40	ug/L	-
Dichlorodifluoromethane	75-71-8	8260D	ND	0.5	50	0.40	ug/L	
1,1-Dichloroethane	75-34-3	8260D	ND	0.5	50	0.40	ug/L	
1,2-Dichloroethane	107-06-2	8260D	0.61	0.5	50	0.40	ug/L	
1,1-Dichloroethene	75-35-4	8260D	ND	0.5	50	0.40	ug/L	
cis-1,2-Dichloroethene	156-59-2	8260D	1.6	0.5	50	0.40	ug/L	
rans-1,2-Dichloroethene	156-60-5	8260D	ND	0.5	50	0.40	ug/L	
1,2-Dichloropropane	78-87-5	8260D	ND	0.5	50	0.40	ug/L	
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.5	50	0.40	ug/L	
rans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.5	50	0.40	ug/L	
Ethylbenzene	100-41-4	8260D	ND	0.5	50	0.40	ug/L	
2-Hexanone	591-78-6	8260D	ND	1	0	2.0	ug/L	-
sopropylbenzene	98-82-8	8260D	ND	0.5	50	0.40	ug/L	
Methyl acetate	79-20-9	8260D	2.2	1.	0	0.40	ug/L	
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.5	50	0.40	ug/L	
4-Methyl-2-pentanone	108-10-1	8260D	ND	1	0	2.0	ug/L	
Methylcyclohexane	108-87-2	8260D	ND	5.	.0	0.40	ug/L	
Methylene chloride	75-09-2	8260D	2.3	0.5	0	0.40	ug/L	
Styrene	100-42-5	8260D	ND	0.5	0	0.41	ug/L	
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.5	50	0.40	ug/L	
Tetrachloroethene	127-18-4	8260D	ND	0.5	0	0.40	ug/L	
Toluene	108-88-3	8260D	ND	0.5	50	0.40	ug/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.	0	0.42	ug/L	
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.5	50	0.40	ug/L	
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.5	50	0.40	ug/L	
1,1,2-Trichloroethane	79-00-5	8260D	ND	0.5	0	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

Client: AECOM
Description: ISERD-OBSW-10I
Date Sampled: 10/29/2021 1150
Date Received: 10/29/2021

Run Prep Method
1 5030B
Analytical Method Dilution Analysis Date Analyst Prep Date Batch
22328

CAS Analytical
Parameter
Number Method Result O LOO DI Units Run

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	520 E	0.50	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	0.50	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	0.50	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	1.0	0.40	ug/L	1

Surrogate	Run 1 Acceptance Q % Recovery Limits	
Bromofluorobenzene	102 70-130	
1,2-Dichloroethane-d4	103 70-130	
Toluene-d8	101 70-130	

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

#### **Dissolved Gases**

Client: AECOM

Description: ISERD-OBSW-10I

Laboratory ID: WJ29086-002 Matrix: Aqueous

Date Sampled:10/29/2021 1150

Date Received: 10/29/2021

Run Prep Method

Analytical Method Dilution Analysis Date Analyst Prep Date Batch RSK - 175 11/12/2021 0840 TML 22265

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND L	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	15 L	10	2.5	ug/L	1

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit  $\mbox{ J = Estimated result < LOQ and } \geq \mbox{ DL}$ 

Client: AECOM Laboratory ID: WJ29086-002

Description: ISERD-OBSW-10I Matrix: Aqueous

Date Sampled:10/29/2021 1150
Date Received:10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 11/05/2021 1229 KSH2 11/04/2021 0914 21232

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 0.70 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM

Laboratory ID: WJ29086-002 Description: ISERD-OBSW-10I Matrix: Aqueous Date Sampled:10/29/2021 1150

Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 11/05/2021 1313 KSH2 11/04/2021 0914 21231

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 7439-89-6 6010D 0.10 Iron 1.2 0.040 mg/L

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

## Inorganic non-metals

Client: AECO	M				Laboratory ID: WJ29086-003
Description: MW-10	)				Matrix: Aqueous
Date Sampled:10/29/2	2021 1310				
Date Received: 10/29/2	2021				
Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1	(Alkalinity @) SM 2320B-2011	1	11/07/2021 0321 AAB		21752
1	(Bicarbonate ) SM 2320B-2011	1	11/07/2021 0321 AAB		
1	(Carbonate Al) SM 2320B-2011	1	11/07/2021 0321 AAB		
2	(Chloride) 300.0	10	11/03/2021 1818 AMR		21361
1	(Nitrate - N) 300.0	50	10/31/2021 0133 AMR		21286
1	(Nitrite - N) 300.0	50	10/31/2021 0133 AMR		21288
2	(Sulfate) 300.0	10	11/03/2021 1818 AMR		21362
2	(TOC) SM 5310C-2011	300	11/18/2021 1150 AAB		22867
			0.0.0		

Parameter	CAS Number	Analytical Method	Result	Q LO	2 DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	190	2	20	mg CaCO3/L	1
Bicarbonate Alkalinity		SM 2320B-2011	160	2	20	mg/L	1
Carbonate Alkalinity		SM 2320B-2011	25	2	20	mg/L	1
Chloride		300.0	29	1	2.5	mg/L	2
Nitrate - N		300.0	ND	1.0	0.25	mg/L	1
Nitrite - N		300.0	ND	1.0	0.25	mg/L	1
Sulfate		300.0	2.5	J 1	2.5	mg/L	2
TOC		SM 5310C-2011	4800	30	300	mg/L	2

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of \ compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Client: AECOM

Description: MW-10

Laboratory ID: WJ29086-003 Matrix: Aqueous

Date Sampled:10/29/2021 1310 Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 100 11/13/2021 0515 BBW 22389

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	Н	1000	400	ug/L	1
Benzene	71-43-2	8260D	ND	Н	50	40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	Н	50	40	ug/L	1
Bromoform	75-25-2	8260D	ND	Н	50	40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	Н	50	40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	Н	1000	200	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	Н	50	40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	Н	50	40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	Н	50	40	ug/L	1
Chloroethane	75-00-3	8260D	ND	Н	50	40	ug/L	1
Chloroform	67-66-3	8260D	ND	Н	50	40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	Н	50	40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	Н	50	40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	Н	50	40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	Н	50	40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	Н	50	40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	Н	50	40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	Н	50	40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	Н	50	40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	Н	50	40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	Н	50	40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	Н	50	40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	Н	50	40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	Н	50	40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	Н	50	40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	Н	50	40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	Н	50	40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	Н	50	40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	Н	50	40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	Н	1000	200	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	Н	50	40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	Н	100	40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	Н	50	40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	Н	1000	200	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	Н	500	40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	Н	50	40	ug/L	1
Styrene	100-42-5	8260D	ND	Н	50	41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	Н	50	40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	Н	50	40	ug/L	1
Toluene	108-88-3	8260D	ND	Н	50	40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	Н	100	42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	HL	50	40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		50	40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	Н	50	40	ug/L	1

ND = Not detected at or above the DL H = Out of holding time

N = Recovery is out of criteria W = Reported on wet weight basis J = Estimated result < LOQ and  $\geq$  DL

L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

P = The RPD between two GC columns exceeds 40%

Client: AECOM Laboratory ID: WJ29086-003

Description: MW-10 Matrix: Aqueous

Date Sampled:10/29/2021 1310 Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 100 11/13/2021 0515 BBW 22389

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	600	Н	50	40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	Н	50	40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	Н	50	40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	Н	100	40	ug/L	1

Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene Н 91 70-130 1,2-Dichloroethane-d4 Н 104 70-130 Toluene-d8 Н 99 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

#### **Dissolved Gases**

Client: AECOM Laborated La

Date Sampled:10/29/2021 1310 Date Received: 10/29/2021 Laboratory ID: WJ29086-003 Matrix: Aqueous

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 11/12/2021 0856 TML 22265

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND L	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	9.1 JL	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Client: AECOM

Description: MW-10

Laboratory ID: WJ29086-003

Matrix: Aqueous

Date Sampled:10/29/2021 1310 Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 11/05/2021 1233 KSH2 11/04/2021 0914 21232

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 0.46 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

Client: AECOM

Description: MW-10

Laboratory ID: WJ29086-003

Matrix: Aqueous

Date Sampled:10/29/2021 1310 Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 11/05/2021 1316 KSH2 11/04/2021 0914 21231

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 7439-89-6 6010D 0.10 Iron 1.2 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

## Inorganic non-metals

Client: AECOM Laboratory ID: WJ29086-004										
Description: ISERD	Description: ISERD-OBSW-10 Matrix: Aqueous									
Date Sampled:10/29/2021 1405										
Date Received: 10/29/2	2021									
Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch					
1	(Alkalinity @) SM 2320B-2011	1	11/07/2021 0326 AAB		21752					
1	(Bicarbonate ) SM 2320B-2011	1	11/07/2021 0326 AAB							
1	(Carbonate AI) SM 2320B-2011	1	11/07/2021 0326 AAB							
1	(Chloride) 300.0	1	10/31/2021 0152 AMR		21283					
1	(Nitrate - N) 300.0	1	10/31/2021 0152 AMR		21286					
1	(Nitrite - N) 300.0	1	10/31/2021 0152 AMR		21288					
1	(Sulfate) 300.0	1	10/31/2021 0152 AMR		21284					
3	(TOC) SM 5310C-2011	5	11/19/2021 0326 AAB		23034					
			CAS Applytical							

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su	S	M 2320B-2011	54		20	20	mg CaCO3/L	1
Bicarbonate Alkalinity	S	M 2320B-2011	54		20	20	mg/L	1
Carbonate Alkalinity	S	SM 2320B-2011	ND		20	20	mg/L	1
Chloride		300.0	83		1.0	0.25	mg/L	1
Nitrate - N		300.0	0.026		0.020	0.0050	mg/L	1
Nitrite - N		300.0	ND		0.020	0.0050	mg/L	1
Sulfate		300.0	0.29	J	1.0	0.25	mg/L	1
TOC	SI	M 5310C-2011	71		5.0	5.0	mg/L	3

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Client: AECOM

Description: ISERD-OBSW-10

Date Sampled:10/29/2021 1405

Laboratory ID: WJ29086-004 Matrix: Aqueous

L = LCS/LCSD failure

S = MS/MSD failure

J = Estimated result < LOQ and  $\geq$  DL

Date Received: 10/29/2021

Run Prep Method 5030B

Analytical Method Dilution Analysis Date Analyst 8260D

11/13/2021 0538 BBW

Prep Date

Batch 22389

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Ru
Acetone	67-64-1	8260D	ND	Н	100	40	ug/L	1
Benzene	71-43-2	8260D	ND	Н	5.0	4.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	Н	5.0	4.0	ug/L	1
Bromoform	75-25-2	8260D	ND	Н	5.0	4.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	Н	5.0	4.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	Н	100	20	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	Н	5.0	4.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	Н	5.0	4.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	Н	5.0	4.0	ug/L	1
Chloroethane	75-00-3	8260D	ND	Н	5.0	4.0	ug/L	1
Chloroform	67-66-3	8260D	ND	Н	5.0	4.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	Н	5.0	4.0	ug/L	1
Cyclohexane	110-82-7	8260D	ND	Н	5.0	4.0	ug/L	1
,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	Н	5.0	4.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	Н	5.0	4.0	ug/L	1
,2-Dibromoethane (EDB)	106-93-4	8260D	ND	Н	5.0	4.0	ug/L	-
,2-Dichlorobenzene	95-50-1	8260D	ND	Н	5.0	4.0	ug/L	1
,3-Dichlorobenzene	541-73-1	8260D	ND	Н	5.0	4.0	ug/L	
,4-Dichlorobenzene	106-46-7	8260D	ND	Н	5.0	4.0	ug/L	1
ichlorodifluoromethane	75-71-8	8260D	ND	Н	5.0	4.0	ug/L	
,1-Dichloroethane	75-34-3	8260D	ND	Н	5.0	4.0	ug/L	
,2-Dichloroethane	107-06-2	8260D	ND	Н	5.0	4.0	ug/L	
,1-Dichloroethene	75-35-4	8260D	ND	Н	5.0	4.0	ug/L	
is-1,2-Dichloroethene	156-59-2	8260D	ND	Н	5.0	4.0	ug/L	1
ans-1,2-Dichloroethene	156-60-5	8260D	ND	Н	5.0	4.0	ug/L	
,2-Dichloropropane	78-87-5	8260D	ND	Н	5.0	4.0	ug/L	•
is-1,3-Dichloropropene	10061-01-5	8260D	ND	Н	5.0	4.0	ug/L	•
ans-1,3-Dichloropropene	10061-02-6	8260D	ND	Н	5.0	4.0	ug/L	•
thylbenzene	100-41-4	8260D	ND	Н	5.0	4.0	ug/L	
-Hexanone	591-78-6	8260D	ND	Н	100	20	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	Н	5.0	4.0	ug/L	
Methyl acetate	79-20-9	8260D	ND	Н	10	4.0	ug/L	•
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	Н	5.0	4.0	ug/L	•
-Methyl-2-pentanone	108-10-1	8260D	ND	Н	100	20	ug/L	-
Methylcyclohexane	108-87-2	8260D	ND	Н	50	4.0	ug/L	•
flethylene chloride	75-09-2	8260D	ND		5.0	4.0	ug/L	•
styrene	100-42-5	8260D	ND		5.0	4.1	ug/L	
,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	Н	5.0	4.0	ug/L	
etrachloroethene	127-18-4	8260D	ND		5.0	4.0	ug/L	
oluene	108-88-3	8260D	ND		5.0	4.0	ug/L	1
,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	Н	10	4.2	ug/L	-
,2,4-Trichlorobenzene	120-82-1	8260D	ND		5.0	4.0	ug/L	
,1,1-Trichloroethane	71-55-6	8260D	ND	Н	5.0	4.0	ug/L	1
,1,2-Trichloroethane	79-00-5	8260D	ND	Н	5.0	4.0	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

Client: AECOM Laboratory ID: WJ29086-004 Description: ISERD-OBSW-10 Matrix: Aqueous Date Sampled:10/29/2021 1405 Date Received: 10/29/2021 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 11/13/2021 0538 BBW 22389 CAS Analytical Parameter LOQ DL Units Number Result Q Run Method Trichloroethene 79-01-6 8260D 410 H 5.0 ug/L 1 4.0 Trichlorofluoromethane 8260D 75-69-4 ND H 5.0 ug/L 1 4.0

Xylenes (total)		1330-2	20-7	8260D	ND H	10	4.0	ug/L	1
Surrogate	Q	Run 1 A % Recovery	Acceptance Limits						
Bromofluorobenzene	Н	94	70-130						
1,2-Dichloroethane-d4	Н	103	70-130						
Toluene-d8	Н	97	70-130						

8260D

ND H

5.0

4.0

ug/L

1

75-01-4

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

Vinyl chloride

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

#### **Dissolved Gases**

Client: AECOM Laboratory ID: WJ29086-004

Description: ISERD-OBSW-10 Matrix: Aqueous

Date Sampled:10/29/2021 1405 Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 11/12/2021 0909 TML 22265

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND L	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	ND L	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM Laboratory ID: WJ29086-004

Description: ISERD-OBSW-10 Matrix: Aqueous

Date Sampled:10/29/2021 1405 Date Received: 10/29/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 11/05/2021 1236 KSH2 11/04/2021 0914 21232

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 0.68 0.10 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM Laboratory ID: WJ29086-004

Description: ISERD-OBSW-10 Matrix: Aqueous

Date Sampled:10/29/2021 1405
Date Received:10/29/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 11/05/2021 1320
 KSH2
 11/04/2021 0914
 21231

CAS Analytical Parameter Number Result Q LOQ DL Units Run Method 7439-89-6 6010D 0.10 Iron 1.1 0.040 mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

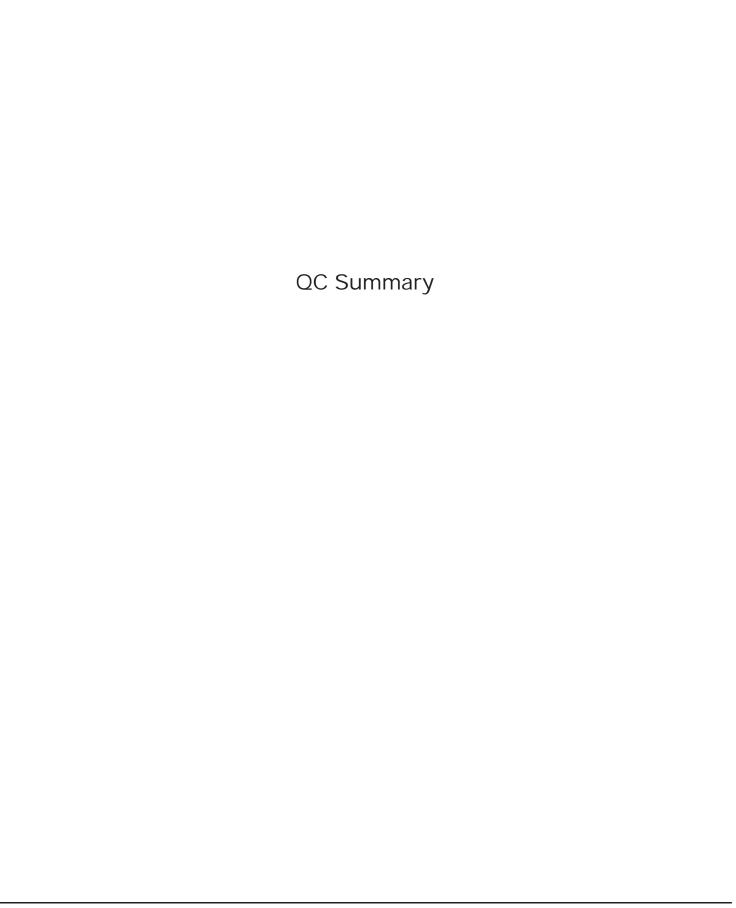
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)



## Inorganic non-metals - MB

Sample ID: WQ21283-001

Batch: 21283 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND	•	1	1.0	0.25	mg/L	10/30/2021 2358

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ21283-002

Batch: 21283 Analytical Method: 300.0 Matrix: Aqueous

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Chloride	20	21		1	104	90-110	10/31/2021 0036

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: WQ21284-001

Batch: 21284 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND		1	1.0	0.25	mg/L	10/30/2021 2358

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ21284-002

Batch: 21284 Analytical Method: 300.0 Matrix: Aqueous

	Spike Amount	Result			0.5	%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Sulfate	20	20		1	101	90-110	10/31/2021 0036

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: WQ21286-001 Batch: 21286

Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	10/30/2021 2358

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ21286-002

Batch: 21286 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.80	0.77		1	96	90-110	10/31/2021 0036

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: WQ21288-001 Batch: 21288

Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.0050	mg/L	10/30/2021 2358

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ21288-002

Batch: 21288

Matrix: Aqueous

Analytical Method: 300.0	

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Nitrite - N	0.80	0.73		1	91	90-110	10/31/2021 0036

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: WQ21361-001

Batch: 21361 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND	•	1	1.0	0.25	mg/L	11/03/2021 1605

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ21361-002

Batch: 21361 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	20	21		1	104	90-110	11/03/2021 1643

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: WQ21362-001 Batch: 21362

Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND		1	1.0	0.25	mg/L	11/03/2021 1605

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: WQ21362-002

Batch: 21362

Matrix: Aqueous

Analytical Method: 300.0

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	20	20		1	101	90-110	11/03/2021 1643

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: WQ21750-002

Batch: 21750

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	97	1	97	90-110	11/07/2021 0145

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: WQ21752-002

Batch: 21752

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	99	1	99	90-110	11/07/2021 0313

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - Duplicate

Sample ID: WJ29086-004DU

Batch: 21752

Analytical Method: SM 2320B-2011

Matrix: Aqueous

Parameter	Sample Amount (mg CaCO3/L)	Result (mg CaCO3/L) Q	Dil	% RPD	%RPD Limit	Analysis Date
Alkalinity @ pH 4.5 su	54	54	1	0.15	20	11/07/2021 0331

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MB

Sample ID: WQ22867-001

Batch: 22867

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	11/18/2021 0500

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## Inorganic non-metals - LCS

Sample ID: WQ22867-002

Batch: 22867

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	20		1	99	90-110	11/18/2021 0513

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MB

Sample ID: WQ23034-001

Batch: 23034

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	11/18/2021 2039

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: WQ23034-002

Batch: 23034

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	19		1	97	90-110	11/18/2021 2052

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ22328-001 Batch: 22328

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	11/12/2021 1055
Benzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Bromodichloromethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Bromoform	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	11/12/2021 1055
2-Butanone (MEK)	ND		1	10	2.0	ug/L	11/12/2021 1055
Carbon disulfide	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Chlorobenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Chloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Chloroform	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Cyclohexane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Dibromochloromethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Ethylbenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
2-Hexanone	ND		1	10	2.0	ug/L	11/12/2021 1055
Isopropylbenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Methyl acetate	ND		1	1.0	0.40	ug/L	11/12/2021 1055
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	11/12/2021 1055
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	11/12/2021 1055
Methylcyclohexane	ND		1	5.0	0.40	ug/L	11/12/2021 1055
Methylene chloride	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Styrene	ND		1	0.50	0.41	ug/L	11/12/2021 1055
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Tetrachloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Toluene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	11/12/2021 1055
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
						- 3 <sup>,</sup> –	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

#### Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ22328-001 Batch: 22328

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Vinyl chloride	ND		1	0.50	0.40	ug/L	11/12/2021 1055
Xylenes (total)	ND		1	1.0	0.40	ug/L	11/12/2021 1055
Surrogate	Q % Red	Ac	cceptance Limit				
Bromofluorobenzene	98		70-130				
1,2-Dichloroethane-d4	105		70-130				
Toluene-d8	99		70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ22328-002 Batch: 22328 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter         Amount (ug/L)         Result (ug/L)         Q DII         % Rec         Limit         Analysis Date           Acetone         100         120         1         118         60-140         11/12/2021 0953           Benzene         50         48         1         95         70-130         11/12/2021 0953           Bromodichloromethane         50         49         1         99         70-130         11/12/2021 0953           Bromomethane (Methyl bromide)         50         38         1         76         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disurifie         50         50         1         100         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91		Spike
Benzene         50         48         1         95         70-130         11/12/2021 0953           Bromodichloromethane         50         49         1         99         70-130         11/12/2021 0953           Bromoform         50         38         1         76         70-130         11/12/2021 0953           Bromomethane (Melthyl bromide)         50         45         1         90         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disulfide         50         50         1         100         70-130         11/12/2021 0953           Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         50         1         100         70-130         11/12/2021 0953           Chloroform         50         49         1         99         60-140         11	Parameter	Amount (ug/L)
Bromodichloromethane         50         49         1         99         70-130         11/12/2021 0953           Bromoform         50         38         1         76         70-130         11/12/2021 0953           Bromomethane (Methyl bromide)         50         45         1         90         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disulfide         50         50         1         100         70-130         11/12/2021 0953           Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           Ly-Dibromo-S-chloropropane (DBCP)         50         52         1         103	Acetone	100
Bromoform         50         38         1         76         70-130         11/12/2021 0953           Bromomethane (Methyl bromide)         50         45         1         90         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disulfide         50         50         1         100         70-130         11/12/2021 0953           Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         46         1         91         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         50         1         100         70-130         11/12/2021 0953           Cyclohexane         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         52         1         103         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103	Benzene	50
Bromoform         50         38         1         76         70-130         11/12/2021 0953           Bromomethane (Methyl bromide)         50         45         1         90         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disulfide         50         50         1         100         70-130         11/12/2021 0953           Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         46         1         91         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         50         1         100         70-130         11/12/2021 0953           Cyclohexane         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         52         1         103         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103	Bromodichloromethane	50
Bromomethane (Methyl bromide)         50         45         1         90         70-130         11/12/2021 0953           2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disulfide         50         50         1         100         70-130         11/12/2021 0953           Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroethane         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         46         1         91         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           Ly-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-130         11/12/2021 0953           1,2-Dibromo-4loromethane         50         48         1	Bromoform	50
2-Butanone (MEK)         100         110         1         109         70-130         11/12/2021 0953           Carbon disulfide         50         50         1         100         70-130         11/12/2021 0953           Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         50         1         100         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-	Bromomethane (Methyl bromide)	50
Carbon tetrachloride         50         52         1         103         70-130         11/12/2021 0953           Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chlorofermane         50         46         1         91         70-130         11/12/2021 0953           Chlorofermane         50         50         1         100         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         50         1         100         70-130         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         96         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         48         1         95         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1	_	100
Chlorobenzene         50         46         1         91         70-130         11/12/2021 0953           Chloroethane         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         50         1         100         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromochlaromethane         50         48         1         103         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         96         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1         91         70-130         11/12/2021 0953           1,4-Dichloroethane         50         47         1         94         6	Carbon disulfide	50
Chloroethane         50         46         1         91         70-130         11/12/2021 0953           Chloroform         50         50         1         100         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-130         11/12/2021 0953           Dibromochloromethane         50         48         1         96         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         95         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1         91         70-130         11/12/2021 0953           1,4-Dichlorobenzene         50         44         1         88         70-130         11/12/2021 0953           1,1-Dichloroethane         50         47         1         <	Carbon tetrachloride	50
Chloroform         50         50         1         100         70-130         11/12/2021 0953           Chloromethane (Methyl chloride)         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-130         11/12/2021 0953           Dibromochloromethane         50         48         1         96         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         95         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1         91         70-130         11/12/2021 0953           1,4-Dichlorobenzene         50         44         1         88         70-130         11/12/2021 0953           1,1-Dichloroethane         50         47         1         94         60-140         11/12/2021 0953           1,2-Dichloroethane         50         49         1	Chlorobenzene	50
Chloromethane (Methyl chloride)         50         49         1         99         60-140         11/12/2021 0953           Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-130         11/12/2021 0953           Dibromochloromethane         50         48         1         96         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         95         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1         91         70-130         11/12/2021 0953           1,4-Dichlorobenzene         50         44         1         88         70-130         11/12/2021 0953           1,1-Dichloroethane         50         47         1         94         60-140         11/12/2021 0953           1,2-Dichloroethane         50         49         1         99         70-130         11/12/2021 0953           1,1-Dichloroethane         50         50         1 </td <td>Chloroethane</td> <td>50</td>	Chloroethane	50
Cyclohexane         50         54         1         109         70-130         11/12/2021 0953           1,2-Dibromo-3-chloropropane (DBCP)         50         52         1         103         70-130         11/12/2021 0953           Dibromochloromethane         50         48         1         96         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         95         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1         91         70-130         11/12/2021 0953           1,4-Dichlorobenzene         50         44         1         88         70-130         11/12/2021 0953           1,1-Dichloroethane         50         47         1         94         60-140         11/12/2021 0953           1,2-Dichloroethane         50         49         1         99         70-130         11/12/2021 0953           1,1-Dichloroethane         50         50         1         101         70-130         11/12/2021 0953           1,2-Dichloroethene         50         47         1	Chloroform	50
1,2-Dibromo-3-chloropropane (DBCP)       50       52       1       103       70-130       11/12/2021 0953         Dibromochloromethane       50       48       1       96       70-130       11/12/2021 0953         1,2-Dibromoethane (EDB)       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichlorobenzene       50       45       1       91       70-130       11/12/2021 0953         1,3-Dichlorobenzene       50       46       1       91       70-130       11/12/2021 0953         1,4-Dichlorobenzene       50       44       1       88       70-130       11/12/2021 0953         1,1-Dichloroethane       50       47       1       94       60-140       11/12/2021 0953         1,2-Dichloroethane       50       49       1       99       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         1,2-Dichloropropene <td< td=""><td>Chloromethane (Methyl chloride)</td><td>50</td></td<>	Chloromethane (Methyl chloride)	50
Dibromochloromethane         50         48         1         96         70-130         11/12/2021 0953           1,2-Dibromoethane (EDB)         50         48         1         95         70-130         11/12/2021 0953           1,2-Dichlorobenzene         50         45         1         91         70-130         11/12/2021 0953           1,3-Dichlorobenzene         50         46         1         91         70-130         11/12/2021 0953           1,4-Dichlorobenzene         50         44         1         88         70-130         11/12/2021 0953           Dichlorodifluoromethane         50         47         1         94         60-140         11/12/2021 0953           1,2-Dichloroethane         50         49         1         99         70-130         11/12/2021 0953           1,1-Dichloroethane         50         50         1         101         70-130         11/12/2021 0953           1,1-Dichloroethene         50         50         1         101         70-130         11/12/2021 0953           cis-1,2-Dichloroethene         50         47         1         94         70-130         11/12/2021 0953           trans-1,2-Dichloroethene         50         48         1	Cyclohexane	50
1,2-Dibromoethane (EDB)504819570-13011/12/2021 09531,2-Dichlorobenzene504519170-13011/12/2021 09531,3-Dichlorobenzene504619170-13011/12/2021 09531,4-Dichlorobenzene504418870-13011/12/2021 0953Dichlorodifluoromethane504719460-14011/12/2021 09531,1-Dichloroethane504919970-13011/12/2021 09531,2-Dichloroethane5050110170-13011/12/2021 09531,1-Dichloroethene5050110170-13011/12/2021 0953cis-1,2-Dichloroethene504719470-13011/12/2021 0953trans-1,2-Dichloroethene504819570-13011/12/2021 09531,2-Dichloropropane504819670-13011/12/2021 0953cis-1,3-Dichloropropene5052110570-13011/12/2021 0953	1,2-Dibromo-3-chloropropane (DBCP)	50
1,2-Dichlorobenzene       50       45       1       91       70-130       11/12/2021 0953         1,3-Dichlorobenzene       50       46       1       91       70-130       11/12/2021 0953         1,4-Dichlorobenzene       50       44       1       88       70-130       11/12/2021 0953         Dichlorodifluoromethane       50       47       1       94       60-140       11/12/2021 0953         1,1-Dichloroethane       50       49       1       99       70-130       11/12/2021 0953         1,2-Dichloroethane       50       50       1       101       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	Dibromochloromethane	50
1,3-Dichlorobenzene       50       46       1       91       70-130       11/12/2021 0953         1,4-Dichlorobenzene       50       44       1       88       70-130       11/12/2021 0953         Dichlorodifluoromethane       50       47       1       94       60-140       11/12/2021 0953         1,1-Dichloroethane       50       49       1       99       70-130       11/12/2021 0953         1,2-Dichloroethane       50       50       1       101       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	1,2-Dibromoethane (EDB)	50
1,4-Dichlorobenzene       50       44       1       88       70-130       11/12/2021 0953         Dichlorodifluoromethane       50       47       1       94       60-140       11/12/2021 0953         1,1-Dichloroethane       50       49       1       99       70-130       11/12/2021 0953         1,2-Dichloroethane       50       50       1       101       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	1,2-Dichlorobenzene	50
Dichlorodifluoromethane       50       47       1       94       60-140       11/12/2021 0953         1,1-Dichloroethane       50       49       1       99       70-130       11/12/2021 0953         1,2-Dichloroethane       50       50       1       101       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	1,3-Dichlorobenzene	50
1,1-Dichloroethane       50       49       1       99       70-130       11/12/2021 0953         1,2-Dichloroethane       50       50       1       101       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	1,4-Dichlorobenzene	50
1,2-Dichloroethane       50       50       1       101       70-130       11/12/2021 0953         1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	Dichlorodifluoromethane	50
1,1-Dichloroethene       50       50       1       101       70-130       11/12/2021 0953         cis-1,2-Dichloroethene       50       47       1       94       70-130       11/12/2021 0953         trans-1,2-Dichloroethene       50       48       1       95       70-130       11/12/2021 0953         1,2-Dichloropropane       50       48       1       96       70-130       11/12/2021 0953         cis-1,3-Dichloropropene       50       52       1       105       70-130       11/12/2021 0953	1,1-Dichloroethane	50
cis-1,2-Dichloroethene     50     47     1     94     70-130     11/12/2021 0953       trans-1,2-Dichloroethene     50     48     1     95     70-130     11/12/2021 0953       1,2-Dichloropropane     50     48     1     96     70-130     11/12/2021 0953       cis-1,3-Dichloropropene     50     52     1     105     70-130     11/12/2021 0953	1,2-Dichloroethane	50
trans-1,2-Dichloroethene     50     48     1     95     70-130     11/12/2021 0953       1,2-Dichloropropane     50     48     1     96     70-130     11/12/2021 0953       cis-1,3-Dichloropropene     50     52     1     105     70-130     11/12/2021 0953	1,1-Dichloroethene	50
1,2-Dichloropropane     50     48     1     96     70-130     11/12/2021 0953       cis-1,3-Dichloropropene     50     52     1     105     70-130     11/12/2021 0953	cis-1,2-Dichloroethene	50
cis-1,3-Dichloropropene 50 52 1 105 70-130 11/12/2021 0953	trans-1,2-Dichloroethene	50
	1,2-Dichloropropane	50
trans-1,3-Dichloropropene 50 46 1 91 70-130 11/12/2021 0953	cis-1,3-Dichloropropene	50
	trans-1,3-Dichloropropene	50
Ethylbenzene 50 47 1 94 70-130 11/12/2021 0953	Ethylbenzene	50
2-Hexanone 100 110 1 109 70-130 11/12/2021 0953	2-Hexanone	100
Isopropylbenzene 50 50 1 99 70-130 11/12/2021 0953	Isopropylbenzene	50
Methyl acetate 50 52 1 104 70-130 11/12/2021 0953	Methyl acetate	50
Methyl tertiary butyl ether (MTBE) 50 50 1 99 70-130 11/12/2021 0953	Methyl tertiary butyl ether (MTBE)	50
4-Methyl-2-pentanone 100 110 1 107 70-130 11/12/2021 0953	4-Methyl-2-pentanone	100
Methylcyclohexane 50 48 1 97 70-130 11/12/2021 0953	Methylcyclohexane	50
Methylene chloride 50 46 1 91 70-130 11/12/2021 0953		50
Styrene 50 50 1 99 70-130 11/12/2021 0953	Styrene	50
1,1,2,2-Tetrachloroethane 50 48 1 96 70-130 11/12/2021 0953	1,1,2,2-Tetrachloroethane	50
Tetrachloroethene 50 46 1 92 70-130 11/12/2021 0953	Tetrachloroethene	50
Toluene 50 49 1 97 70-130 11/12/2021 0953	Toluene	50
1,1,2-Trichloro-1,2,2-Trifluoroethane 50 53 1 106 70-130 11/12/2021 0953	1,1,2-Trichloro-1,2,2-Trifluoroethane	50
1,2,4-Trichlorobenzene 50 44 1 87 70-130 11/12/2021 0953	1,2,4-Trichlorobenzene	50
1,1,1-Trichloroethane 50 52 1 104 70-130 11/12/2021 0953	1,1,1-Trichloroethane	50

LOQ = Limit of Quantitation

1,1,2-Trichloroethane

ND = Not detected at or above the DL

46

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

70-130

11/12/2021 0953

+ = RPD is out of criteria

91

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

50

<sup>\* =</sup> RSD is out of criteria

#### Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ22328-002 Batch: 22328

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	47	1	93	70-130	11/12/2021 0953
Trichlorofluoromethane	50	47	1	95	70-130	11/12/2021 0953
Vinyl chloride	50	54	1	107	70-130	11/12/2021 0953
Xylenes (total)	100	96	1	96	70-130	11/12/2021 0953
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	92	70-130				
1,2-Dichloroethane-d4	95	70-130				
Toluene-d8	88	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ22389-001 Batch: 22389

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	11/12/2021 2120
Benzene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Bromodichloromethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Bromoform	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	11/12/2021 2120
2-Butanone (MEK)	ND		1	10	2.0	ug/L	11/12/2021 2120
Carbon disulfide	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Chlorobenzene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Chloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Chloroform	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Cyclohexane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,2-Dibromo-3-chloropropane (DBCP)	12		1	0.50	0.40	ug/L	11/12/2021 2120
Dibromochloromethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,2-Dichlorobenzene	2.6		1	0.50	0.40	ug/L	11/12/2021 2120
1,3-Dichlorobenzene	1.5		1	0.50	0.40	ug/L	11/12/2021 2120
1,4-Dichlorobenzene	1.8		1	0.50	0.40	ug/L	11/12/2021 2120
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Ethylbenzene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
2-Hexanone	ND		1	10	2.0	ug/L	11/12/2021 2120
Isopropylbenzene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Methyl acetate	ND		1	1.0	0.40	ug/L	11/12/2021 2120
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	11/12/2021 2120
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	11/12/2021 2120
Methylcyclohexane	ND		1	5.0	0.40	ug/L	11/12/2021 2120
Methylene chloride	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Styrene	ND		1	0.50	0.41	ug/L	11/12/2021 2120
1,1,2,2-Tetrachloroethane	0.51		1	0.50	0.40	ug/L	11/12/2021 2120
Tetrachloroethene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
Toluene	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	11/12/2021 2120
1,2,4-Trichlorobenzene	17		1	0.50	0.40	ug/L	11/12/2021 2120
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	11/12/2021 2120

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

<sup>\* =</sup> RSD is out of criteria

#### Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ22389-001 Batch: 22389

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q D	l LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	11/12/2021 2120
Trichlorofluoromethane	ND	1	0.50	0.40	ug/L	11/12/2021 2120
Vinyl chloride	ND	1	0.50	0.40	ug/L	11/12/2021 2120
Xylenes (total)	ND	1	1.0	0.40	ug/L	11/12/2021 2120
Surrogate	Q % Red	Acceptar Limit	ce			
Bromofluorobenzene	99	70-130	)			
1,2-Dichloroethane-d4	105	70-130	)			
Toluene-d8	98	70-130	)			

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ22389-002 Batch: 22389 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
	Amount	Result			0/ 5	%Rec	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	120		1	118	60-140	11/12/2021 2019
Benzene	50	48		1	97	70-130	11/12/2021 2019
Bromodichloromethane	50	51		1	101	70-130	11/12/2021 2019
Bromoform	50	36		1	73	70-130	11/12/2021 2019
Bromomethane (Methyl bromide)	50	48		1	97	70-130	11/12/2021 2019
2-Butanone (MEK)	100	110		1	108	70-130	11/12/2021 2019
Carbon disulfide	50	52		1	104	70-130	11/12/2021 2019
Carbon tetrachloride	50	56		1	113	70-130	11/12/2021 2019
Chlorobenzene	50	47		1	93	70-130	11/12/2021 2019
Chloroethane	50	47		1	95	70-130	11/12/2021 2019
Chloroform	50	51		1	102	70-130	11/12/2021 2019
Chloromethane (Methyl chloride)	50	48		1	96	60-140	11/12/2021 2019
Cyclohexane	50	56		1	113	70-130	11/12/2021 2019
1,2-Dibromo-3-chloropropane (DBCP)	50	35		1	70	70-130	11/12/2021 2019
Dibromochloromethane	50	50		1	99	70-130	11/12/2021 2019
1,2-Dibromoethane (EDB)	50	49		1	98	70-130	11/12/2021 2019
1,2-Dichlorobenzene	50	45		1	90	70-130	11/12/2021 2019
1,3-Dichlorobenzene	50	46		1	92	70-130	11/12/2021 2019
1,4-Dichlorobenzene	50	44		1	89	70-130	11/12/2021 2019
Dichlorodifluoromethane	50	46		1	92	60-140	11/12/2021 2019
1,1-Dichloroethane	50	51		1	102	70-130	11/12/2021 2019
1,2-Dichloroethane	50	52		1	104	70-130	11/12/2021 2019
1,1-Dichloroethene	50	53		1	107	70-130	11/12/2021 2019
cis-1,2-Dichloroethene	50	48		1	97	70-130	11/12/2021 2019
trans-1,2-Dichloroethene	50	50		1	99	70-130	11/12/2021 2019
1,2-Dichloropropane	50	48		1	96	70-130	11/12/2021 2019
cis-1,3-Dichloropropene	50	52		1	103	70-130	11/12/2021 2019
trans-1,3-Dichloropropene	50	46		1	92	70-130	11/12/2021 2019
Ethylbenzene	50	48		1	96	70-130	11/12/2021 2019
2-Hexanone	100	100		1	104	70-130	11/12/2021 2019
Isopropylbenzene	50	49		1	99	70-130	11/12/2021 2019
Methyl acetate	50	51		1	102	70-130	11/12/2021 2019
Methyl tertiary butyl ether (MTBE)	50	51		1	101	70-130	11/12/2021 2019
4-Methyl-2-pentanone	100	100		1	101	70-130	11/12/2021 2019
Methylcyclohexane	50	46		1	93	70-130	11/12/2021 2019
Methylene chloride	50	47		1	95	70-130	11/12/2021 2019
Styrene	50	50		1	99	70-130	11/12/2021 2019
1,1,2,2-Tetrachloroethane	50	48		1	95	70-130	11/12/2021 2019
Tetrachloroethene	50	48		1	95	70-130	11/12/2021 2019
Toluene	50	49		1	99	70-130	11/12/2021 2019
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	58		1	115	70-130	11/12/2021 2019
1,2,4-Trichlorobenzene	50	22	N	1	45	70-130	11/12/2021 2019
1,1,1-Trichloroethane	50	55		1	110	70-130	11/12/2021 2019
1,1,2-Trichloroethane	50	48		1	96	70-130	11/12/2021 2019

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

#### Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ22389-002 Batch: 22389

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	47	1	95	70-130	11/12/2021 2019
Trichlorofluoromethane	50	50	1	100	70-130	11/12/2021 2019
Vinyl chloride	50	55	1	109	70-130	11/12/2021 2019
Xylenes (total)	100	96	1	96	70-130	11/12/2021 2019
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	92	70-130				
1,2-Dichloroethane-d4	96	70-130				
Toluene-d8	91	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: WQ22265-001

Batch: 22265 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	11/12/2021 0816
Ethene	ND		1	10	2.5	ug/L	11/12/2021 0816
Methane	ND		1	10	2.5	ug/L	11/12/2021 0816

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCS

Sample ID: WQ22265-002

Batch: 22265 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	280	360		1	128	70-130	11/12/2021 0752
Ethene	260	330		1	126	70-130	11/12/2021 0752
Methane	150	230	N	1	149	70-130	11/12/2021 0752

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCSD

Sample ID: WQ22265-003

Batch: 22265 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Ethane	280	380	N	1	133	3.2	70-130	30	11/12/2021 0802
Ethene	260	340		1	130	2.8	70-130	30	11/12/2021 0802
Methane	150	230	Ν	1	153	2.5	70-130	30	11/12/2021 0802

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MB

Sample ID: WQ21231-001 Batch: 21231

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 11/04/2021 0914

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	0.10	0.040	mg/L	11/05/2021 1240

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

#### ICP-AES Metals - LCS

Sample ID: WQ21231-002 Batch: 21231 Matrix: Aqueous Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 11/04/2021 0914

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	20	20		1	100	80-120	11/05/2021 1244

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MS

Sample ID: WJ29086-001MS

Batch: 21231

Prep Method: 3005A Analytical Method: 6010D

Prep Date: 11/04/2021 0914

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	6.4	20	25		1	93	75-125	11/05/2021 1251

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MSD

Sample ID: WJ29086-001MD

Batch: 21231 Analytical Method: 6010D Matrix: Aqueous Prep Method: 3005A

Prep Date: 11/04/2021 0914

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Iron	6.4	20	25		1	95	1.4	75-125	20	11/05/2021 1254

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MB

Sample ID: WQ21232-001 Batch: 21232

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 11/04/2021 0914

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Dissolved Iron	ND		1	0.10	0.040	mg/L	11/05/2021 1156

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

#### ICP-AES Metals - LCS

Sample ID: WQ21232-002 Batch: 21232 Matrix: Aqueous Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 11/04/2021 0914

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	20	21		1	106	80-120	11/05/2021 1200

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MS

Sample ID: WJ29086-001MS

Batch: 21232

Matrix: Aqueous Prep Method: 3005A

Prep Date: 11/04/2021 0914

Analytical Method: 6010D

	Sample	Spike						
	Amount	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Dissolved Iron	0.79	20	20		1	95	75-125	11/05/2021 1207

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MSD

Sample ID: WJ29086-001MD

Batch: 21232

Matrix: Aqueous Prep Method: 3005A

Prep Date: 11/04/2021 0914

Analytical Method: 6010D

	Sample	Spike						0/ 5			
Parameter	Amount (mg/L)	Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Dissolved Iron	0.79	20	20		1	95	0.35	75-125	20	11/05/2021 1211	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Chain of Custody and Miscellaneous Documents

#### Remarks / Cooler LD. 127553 WJ29086 Quote No. 춫 Temp Blank QC Requirements (Spocally) Time TOTA 943-45-4-4400 Scott. Poss @ Cecon. Com Number 12/42/21 )r)mrki 1203/1203/fack Telephane No. / Email 903-140-192J 3.0 Safe Saga × 4nalysis (Allanti kist if more space is needed) Poison L. Unknown Receipt Temp. × Repeived on ice (Chale) (Yes) No. Asp Pack Side Irnhant cuiq **WEE** 108 Vantage Point Drive • West Columbia, SC 29172 Telephone No. 803-791-9700 Fax No. 803-791-9111 $\lambda 0 V$ PACE ANALYTICAL SERVICES, LLC × × Philipse Hazsan Identification Parties Parties 4. Laboratory received by Ny apos No of Conteners by Preservative Type www.pacelabs.com LAR USE ONLY Son-Hazard 3. Received by Received by 2. Received by ょ юн CONI 10984 3 vanetay) 3 Semple Disposal With Buter ANGESTA. - ACM Scott Ross $\rho_{9}(g)$ Time Turk stoanty 7 × Report to Contact decoproces. ٩ Note: All samples are retained for four weeks from receipt S S Neme nperfor Date Posts Ē Caleathar IIm (Millay) 020 1310 150 Dale 3405 uniess other arrangements are made. Required (Prior lab approval regulard for expedited IAL) 29203 )2/82/व nizio 14/12/01 Cathorities Date(b) 10/23/01 P.C. No. Zip Coole day. Drive (Containers for each simple may be combined on one that) 6 Face Analytical <sup>®</sup> ISERD-OBSW-10I ISERD - 085W - 10 Sample (D / Description 101 Research Shakespeare Project No. 60635197 Scott Ross MW-10I Colombia MW-10 3. Relinquished by 4. Polinguished by Tivn Around Top Project Magig Standerd 2 Reti

Occument Number: ME003N2-01



#### Samples Receipt Checklist (SRC) (ME0018C-15) Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020 Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Accom  Cooler Inspected by/date: KDRW / 10/29/2021 Lot #: W.129086
Means of receipt: Pace
Yes No 1. Were custody seals present on the cooler?
Yes No VNA 2. If custody seals were present, were they intact and unbroken?
Chlorine Strip ID: NA
3.0 /3.0 °C NA /NA °C
Method: Temperature Blank Against Bottles IR Gun ID: 5
Method of coolant:
Yes No No No life temperature of any cooler exceeded 6.0°C, was Project Manager Notified?  PM was Notified by: phone / email / face-to-face (circle one).
This Line Wina 4. Is the commercial courier's packing slip attached to this form?
5. Were proper custody procedures (relinquished/received) follower/2
6. Were sample IDs listed on the COC?
✓ Yes No 7. Were sample (Ds listed on all sample containers?  ✓ Yes No 8. Was collection date & time listed on the COSE
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
tendent date de unite risjed bit all sample containers?
the art container about information (1D, date, time) agree with the COC?
11. Were lests to be performed listed on the COC?
Yes No. 12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes No 13. Was adequate sample volume available?
Yes No 14. Were all samples received within ½ the holding time or 48 hours, which was a which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time or 48 hours, which was a second of the holding time
15. Were any samples containers missing/excess (circle one) samples Not listed
Yes   No. 17 MA 170 of YOA and RSN-1/3 samples, were bubbles present >"peacine? /1/200 6 mm in 22
and of the VOA vialst
1. 43 LE NO WERE all cyanide samples received at a nH > 12 and sulfide s
Yes LINO VINA residual chloring?
Yes No No NA 20. Were client remarks/requests (i.e., requested dilutions, MS/MSD designations, etc)
concern against the COC into the comment section in LIMS?
[21] Was the quote number listed on the container label? If yes, Quote # 24900
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)
were received incorrectly preserved and many 45 + 4 - 6
Inc of circle one: PIZSO4, HNO3, HCl, NaOH using SR # NA
Fine of preservation NA
Sample(s) NA were received with hubbles > 6 mm in the
samples(s) And
were received with TRC > 0.5 mg/L (If #19 is $no$ ) and were edjusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Sheaty ID: NA
R barcode labels applied by: /RG2 Date: 10/29/2021
Comments:



## **Report of Analysis**

#### **AECOM**

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Signify Shakespeare

Project Number: 60635197

Lot Number: XC08061

Date Completed:03/30/2022

04/07/2022 9:27 AM Approved and released by:

Project Manager II: Cathy S. Dover





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

#### Case Narrative AECOM Lot Number: XC08061

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

#### **VOA 8260D**

The laboratory control sample (LCS) for analytical batch 34980 exceeded acceptance criteria for Acetone (156%) This analyte was biased high and was not detected in the associated samples:XC08061-001 (ERD-OBSW-1I) and XC08061-002 (MW-10I). Associated samples XC08061-003 (ERD-OBSW-1) and XC08061-005 (TB-10) had a low level (J flagged) detect for acetone. The data has been reported.

Sample XC08061-004 (MW-10) was diluted due to the nature of the sample matrix. The LOQ has been elevated to reflect the dilution.

#### Nitrate 300.0

The LCS associated with the following samples was analyzed after the samples: XC08061-001 (ERD-OBSW-1I), XC08061-002 (MW-10I), XC08061-003 (ERD-OBSW-1) and XC08061-004 (MW-10). The SOP specifies that the QC must be analyzed before the samples. The samples were reanalyzed for confirmation.

Reanalysis of the following samples was performed outside of the analytical holding time: XC08061-001 (ERD-OBSW-1I), XC08061-002 (MW-10I), XC08061-003 (ERD-OBSW-1) and XC08061-004 (MW-10). Due to batch and instrument failures as well as matrix interference, all samples were reanalyzed outside of holding time. Samples XC08061-003 and XC08061-004 confirm original analysis and Run 1 has been reported. XC08061-001 and XC08061-002 contained significant matrix interference in the original analysis and the reanalysis was done within 24 hours outside holding time. Both runs have been reported for these two samples.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

#### Nitrite 300.0

Samples XC08061-001 (ERD-OBSW-1I) and XC08061-002 (MW-10I) ran before the LOQ. Additionally, sample XC08061-001 contained a significant amount of matrix that interferes with the ability to determine the presence of nitrite. Because of this, XC08061-001 was reanalyzed outside of holding time and both runs have been reported.

Samples XC08061-001 (ERD-OBSW-1I), XC08061-002 (MW-10I), XC08061-003 (ERD-OBSW-1) and XC08061-004 (MW-10) ran before the LCS. The LCS is passing criteria. The data has been reported.

Reanalysis of the following samples was performed outside of the analytical holding time: XC08061-001 (ERD-OBSW-1I), XC08061-002 (MW-10I), XC08061-003 (ERD-OBSW-1) and XC08061-004 (MW-10). Due to batch and instrument failures as well as matrix interference, all samples were reanalyzed outside of holding time. Samples XC08061-002, XC08061-003 and XC08061-004 confirm original analysis is below the LOQ so the original Run 1 has been reported. XC08061-001 contained matrix in the original analysis and Run 2 was outside holding time; therefore, both runs have been reported.

#### TOC SM5310C

The continuing calibration blank (CCB) for analytical batch 34637 contained the analyte total organic carbon (TOC) greater than the SOP acceptance criteria. The associated sample, XC08061-001 (ERD-OBSW-1I), contained detections for this analyte at a concentration greater than 10X the value found in the CCB; therefore sample results are not impacted. The data has been reported.

The following samples were diluted due to the nature of the sample matrix: XC08061-002 (MW-10I), XC08061-003 (ERD-OBSW-1), and XC08061-004 (MW-10). The LOQ has been elevated to reflect the dilution.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

# Sample Summary AECOM

Lot Number: XC08061

Project Name: Signify Shakespeare Project Number: 60635197

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	ERD-OBSW-1I	Aqueous	03/08/2022 1010	03/08/2022
002	MW-10I	Aqueous	03/08/2022 1110	03/08/2022
003	ERD-OBSW-1	Aqueous	03/08/2022 1335	03/08/2022
004	MW-10	Aqueous	03/08/2022 1435	03/08/2022
005	TB-10	Aqueous	03/08/2022	03/08/2022

(5 samples)

# Detection Summary AECOM

Lot Number: XC08061

Project Name: Signify Shakespeare Project Number: 60635197

Sampl	e Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	ERD-OBSW-1I	Aqueous	Chloride	300.0	10		mg/L	7
001	ERD-OBSW-1I	Aqueous	TOC	SM 5310C-	140		mg/L	7
001	ERD-OBSW-1I	Aqueous	2-Butanone (MEK)	8260D	22	J	ug/L	8
001	ERD-OBSW-1I	Aqueous	1,1-Dichloroethene	8260D	2.5		ug/L	8
001	ERD-OBSW-1I	Aqueous	cis-1,2-Dichloroethene	8260D	53		ug/L	8
001	ERD-OBSW-1I	Aqueous	trans-1,2-Dichloroethene	8260D	3.1		ug/L	8
001	ERD-OBSW-1I	Aqueous	Methyl acetate	8260D	3.7	J	ug/L	8
001	ERD-OBSW-1I	Aqueous	Trichloroethene	8260D	590		ug/L	9
001	ERD-OBSW-1I	Aqueous	Vinyl chloride	8260D	2.5		ug/L	9
001	ERD-OBSW-1I	Aqueous	Ethane	RSK - 175	5.7	J	ug/L	10
001	ERD-OBSW-1I	Aqueous	Ethene	RSK - 175	14		ug/L	10
001	ERD-OBSW-1I	Aqueous	Methane	RSK - 175	4500		ug/L	10
001	ERD-OBSW-1I	Aqueous	Dissolved Manganese	6010D	0.68		mg/L	11
001	ERD-OBSW-1I	Aqueous	Iron	6010D	5.0		mg/L	12
001	ERD-OBSW-1I	Aqueous	Manganese	6010D	1.7		mg/L	12
002	MW-10I	Aqueous	Chloride	300.0	8.2		mg/L	13
002	MW-10I	Aqueous	Nitrate - N	300.0	0.0099	HJ	mg/L	13
002	MW-10I	Aqueous	TOC	SM 5310C-	16		mg/L	13
002	MW-10I	Aqueous	cis-1,2-Dichloroethene	8260D	690		ug/L	14
002	MW-10I	Aqueous	Trichloroethene	8260D	50		ug/L	15
002	MW-10I	Aqueous	Methane	RSK - 175	1400		ug/L	16
002	MW-10I	Aqueous	Dissolved Iron	6010D	11		mg/L	17
002	MW-10I	Aqueous	Dissolved Manganese	6010D	1.0		mg/L	17
002	MW-10I	Aqueous	Iron	6010D	12		mg/L	18
002	MW-10I	Aqueous	Manganese	6010D	0.98		mg/L	18
003	ERD-OBSW-1	Aqueous	Chloride	300.0	94	S	mg/L	19
003	ERD-OBSW-1	Aqueous	Nitrate - N	300.0	0.24		mg/L	19
003	ERD-OBSW-1	Aqueous	Nitrite - N	300.0	0.012	J	mg/L	19
003	ERD-OBSW-1	Aqueous	TOC	SM 5310C-	21		mg/L	19
003	ERD-OBSW-1	Aqueous	Acetone	8260D	5.7	JL	ug/L	20
003	ERD-OBSW-1	Aqueous	1,2-Dichloroethane	8260D	0.82		ug/L	20
003	ERD-OBSW-1	Aqueous	cis-1,2-Dichloroethene	8260D	86		ug/L	20
003	ERD-OBSW-1	Aqueous	Methyl acetate	8260D	0.60	J	ug/L	20
003	ERD-OBSW-1	Aqueous	Trichloroethene	8260D	180		ug/L	21
003	ERD-OBSW-1	Aqueous	Methane	RSK - 175	150		ug/L	22
003	ERD-OBSW-1	Aqueous	Dissolved Manganese	6010D	0.064		mg/L	23
003	ERD-OBSW-1	Aqueous	Iron	6010D	3.4		mg/L	24
003	ERD-OBSW-1	Aqueous	Manganese	6010D	0.060		mg/L	24
004	MW-10	Aqueous	Chloride	300.0	28		mg/L	25
004	MW-10	Aqueous	Nitrate - N	300.0	0.17		mg/L	25
004	MW-10	Aqueous	Nitrite - N	300.0	0.015	J	mg/L	25
004	MW-10	Aqueous	Sulfate	300.0	0.58	J	mg/L	25
004	MW-10	Aqueous	TOC	SM 5310C-	920		mg/L	25

## **Detection Summary (Continued)**

Lot Number: XC08061

Sample	e Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	MW-10	Aqueous	Trichloroethene	8260D	590		ug/L	27
004	MW-10	Aqueous	Ethene	RSK - 175	2.8	J	ug/L	28
004	MW-10	Aqueous	Methane	RSK - 175	2600		ug/L	28
004	MW-10	Aqueous	Dissolved Iron	6010D	1.9		mg/L	29
004	MW-10	Aqueous	Dissolved Manganese	6010D	0.052		mg/L	29
004	MW-10	Aqueous	Iron	6010D	5.9		mg/L	30
004	MW-10	Aqueous	Manganese	6010D	0.18		mg/L	30
005	TB-10	Aqueous	Acetone	8260D	4.0	JL	ug/L	31

(51 detections)

#### Inorganic non-metals

Client: AECOM Description: ERD-OBSW-1I Date Sampled: 03/08/2022 1010 Project Name: Signify Shakespeare Date Received: 03/08/2022 Project Number: 60635197  Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date (Chloride) 300.0 1 03/10/2022 2203 YCB	Mat	ID: XC08061- trix: Aqueous		
Date Sampled:03/08/2022 1010 Project Name: Signify Shakespeare  Date Received: 03/08/2022 Project Number: 60635197  Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Da	te Batch 34642	trix: Aqueous		
Date Received: 03/08/2022 Project Number: 60635197  Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Da	34642			
Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Da	34642			
	34642			
1 (Chloride) 300.0 1 03/10/2022 2203 YCB				
	34754			
1 (Nitrate - N) 300.0 1 03/10/2022 0545 YCB				
2 (Nitrate - N) 300.0 1 03/10/2022 2203 SLP	34948			
1 (Nitrite - N) 300.0 1 03/10/2022 0545 YCB	34752			
2 (Nitrite - N) 300.0 1 03/10/2022 2203 SLP	34946			
1 (Sulfate) 300.0 1 03/10/2022 2203 YCB	34641			
1 (TOC) SM 5310C-2014 5 03/12/2022 2101 DMA	34637			
CAS Analytical				
Parameter Number Method Result Q	LOQ	DL	Units	Rur
Chloride 300.0 10	1.0	0.25	mg/L	1
Nitrate - N 300.0 ND	0.020	0.0050	mg/L	1
Sulfate 300.0 ND	1.0	0.25	mg/L	1
Nitrite - N 300.0 ND B	0.020	0.0050	mg/L	1
Nitrate - N 300.0 ND H	0.020	0.0050	mg/L	2

SM 5310C-2014

300.0

140

ND H

5.0

0.020

5.0

0.0050

mg/L

mg/L

1

2

LOQ = Limit of QuantitationB = Detected in the method blankE = Quantitation of compound exceeded the calibration rangeDL = Detection LimitQ = Surrogate failureND = Not detected at or above the DLN = Recovery is out of criteriaP = The RPD between two GC columns exceeds 40%J = Estimated result < LOQ and  $\geq$  DLL = LCS/LCSD failureH = Out of holding timeW = Reported on wet weight basisS = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

TOC

Nitrite - N

Client: AECOM Laboratory ID: XC08061-001

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:03/08/2022 1010 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D503/16/2022 0505 JWO34980

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	L	50	20	ug/L	1
Benzene	71-43-2	8260D	ND		2.5	2.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		2.5	2.0	ug/L	1
Bromoform	75-25-2	8260D	ND		2.5	2.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		2.5	2.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	22	J	50	10	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		2.5	2.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		2.5	2.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		2.5	2.0	ug/L	1
Chloroethane	75-00-3	8260D	ND		2.5	2.0	ug/L	1
Chloroform	67-66-3	8260D	ND		2.5	2.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		2.5	2.0	ug/L	1
Cyclohexane	110-82-7	8260D	ND		2.5	2.0	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		2.5	2.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		2.5	2.0	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		2.5	2.0	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		2.5	2.0	ug/L	1
1.3-Dichlorobenzene	541-73-1	8260D	ND		2.5	2.0	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		2.5	2.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		2.5	2.0	ug/L	1
1.1-Dichloroethane	75-34-3	8260D	ND		2.5	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		2.5	2.0	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	2.5		2.5	2.0	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	53		2.5	2.0	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	3.1		2.5	2.0	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		2.5	2.0	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		2.5	2.0	ug/L	1
trans-1,3-Dichloropropene	10061-01-6	8260D	ND		2.5	2.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		2.5	2.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND		50	10	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		2.5	2.0	ug/L	1
Methyl acetate	79-20-9	8260D	3.7	1	5.0	2.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	3	2.5	2.0	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		50	10	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND		25	2.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND		2.5		ug/L	1
	100-42-5	8260D	ND		2.5	2.0		1
Styrene						2.1	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		2.5	2.0	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		2.5	2.0	ug/L	1
Toluene	108-88-3	8260D	ND		2.5	2.0	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		5.0	2.1	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		2.5	2.0	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		2.5	2.0	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		2.5	2.0	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

W = Reported on wet weight basis

S = MS/MSD failure

Client: AECOM Laboratory ID: XC08061-001 Description: ERD-OBSW-1I Matrix: Aqueous Date Sampled:03/08/2022 1010 Project Name: Signify Shakespeare Date Received: 03/08/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 03/16/2022 0505 JWO 34980 1 CAS Analytical Parameter Result Q LOQ DL Units Number Run Method Trichloroethene 79-01-6 8260D 590 2.5 ug/L 1 2.0 Trichlorofluoromethane 8260D 75-69-4 ND 2.5 ug/L 1 2.0 Vinyl chloride 75-01-4 8260D 2.5 2.5 ug/L 1 2.0 Xylenes (total) 1330-20-7 8260D ND 5.0 ug/L 2.0 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 93 70-130

70-130

70-130

103

93

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

1,2-Dichloroethane-d4

Toluene-d8

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

#### **Dissolved Gases**

Client: AECOM Laboratory ID: XC08061-001

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:03/08/2022 1010 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis Date AnalystPrep DateBatch1RSK - 175103/15/2022 1621JM1348902RSK - 175503/21/2022 1235JM135565

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	5.7 J	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	14	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	4500	50	13	ug/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES** Metals

Client: AECOM Laboratory ID: XC08061-001

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:03/08/2022 1010 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 03/18/2022 2219
 KSH2
 03/18/2022 0946
 35213

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Dissolved Iron	7439-89-6	6010D	ND	0.10	0.040	mg/L	1
Dissolved Manganese	7439-96-5	6010D	0.68	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Metals

Client: AECOM Laboratory ID: XC08061-001

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:03/08/2022 1010 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 3005A 6010D 03/11/2022 2154 KSH2 03/10/2022 1012 34232 1 2 3005A 6010D 03/10/2022 1012 34232 1 03/14/2022 1846 KSH2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Iron	7439-89-6	6010D	5.0	0.10	0.040	mg/L	2
Manganese	7439-96-5	6010D	1.7	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Inorganic non-metals

		11101	gariic non-metai	3				
Client: AECOM					Laboratory	ID: XC08061	-002	
Description: MW-10I					Matr	ix: Aqueous	;	
Date Sampled:03/08/2022 111	0	Project N	lame: Signify Shakespear	е				
Date Received: 03/08/2022	F	Project Number: 60635197						
Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch			
1	(Chloride) 300.0	1	03/10/2022 2222 YCB		34642			
1	(Nitrate - N) 300.0	1	03/10/2022 0603 YCB		34754			
2	(Nitrate - N) 300.0	1	03/10/2022 2222 SLP		34948			
1	(Nitrite - N) 300.0	1	03/10/2022 0603 YCB		34752			
1	(Sulfate) 300.0	1	03/10/2022 2222 YCB		34641			
3	(TOC) SM 5310C-2014	5	03/29/2022 0210 DMA		36304			
			CAS Analytical					
Parameter		Nun	nber Method	Result Q	LOQ	DL	Units	Run
Chloride			300.0	8.2	1.0	0.25	mg/L	1
Nitrite - N			300.0	ND	0.020	0.0050	mg/L	1
Nitrate - N			300.0	ND	0.020	0.0050	mg/L	1
Sulfate			300.0	ND	1.0	0.25	mg/L	1

300.0

SM 5310C-2014

0.0099 HJ

16

0.020

5.0

0.0050

5.0

mg/L

mg/L

2

3

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	$J = Estimated result < LOQ and \geq DL$	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Nitrate - N

TOC

Client: AECOM

Description: MW-10I

Matrix: Aqueous

Date Sampled:03/08/2022 1110 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 5 03/16/2022 0528 JWO 34980

ical nod	Result	Q	LOQ	DL	Units	Run
3260D	ND	L	50	20	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND	S	2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		50	10	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND	S	2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	690		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		50	10	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		5.0	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		50	10	ug/L	1
3260D	ND		25	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.1	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
260D	ND		2.5	2.0	ug/L	1
3260D	ND		2.5	2.0	ug/L	1
3260D	ND		5.0	2.1	_	1
260D	ND		2.5	2.0	_	1
260D	ND				_	1
260D	ND		2.5	2.0	ug/L	1
12 12 12	60D 60D 60D 60D	60D ND 60D ND 60D ND 60D ND	60D ND 60D ND 60D ND 60D ND	60D ND 5.0 60D ND 2.5 60D ND 2.5 60D ND 2.5	60D         ND         5.0         2.1           60D         ND         2.5         2.0           60D         ND         2.5         2.0	60D ND 5.0 2.1 ug/L 60D ND 2.5 2.0 ug/L 60D ND 2.5 2.0 ug/L 60D ND 2.5 2.0 ug/L

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

L = LCS/LCSD failure

S = MS/MSD failure

J = Estimated result < LOQ and  $\geq$  DL

Client: AECOM Laboratory ID: XC08061-002 Description: MW-10I Matrix: Aqueous Date Sampled:03/08/2022 1110 Project Name: Signify Shakespeare Date Received: 03/08/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 03/16/2022 0528 JWO 34980

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	50	2.5	2.0	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	2.5	2.0	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	2.5	2.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	5.0	2.0	ug/L	1

Surrogate	Run 1 Acceptance Q % Recovery Limits	
Bromofluorobenzene	96 70-130	
1,2-Dichloroethane-d4	103 70-130	
Toluene-d8	93 70-130	

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### **Dissolved Gases**

Client: AECOM

Description: MW-10I

Matrix: Aqueous

Date Sampled:03/08/2022 1110 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 03/15/2022 1637 JM1 34890

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	1400	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES** Metals

Client: AECOM

Description: MW-10I

Matrix: Aqueous

Date Sampled:03/08/2022 1110 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 03/18/2022 2250 KSH2
 03/18/2022 0946 35213

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Dissolved Iron	7439-89-6	6010D	11	0.10	0.040	mg/L	1
Dissolved Manganese	7439-96-5	6010D	1.0	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Metals

Client: AECOM

Description: MW-10I

Matrix: Aqueous

Date Sampled:03/08/2022 1110 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 3005A 6010D 03/11/2022 2158 KSH2 03/10/2022 1012 34232 1 2 3005A 6010D 03/14/2022 1859 KSH2 03/10/2022 1012 34232 1

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Iron	7439-89-6	6010D	12	0.10	0.040	mg/L	2
Manganese	7439-96-5	6010D	0.98	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

Client: AECOM							Laboratory	ID: XC08061	-003	
Description: ERD-OBSW-1		Matrix: Aqueous								
Date Sampled:03/08/2022 1335	5	Project Name: Signify Shakespeare								
Date Received: 03/08/2022	ſ	Project Number: 60635197								
Run Prep Method	Analytical Method	Dilution	Analy	ysis Date Analyst	Prep I	Date	Batch			
1	(Chloride) 300.0	1	03/10/	/2022 2241 YCB			34642			
1	(Nitrate - N) 300.0	1	03/10/	/2022 0719 YCB			34754			
1	(Nitrite - N) 300.0	1	03/10/	/2022 0719 YCB			34752			
1	(Sulfate) 300.0	1	03/10/	/2022 2241 YCB			34641			
3	(TOC) SM 5310C-2014	10	03/29/	/2022 0223 DMA			36304			
Danamatan			CAS	Analytical	Decult		1.00	DI	Lleite	Divis
Parameter		Nur	nber	Method	Result		LOQ	DL	Units	Run
Chloride				300.0		S	1.0	0.25	mg/L	1
Nitrate - N				300.0	0.24		0.020	0.0050	mg/L	1

300.0

300.0

SM 5310C-2014

0.012 J

ND

21

0.020

1.0

10

0.0050

0.25

10

mg/L

mg/L

mg/L

1

1

3

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	$J = Estimated result < LOQ and \geq DL$	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Nitrite - N

Sulfate

TOC

Client: AECOM Laboratory ID: XC08061-003

Description: ERD-OBSW-1 Matrix: Aqueous

Date Sampled:03/08/2022 1335 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D103/16/2022 0354 JWO34980

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	5.7 JL	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	0.82	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	86	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	0.60 J	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XC08061-003 Description: ERD-OBSW-1 Matrix: Aqueous Date Sampled:03/08/2022 1335 Project Name: Signify Shakespeare Date Received: 03/08/2022 Project Number: 60635197 Run Prep Method Analytical Method Analysis Date Analyst Prep Date Dilution Batch 1 5030B 8260D 03/16/2022 0354 JWO 34980 CAS Analytical Parameter LOQ DL Number Result Q Units Run Method Trichloroethene 79-01-6 8260D 180 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D 75-69-4 ND ug/L 0.50 0.40 1 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L

Xylenes (total)	1330-20	)-7 8260D	ND	1.0	0.40	ug/L	1
Surrogate	Run 1 A Q % Recovery	cceptance Limits					
Bromofluorobenzene	94	70-130					
1,2-Dichloroethane-d4	105	70-130					
Toluene-d8	93	70-130					

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit J = Estimated result < LOQ and  $\geq$  DL

0.40

1

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

### **Dissolved Gases**

Client: AECOM Laboratory ID: XC08061-003

Description: ERD-OBSW-1 Matrix: Aqueous

Date Sampled:03/08/2022 1335 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 03/15/2022 1653 JM1 34890

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	150	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ (\mbox{formerly Shealy Environmental Services, Inc.})$ 

# **ICP-AES** Metals

Client: AECOM Laboratory ID: XC08061-003

Description: ERD-OBSW-1 Matrix: Aqueous

Date Sampled:03/08/2022 1335 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 03/18/2022 2255 KSH2
 03/18/2022 0946 35213

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Dissolved Iron	7439-89-6	6010D	ND	0.10	0.040	mg/L	1
Dissolved Manganese	7439-96-5	6010D	0.064	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Metals

Client: AECOM Laboratory ID: XC08061-003

Description: ERD-OBSW-1 Matrix: Aqueous

Date Sampled:03/08/2022 1335 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 3005A 6010D 03/11/2022 2202 KSH2 03/10/2022 1012 34232 1 2 3005A 6010D 03/14/2022 1903 KSH2 03/10/2022 1012 34232 1

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Iron	7439-89-6	6010D	3.4	0.10	0.040	mg/L	2
Manganese	7439-96-5	6010D	0.060	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

# Inorganic non-metals

Client: AECOM		Laboratory ID: XC08061-004							
Description: MW-10		Matrix: Aqueous							
Date Sampled:03/08/2022 1435		Project N	lame: S	ignify Shakespeare	е				
Date Received: 03/08/2022	F	Project Number: 60635197							
Run Prep Method	Analytical Method	Dilution	Analy	ysis Date Analyst	Prep Date	Batch			
1	(Chloride) 300.0	1	03/10/	2022 2338 YCB		34642			
1	(Nitrate - N) 300.0	1	03/10/	2022 0738 YCB		34754			
1	(Nitrite - N) 300.0	1	03/10/	2022 0738 YCB		34752			
1	(Sulfate) 300.0	1	03/10/	2022 2338 YCB		34641			
3	(TOC) SM 5310C-2014	500	03/29/	2022 0237 DMA		36304			
			CAS	Analytical					
Parameter		Nur	nber	Method	Result Q	LOQ	DL	Units	Run
Chloride		·		300.0	28	1.0	0.25	mg/L	1
Nitrate - N				300.0	0.17	0.020	0.0050	mg/L	1

300.0

300.0

SM 5310C-2014

0.015 J

0.58 J

920

0.020

1.0

500

0.0050

0.25

500

mg/L

mg/L

mg/L

1

1

3

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	$J = Estimated result < LOQ and \geq DL$	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Nitrite - N

Sulfate

TOC

Client: AECOM

Description: MW-10

Laboratory ID: XC08061-004

Matrix: Aqueous

Date Sampled:03/08/2022 1435 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch25030B8260D2003/19/2022 0449BBW35438

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	200	80	ug/L	2
Benzene	71-43-2	8260D	ND	10	8.0	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND	10	8.0	ug/L	2
Bromoform	75-25-2	8260D	ND	10	8.0	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	10	8.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND	200	40	ug/L	2
Carbon disulfide	75-15-0	8260D	ND	10	8.0	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND	10	8.0	ug/L	2
Chlorobenzene	108-90-7	8260D	ND	10	8.0	ug/L	2
Chloroethane	75-00-3	8260D	ND	10	8.0	ug/L	2
Chloroform	67-66-3	8260D	ND	10	8.0	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	10	8.0	ug/L	2
Cyclohexane	110-82-7	8260D	ND	10	8.0	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	10	8.0	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND	10	8.0	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	10	8.0	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND	10	8.0	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND	10	8.0	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND	10	8.0	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND	10	8.0	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND	10	8.0	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	ND	10	8.0	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND	10	8.0	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	ND	10	8.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND	10	8.0	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND	10	8.0	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	10	8.0	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	10	8.0	ug/L	2
Ethylbenzene	100-41-4	8260D	ND	10	8.0	ug/L	2
2-Hexanone	591-78-6	8260D	ND	200	40	ug/L	2
Isopropylbenzene	98-82-8	8260D	ND	10	8.0	ug/L	2
Methyl acetate	79-20-9	8260D	ND	20	8.0	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	10	8.0	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND	200	40	ug/L	2
Methylcyclohexane	108-87-2	8260D	ND	100	8.0	ug/L	2
Methylene chloride	75-09-2	8260D	ND	10	8.0	ug/L	2
Styrene	100-42-5	8260D	ND	10	8.2	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	10	8.0	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND	10	8.0	ug/L	2
Toluene	108-88-3	8260D	ND	10	8.0	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	20	8.4	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	10	8.0	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND	10	8.0	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260D	ND	10	8.0	ug/L	2

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XC08061-004 Description: MW-10 Matrix: Aqueous Date Sampled:03/08/2022 1435 Project Name: Signify Shakespeare Date Received: 03/08/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 2 5030B 8260D 03/19/2022 0449 BBW 35438 CAS Analytical Parameter Result Q LOQ DL Units Number Run Method Trichloroethene 79-01-6 8260D 590 10 ug/L 2 8.0 Trichlorofluoromethane 8260D 2 75-69-4 ND 10 ug/L 8.0 Vinyl chloride 75-01-4 8260D ND 10 ug/L 2 8.0 2 Xylenes (total) 1330-20-7 8260D ND 20 ug/L 8.0 Run 2 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 82 70-130

70-130

70-130

103

96

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

1,2-Dichloroethane-d4

Toluene-d8

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

#### **Dissolved Gases**

Client: AECOM Laboratory ID: XC08061-004

Description: MW-10 Matrix: Aqueous

Date Sampled:03/08/2022 1435 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 03/21/2022 1011 JM1 35565

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	2.8 J	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	2600	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES** Metals

Client: AECOM Laboratory ID: XC08061-004

Description: MW-10 Matrix: Aqueous

Date Sampled:03/08/2022 1435 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 03/18/2022 2259
 KSH2
 03/18/2022 0946
 35213

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Dissolved Iron	7439-89-6	6010D	1.9	0.10	0.040	mg/L	1
Dissolved Manganese	7439-96-5	6010D	0.052	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Metals

Client: AECOM Laboratory ID: XC08061-004

Description: MW-10 Matrix: Aqueous

Date Sampled:03/08/2022 1435 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 3005A 6010D 03/11/2022 2207 KSH2 03/10/2022 1012 34232 1 2 3005A 6010D 03/10/2022 1012 34232 1 03/14/2022 1908 KSH2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Iron	7439-89-6	6010D	5.9	0.10	0.040	mg/L	2
Manganese	7439-96-5	6010D	0.18	0.015	0.0019	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ (\mbox{formerly Shealy Environmental Services, Inc.})$ 

Client: AECOM Laboratory ID: XC08061-005
Description: TB-10 Matrix: Aqueous

Date Sampled:03/08/2022 Project Name: Signify Shakespeare

Date Received: 03/08/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D103/15/2022 2340 JWO34980

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	4.0 JL	. 10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.40	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.42	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D 8260D	ND	0.50	0.40	ug/L ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND ND	0.50	0.40	ug/L ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XC08061-005 Description: TB-10 Matrix: Aqueous Date Sampled:03/08/2022 Project Name: Signify Shakespeare Date Received: 03/08/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 03/15/2022 2340 JWO 34980 CAS Analytical Parameter Result Q LOQ DL Units Number Run Method Trichloroethene 79-01-6 8260D ND 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D 75-69-4 ND 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 Xylenes (total) 1330-20-7 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 91 70-130 1,2-Dichloroethane-d4 103 70-130 Toluene-d8 94 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

QC Summary

# Inorganic non-metals - MB

Sample ID: XQ34637-001

Batch: 34637

Analytical Method: SM 5310C-2014

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	03/12/2022 1721

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ34637-002

Batch: 34637

Analytical Method: SM 5310C-2014

Matrix: Aqueous

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
TOC	20	19		1	94	90-110	03/12/2022 1734

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: XQ34641-001

Batch: 34641 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND	•	1	1.0	0.25	mg/L	03/10/2022 1701

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ34641-002

Batch: 34641 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	20	20		1	98	90-110	03/10/2022 1739

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MS

Sample ID: XC08061-003MS

Batch: 34641 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date	
Sulfate	ND	10	10		1	102	90-110	03/10/2022 2300	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MSD

Sample ID: XC08061-003MD

Batch: 34641 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Sulfate	ND	10	10		1	101	1.3	90-110	20	03/10/2022 2319

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MS

Sample ID: XC08061-004MS

Batch: 34641 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	0.58	10	9.8		1	92	90-110	03/11/2022 0035

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MSD

Sample ID: XC08061-004MD

Batch: 34641 Analytical Method: 300.0 Matrix: Aqueous

_ Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Sulfate	0.58	10	9.9		1	94	1.3	90-110	20	03/11/2022 0054

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: XQ34642-001

Batch: 34642 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND		1	1.0	0.25	mg/L	03/10/2022 1701

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ34642-002

Batch: 34642 Analytical Method: 300.0 Matrix: Aqueous

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Chloride	20	20		1	99	90-110	03/10/2022 1739

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MS

Sample ID: XC08061-003MS

Batch: 34642 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	94	10	100	N	1	77	90-110	03/10/2022 2300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MSD

Sample ID: XC08061-003MD

Batch: 34642 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Chloride	94	10	100	N	1	88	1.1	90-110	20	03/10/2022 2319

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MS

Sample ID: XC08061-004MS

Batch: 34642 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	28	10	37		1	91	90-110	03/11/2022 0035

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MSD

Sample ID: XC08061-004MD

Batch: 34642 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Chloride	28	10	38		1	96	1.2	90-110	20	03/11/2022 0054

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: XQ34752-001

Batch: 34752 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.0050	mg/L	03/10/2022 0332

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

# Inorganic non-metals - LCS

Sample ID: XQ34752-002

Batch: 34752

Matrix: Aqueous

Analytical Method: 300.0

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	0.80	0.78		1	98	90-110	03/10/2022 0854

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: XQ34754-001

Batch: 34754 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	03/10/2022 0332

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - LCS

Sample ID: XQ34754-002

Batch: 34754 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.80	0.81		1	102	90-110	03/10/2022 0854

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: XQ34946-001

Batch: 34946 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.0050	mg/L	03/10/2022 1701

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ34946-002

Batch: 34946 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	D.1	% Rec	%Rec Limit	Analysis Date
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	LITTIL	Ariarysis Date
Nitrite - N	0.80	0.76		1	95	90-110	03/10/2022 1739

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MS

Sample ID: XC08061-003MS

Batch: 34946 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	0.012	0.40	0.42		1	101	90-110	03/10/2022 2300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MSD

Sample ID: XC08061-003MD

Batch: 34946 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Nitrite - N	0.012	0.40	0.42		1	102	0.64	90-110	20	03/10/2022 2319	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MS

Sample ID: XC08061-004MS

Batch: 34946 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	ND	0.40	0.40		1	100	90-110	03/11/2022 0035

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: XC08061-004MD

Batch: 34946 Analytical Method: 300.0 Matrix: Aqueous

_ Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrite - N	ND	0.40	0.40		1	99	0.58	90-110	20	03/11/2022 0054

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MB

Sample ID: XQ34948-001

Batch: 34948 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.0050	mg/L	03/10/2022 1701

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ34948-002

Batch: 34948 Analytical Method: 300.0 Matrix: Aqueous

Danamatan	Spike Amount	Result	0		% Rec	%Rec	Analysis Data
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Nitrate - N	0.80	0.81		1	101	90-110	03/10/2022 1739

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MS

Sample ID: XC08061-003MS

Batch: 34948 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.23	0.40	0.61		1	95	90-110	03/10/2022 2300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: XC08061-003MD

Batch: 34948 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.23	0.40	0.62		1	97	1.1	90-110	20	03/10/2022 2319

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MS

Sample ID: XC08061-004MS

Batch: 34948 Analytical Method: 300.0 Matrix: Aqueous

_ Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.077	0.40	0.45		1	93	90-110	03/11/2022 0035

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Inorganic non-metals - MSD

Sample ID: XC08061-004MD

Batch: 34948 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Nitrate - N	0.077	0.40	0.46		1	96	2.9	90-110	20	03/11/2022 0054	_

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: XQ36304-001

Batch: 36304

Analytical Method: SM 5310C-2014

Matrix: Aqueous

Parameter	Result	Q	Dil	l	LOQ	DL	Units	Analysis Date
TOC	ND		1		1.0	1.0	mg/L	03/28/2022 2003

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

# Inorganic non-metals - LCS

Sample ID: XQ36304-002

Batch: 36304

Analytical Method: SM 5310C-2014

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	19		1	94	90-110	03/28/2022 2015

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ34980-001 Batch: 34980

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Acctone	Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Benzene	Acetone	ND		1	10	4.0	ug/L	03/15/2022 2147
Bromodichloromethane   ND	Benzene	ND		1	0.50	0.40		03/15/2022 2147
Bromoferm   ND	Bromodichloromethane	ND		1	0.50	0.40		03/15/2022 2147
Permomethane (Methyl bromide)	Bromoform	ND		1		0.40		03/15/2022 2147
2-Butanone (MEK)	Bromomethane (Methyl bromide)	ND		1	0.50	0.40		03/15/2022 2147
Carbon disulfide         ND         1         0.50         0.40         ug/L         0315/2022 2147           Carbon tetrachloride         ND         1         0.50         0.40         ug/L         0315/2022 2147           Chlorobenzene         ND         1         0.50         0.40         ug/L         0315/2022 2147           Chloroferm         ND         1         0.50         0.40         ug/L         0315/2022 2147           Chloromethane (Methyl chloride)         ND         1         0.50         0.40         ug/L         0315/2022 2147           Cyclohexane         ND         1         0.50         0.40         ug/L         0315/2022 2147           Cyclohexane         ND         1         0.50         0.40         ug/L         0315/2022 2147           L2-Dibromos-3-chlorogropane (DBCP)         ND         1         0.50         0.40         ug/L         0315/2022 2147           12-Dibromochloromethane         ND         1         0.50         0.40         ug/L         0315/2022 2147           1,3-Dichlorobenzene         ND         1         0.50         0.40         ug/L         0315/2022 2147           1,3-Dichlorodfluoromethane         ND         1         0.50		ND		1				03/15/2022 2147
Chlorobenzene   ND	Carbon disulfide	ND		1	0.50	0.40		03/15/2022 2147
Chlorobenzene	Carbon tetrachloride	ND		1	0.50	0.40		03/15/2022 2147
Chloroform	Chlorobenzene	ND		1	0.50	0.40		03/15/2022 2147
Chloroform	Chloroethane	ND		1	0.50	0.40		03/15/2022 2147
Chloromethane (Methyl chloride)   ND   1   0.50   0.40   ug/L 03/15/2022 2147	Chloroform	ND		1	0.50	0.40		03/15/2022 2147
Cyclohexane	Chloromethane (Methyl chloride)	ND		1	0.50	0.40		03/15/2022 2147
1,2-Dibromo-3-chloropropane (DBCP)   ND				1		0.40		03/15/2022 2147
Dibromochloromethane   ND	-			1		0.40		03/15/2022 2147
1,2-Dibromoethane (EDB)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,3-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,4-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethene         ND         1         0.50				1			=	
1,2-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,3-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,4-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1	1,2-Dibromoethane (EDB)	ND		1			_	
1,3-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,4-Dichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Dichlorodifluoromethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,2-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1 <td< td=""><td></td><td>ND</td><td></td><td>1</td><td></td><td>0.40</td><td></td><td>03/15/2022 2147</td></td<>		ND		1		0.40		03/15/2022 2147
1,4-Dichlorobenzene		ND		1				
Dichlorodifluoromethane		ND		1				
1,1-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,3-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl ectate         ND         1         0.50 <td></td> <td>ND</td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td>03/15/2022 2147</td>		ND		1				03/15/2022 2147
1,2-Dichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           t;2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           t;3-1,3-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           t;3-1,3-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Esorpoylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl ectate         ND         1         0.50				1				
1,1-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           tcis-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1				1				
cis-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           2-Hexanone         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           4-Methyl-2-pentanone         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methylcyclohexane         ND         1         0.50<				1			_	
trans-1,2-Dichloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           2-Hexanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl-2-pentanone         ND         1         1.0         2.0         ug/L         03/15/2022 2147           Methylere chloride         ND         1         0.50	•							
1,2-Dichloropropane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           cis-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           2-Hexanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           4-Methyl-2-pentanone         ND         1         1         0.50         0.40         ug/L         03/15/2022 2147           Methylerylchokexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.5	trans-1,2-Dichloroethene	ND		1		0.40		03/15/2022 2147
cis-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           2-Hexanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl tetriary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           4-Methyl-2-pentanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Methylocyclohexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.40<	1,2-Dichloropropane	ND		1		0.40		03/15/2022 2147
trans-1,3-Dichloropropene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           2-Hexanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           4-Methyl-2-pentanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Methylecyclohexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Tetrachloroethane         ND         1         0.50         0.40		ND		1		0.40		03/15/2022 2147
Ethylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           2-Hexanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           4-Methyl-2-pentanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Methylcyclohexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2,2-Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Toluene         ND         1         0.50         0.40		ND		1	0.50	0.40		03/15/2022 2147
2-Hexanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Isopropylbenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Methyl acetate         ND         1         1.0         0.40         ug/L         03/15/2022 2147           Methyl tertiary butyl ether (MTBE)         ND         1         0.50         0.40         ug/L         03/15/2022 2147           4-Methyl-2-pentanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Methylcyclohexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2,2-Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Toluene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2,4-Trichloroethane         ND         1         0.50         0.40		ND		1	0.50	0.40		03/15/2022 2147
Isopropylbenzene	_	ND		1		2.0		03/15/2022 2147
Methyl acetateND11.00.40ug/L03/15/2022 2147Methyl tertiary butyl ether (MTBE)ND10.500.40ug/L03/15/2022 21474-Methyl-2-pentanoneND1102.0ug/L03/15/2022 2147MethylcyclohexaneND15.00.40ug/L03/15/2022 2147Methylene chlorideND10.500.40ug/L03/15/2022 2147StyreneND10.500.41ug/L03/15/2022 21471,1,2,2-TetrachloroethaneND10.500.40ug/L03/15/2022 2147TetrachloroetheneND10.500.40ug/L03/15/2022 21471,1,2-Trichloro-1,2,2-TrifluoroethaneND10.500.40ug/L03/15/2022 21471,2,4-TrichlorobenzeneND11.00.42ug/L03/15/2022 21471,1,1-TrichloroethaneND10.500.40ug/L03/15/2022 2147	Isopropylbenzene	ND		1	0.50	0.40		03/15/2022 2147
Methyl tertiary butyl ether (MTBE)ND10.500.40ug/L03/15/2022 21474-Methyl-2-pentanoneND1102.0ug/L03/15/2022 2147MethylcyclohexaneND15.00.40ug/L03/15/2022 2147Methylene chlorideND10.500.40ug/L03/15/2022 2147StyreneND10.500.41ug/L03/15/2022 21471,1,2,2-TetrachloroethaneND10.500.40ug/L03/15/2022 2147TetrachloroetheneND10.500.40ug/L03/15/2022 2147TolueneND10.500.40ug/L03/15/2022 21471,1,2-Trichloro-1,2,2-TrifluoroethaneND11.00.42ug/L03/15/2022 21471,2,4-TrichlorobenzeneND10.500.40ug/L03/15/2022 21471,1,1-TrichloroethaneND10.500.40ug/L03/15/2022 2147		ND		1	1.0	0.40		03/15/2022 2147
4-Methyl-2-pentanone         ND         1         10         2.0         ug/L         03/15/2022 2147           Methylcyclohexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.41         ug/L         03/15/2022 2147           1,1,2,2-Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Tetrachloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2-Trichloro-1,2,2-Trifluoroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147	-	ND		1	0.50	0.40		03/15/2022 2147
Methylcyclohexane         ND         1         5.0         0.40         ug/L         03/15/2022 2147           Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.41         ug/L         03/15/2022 2147           1,1,2,2-Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Toluene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2-Trichloro-1,2,2-Trifluoroethane         ND         1         1.0         0.42         ug/L         03/15/2022 2147           1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147		ND		1	10	2.0		03/15/2022 2147
Methylene chloride         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Styrene         ND         1         0.50         0.41         ug/L         03/15/2022 2147           1,1,2,2-Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Toluene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2-Trichloro-1,2,2-Trifluoroethane         ND         1         1.0         0.42         ug/L         03/15/2022 2147           1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147								
Styrene         ND         1         0.50         0.41         ug/L         03/15/2022 2147           1,1,2,2-Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Tetrachloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Toluene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2-Trichloro-1,2,2-Trifluoroethane         ND         1         1.0         0.42         ug/L         03/15/2022 2147           1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147								
1,1,2,2-Tetrachloroethane       ND       1       0.50       0.40       ug/L       03/15/2022 2147         Tetrachloroethene       ND       1       0.50       0.40       ug/L       03/15/2022 2147         Toluene       ND       1       0.50       0.40       ug/L       03/15/2022 2147         1,1,2-Trichloro-1,2,2-Trifluoroethane       ND       1       1.0       0.42       ug/L       03/15/2022 2147         1,2,4-Trichlorobenzene       ND       1       0.50       0.40       ug/L       03/15/2022 2147         1,1,1-Trichloroethane       ND       1       0.50       0.40       ug/L       03/15/2022 2147	,						_	
Tetrachloroethene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           Toluene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2-Trichloro-1,2,2-Trifluoroethane         ND         1         1.0         0.42         ug/L         03/15/2022 2147           1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147	-							
Toluene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,2-Trichloro-1,2,2-Trifluoroethane         ND         1         1.0         0.42         ug/L         03/15/2022 2147           1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147								
1,1,2-Trichloro-1,2,2-Trifluoroethane     ND     1     1.0     0.42     ug/L     03/15/2022 2147       1,2,4-Trichlorobenzene     ND     1     0.50     0.40     ug/L     03/15/2022 2147       1,1,1-Trichloroethane     ND     1     0.50     0.40     ug/L     03/15/2022 2147								
1,2,4-Trichlorobenzene         ND         1         0.50         0.40         ug/L         03/15/2022 2147           1,1,1-Trichloroethane         ND         1         0.50         0.40         ug/L         03/15/2022 2147								
1,1,1-Trichloroethane ND 1 0.50 0.40 ug/L 03/15/2022 2147								
	1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	03/15/2022 2147

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

### Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ34980-001 Batch: 34980

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND		1	0.50	0.40	ug/L	03/15/2022 2147
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	03/15/2022 2147
Vinyl chloride	ND		1	0.50	0.40	ug/L	03/15/2022 2147
Xylenes (total)	ND		1	1.0	0.40	ug/L	03/15/2022 2147
Surrogate	Q % Rec	Ad	cceptance Limit				
Bromofluorobenzene	89		70-130				
1,2-Dichloroethane-d4	102		70-130				
Toluene-d8	91		70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ34980-002

Matrix: Aqueous Prep Method: 5030B

Batch: 34980	
Analytical Method: 8260D	

	Spike						
Deremeter	Amount	Result	0	D.1	0/ Doo	%Rec	Analysis Data
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	160	N	1	156	60-140	03/15/2022 2044
Benzene	50	53		1	106	70-130	03/15/2022 2044
Bromodichloromethane	50	50		1	99	70-130	03/15/2022 2044
Bromoform	50	42		1	84	70-130	03/15/2022 2044
Bromomethane (Methyl bromide)	50	50		1	100	70-130	03/15/2022 2044
2-Butanone (MEK)	100	120		1	123	70-130	03/15/2022 2044
Carbon disulfide	50	56		1	113	70-130	03/15/2022 2044
Carbon tetrachloride	50	53		1	107	70-130	03/15/2022 2044
Chlorobenzene	50	49		1	97	70-130	03/15/2022 2044
Chloroethane	50	50		1	99	70-130	03/15/2022 2044
Chloroform	50	54		1	109	70-130	03/15/2022 2044
Chloromethane (Methyl chloride)	50	48		1	96	60-140	03/15/2022 2044
Cyclohexane	50	63		1	127	70-130	03/15/2022 2044
1,2-Dibromo-3-chloropropane (DBCP)	50	48		1	95	70-130	03/15/2022 2044
Dibromochloromethane	50	44		1	88	70-130	03/15/2022 2044
1,2-Dibromoethane (EDB)	50	47		1	95	70-130	03/15/2022 2044
1,2-Dichlorobenzene	50	49		1	97	70-130	03/15/2022 2044
1,3-Dichlorobenzene	50	48		1	96	70-130	03/15/2022 2044
1,4-Dichlorobenzene	50	47		1	95	70-130	03/15/2022 2044
Dichlorodifluoromethane	50	49		1	98	60-140	03/15/2022 2044
1.1-Dichloroethane	50	55		1	110	70-130	03/15/2022 2044
1,2-Dichloroethane	50	55		1	111	70-130	03/15/2022 2044
1,1-Dichloroethene	50	55		1	109	70-130	03/15/2022 2044
cis-1,2-Dichloroethene	50	53		1	106	70-130	03/15/2022 2044
trans-1,2-Dichloroethene	50	52		1	105	70-130	03/15/2022 2044
1,2-Dichloropropane	50	50		1	101	70-130	03/15/2022 2044
cis-1,3-Dichloropropene	50	51		1	102	70-130	03/15/2022 2044
trans-1,3-Dichloropropene	50	48		1	97	70-130	03/15/2022 2044
Ethylbenzene	50	50		1	100	70-130	03/15/2022 2044
2-Hexanone	100	110		1	106	70-130	03/15/2022 2044
Isopropylbenzene	50	51		1	101	70-130 70-130	03/15/2022 2044
Methyl acetate	50	59		1	117		03/15/2022 2044
Methyl tertiary butyl ether (MTBE)	50	56		1	112	70-130	03/15/2022 2044
4-Methyl-2-pentanone	100	110		1	111	70-130	03/15/2022 2044
Methylcyclohexane	50	54		1	108	70-130	03/15/2022 2044
Methylene chloride	50	53		1	106	70-130	03/15/2022 2044
Styrene	50	49		1	98	70-130	03/15/2022 2044
1,1,2,2-Tetrachloroethane	50	49		1	98	70-130	03/15/2022 2044
Tetrachloroethene	50	48		1	96	70-130	03/15/2022 2044
Toluene	50	51		1	101	70-130	03/15/2022 2044
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	55		1	110	70-130	03/15/2022 2044
1,2,4-Trichlorobenzene	50	46		1	93	70-130	03/15/2022 2044
1,1,1-Trichloroethane	50	54		1	108	70-130	03/15/2022 2044
1,1,2-Trichloroethane	50	47		1	95	70-130	03/15/2022 2044

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

### Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ34980-002 Batch: 34980

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	48	1	96	70-130	03/15/2022 2044
Trichlorofluoromethane	50	51	1	101	70-130	03/15/2022 2044
Vinyl chloride	50	50	1	100	70-130	03/15/2022 2044
Xylenes (total)	100	100	1	101	70-130	03/15/2022 2044
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	98	70-130				
1,2-Dichloroethane-d4	103	70-130				
Toluene-d8	93	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Volatile Organic Compounds by GC/MS - MS

Sample ID: XC08061-002MS

Batch: 34980 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Sample Amount	Spike Amount	Result				%Rec	
Parameter	(ug/L)	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	ND	500	610		5	121	60-140	03/16/2022 0638
Benzene	ND	250	270		5	109	70-130	03/16/2022 0638
Bromodichloromethane	ND	250	230		5	93	70-130	03/16/2022 0638
Bromoform	ND	250	160	N	5	65	70-130	03/16/2022 0638
Bromomethane (Methyl bromide)	ND	250	220		5	87	70-130	03/16/2022 0638
2-Butanone (MEK)	ND	500	580		5	116	70-130	03/16/2022 0638
Carbon disulfide	ND	250	250		5	99	70-130	03/16/2022 0638
Carbon tetrachloride	ND	250	270		5	107	70-130	03/16/2022 0638
Chlorobenzene	ND	250	250		5	99	70-130	03/16/2022 0638
Chloroethane	ND	250	220		5	88	70-130	03/16/2022 0638
Chloroform	ND	250	270		5	108	70-130	03/16/2022 0638
Chloromethane (Methyl chloride)	ND	250	220		5	89	60-140	03/16/2022 0638
Cyclohexane	ND	250	330	N	5	131	70-130	03/16/2022 0638
1,2-Dibromo-3-chloropropane (DBCP)	ND	250	210		5	82	70-130	03/16/2022 0638
Dibromochloromethane	ND	250	190		5	77	70-130	03/16/2022 0638
1,2-Dibromoethane (EDB)	ND	250	230		5	93	70-130	03/16/2022 0638
1,2-Dichlorobenzene	ND	250	240		5	96	70-130	03/16/2022 0638
1.3-Dichlorobenzene	ND	250	240		5	97	70-130	03/16/2022 0638
1,4-Dichlorobenzene	ND	250	240		5	95	70-130	03/16/2022 0638
Dichlorodifluoromethane	ND	250	210		5	83	60-140	03/16/2022 0638
1,1-Dichloroethane	ND	250	270		5	110	70-130	03/16/2022 0638
1,2-Dichloroethane	ND	250	270		5	110	70-130	03/16/2022 0638
1,1-Dichloroethene	ND	250	270 900		5	108 85	70-130 70-130	03/16/2022 0638
cis-1,2-Dichloroethene	690	250			5			03/16/2022 0638
trans-1,2-Dichloroethene	ND	250	260		5	105	70-130	03/16/2022 0638
1,2-Dichloropropane	ND	250	250		5	101	70-130	03/16/2022 0638
cis-1,3-Dichloropropene	ND	250	240		5	96	70-130	03/16/2022 0638
trans-1,3-Dichloropropene	ND	250	230		5	90	70-130	03/16/2022 0638
Ethylbenzene	ND	250	250		5	102	70-130	03/16/2022 0638
2-Hexanone	ND	500	540		5	108	70-130	03/16/2022 0638
Isopropylbenzene	ND	250	260		5	103	70-130	03/16/2022 0638
Methyl acetate	ND	250	270		5	110	70-130	03/16/2022 0638
Methyl tertiary butyl ether (MTBE)	ND	250	270		5	106	70-130	03/16/2022 0638
4-Methyl-2-pentanone	ND	500	550		5	111	70-130	03/16/2022 0638
Methylcyclohexane	ND	250	280		5	112	70-130	03/16/2022 0638
Methylene chloride	ND	250	250		5	101	70-130	03/16/2022 0638
Styrene	ND	250	250		5	98	70-130	03/16/2022 0638
1,1,2,2-Tetrachloroethane	ND	250	240		5	97	70-130	03/16/2022 0638
Tetrachloroethene	ND	250	240		5	98	70-130	03/16/2022 0638
Toluene	ND	250	260		5	102	70-130	03/16/2022 0638
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	250	280		5	110	70-130	03/16/2022 0638
1,2,4-Trichlorobenzene	ND	250	210		5	83	70-130	03/16/2022 0638
1,1,1-Trichloroethane	ND	250	270		5	109	70-130	03/16/2022 0638
1,1,2-Trichloroethane	ND	250	240		5	95	70-130	03/16/2022 0638
.,.,2 111011101001110110	110	200	2.10		0	, 5	, 5 150	30/10/2022 0000

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

### Volatile Organic Compounds by GC/MS - MS

Sample ID: XC08061-002MS

Batch: 34980 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	250	290		5	97	70-130	03/16/2022 0638
Trichlorofluoromethane	ND	250	230		5	93	70-130	03/16/2022 0638
Vinyl chloride	ND	250	240		5	95	70-130	03/16/2022 0638
Xylenes (total)	ND	500	510		5	102	70-130	03/16/2022 0638
Surrogate	Q % Red		ptance mit					
Bromofluorobenzene	96	70	)-130					
1,2-Dichloroethane-d4	100	70	)-130					
Toluene-d8	92	70	)-130					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Volatile Organic Compounds by GC/MS - MSD

Sample ID: XC08061-002MD Batch: 34980

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acetone	ND	500	610		5	121	0.0021	60-140	20	03/16/2022 0701
Benzene	ND	250	270		5	110	0.63	70-130	20	03/16/2022 0701
Bromodichloromethane	ND	250	240		5	95	2.5	70-130	20	03/16/2022 0701
Bromoform	ND	250	160	Ν	5	65	0.71	70-130	20	03/16/2022 0701
Bromomethane (Methyl bromide)	ND	250	200		5	79	8.8	70-130	20	03/16/2022 0701
2-Butanone (MEK)	ND	500	590		5	117	1.2	70-130	20	03/16/2022 0701
Carbon disulfide	ND	250	250		5	101	2.6	70-130	20	03/16/2022 0701
Carbon tetrachloride	ND	250	280		5	110	2.7	70-130	20	03/16/2022 0701
Chlorobenzene	ND	250	250		5	99	0.25	70-130	20	03/16/2022 0701
Chloroethane	ND	250	200		5	81	9.1	70-130	20	03/16/2022 0701
Chloroform	ND	250	270		5	109	1.4	70-130	20	03/16/2022 0701
Chloromethane (Methyl chloride)	ND	250	210		5	83	6.9	60-140	20	03/16/2022 0701
Cyclohexane	ND	250	330	Ν	5	133	1.2	70-130	20	03/16/2022 0701
1,2-Dibromo-3-chloropropane (DBCP)	ND	250	210		5	82	0.10	70-130	20	03/16/2022 0701
Dibromochloromethane	ND	250	190		5	77	0.50	70-130	20	03/16/2022 0701
1,2-Dibromoethane (EDB)	ND	250	240		5	94	1.0	70-130	20	03/16/2022 0701
1,2-Dichlorobenzene	ND	250	230		5	94	2.0	70-130	20	03/16/2022 0701
1,3-Dichlorobenzene	ND	250	240		5	96	1.9	70-130	20	03/16/2022 0701
1,4-Dichlorobenzene	ND	250	230		5	94	1.5	70-130	20	03/16/2022 0701
Dichlorodifluoromethane	ND	250	190		5	77	6.5	60-140	20	03/16/2022 0701
1,1-Dichloroethane	ND	250	280		5	111	1.0	70-130	20	03/16/2022 0701
1,2-Dichloroethane	ND	250	280		5	110	0.42	70-130	20	03/16/2022 0701
1,1-Dichloroethene	ND	250	280		5	111	2.8	70-130	20	03/16/2022 0701
cis-1,2-Dichloroethene	690	250	910		5	90	1.4	70-130	20	03/16/2022 0701
trans-1,2-Dichloroethene	ND	250	270		5	108	2.8	70-130	20	03/16/2022 0701
1,2-Dichloropropane	ND	250	260		5	104	2.3	70-130	20	03/16/2022 0701
cis-1,3-Dichloropropene	ND	250	240		5	98	2.4	70-130	20	03/16/2022 0701
trans-1,3-Dichloropropene	ND	250	230		5	91	0.62	70-130	20	03/16/2022 0701
Ethylbenzene	ND	250	250		5	102	0.20	70-130	20	03/16/2022 0701
2-Hexanone	ND	500	540		5	108	0.17	70-130	20	03/16/2022 0701
Isopropylbenzene	ND	250	260		5	104	0.98	70-130	20	03/16/2022 0701
Methyl acetate	ND	250	280		5	112	2.6	70-130	20	03/16/2022 0701
Methyl tertiary butyl ether (MTBE)	ND	250	270		5	108	1.5	70-130	20	03/16/2022 0701
4-Methyl-2-pentanone	ND	500	550		5	110	0.28	70-130	20	03/16/2022 0701
Methylcyclohexane	ND	250	290		5	114	2.0	70-130	20	03/16/2022 0701
Methylene chloride	ND	250	260		5	103	1.5	70-130	20	03/16/2022 0701
Styrene	ND	250	240		5	98	0.64	70-130	20	03/16/2022 0701
1,1,2,2-Tetrachloroethane	ND	250	240		5	96	0.95	70-130	20	03/16/2022 0701
Tetrachloroethene	ND	250	250		5	99	1.6	70-130	20	03/16/2022 0701
Toluene	ND	250	260		5	103	0.90	70-130	20	03/16/2022 0701
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	250	280		5	113	2.6	70-130	20	03/16/2022 0701
1,2,4-Trichlorobenzene	ND	250	200		5	82	1.3	70-130	20	03/16/2022 0701
444 7111	ND	250	200		_	111	2.1	70 120	20	02/1//2022 0701

LOQ = Limit of Quantitation

1,1,1-Trichloroethane

1,1,2-Trichloroethane

ND = Not detected at or above the DL

N = Recovery is out of criteria

2.1

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

70-130

0.075 70-130

20

20

03/16/2022 0701

03/16/2022 0701

250

250

111

94

5

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

ND

ND

280

240

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

### Volatile Organic Compounds by GC/MS - MSD

Sample ID: XC08061-002MD

Batch: 34980 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Trichloroethene	50	250	300		5	99	1.5	70-130	20	03/16/2022 0701
Trichlorofluoromethane	ND	250	220		5	87	6.6	70-130	20	03/16/2022 0701
Vinyl chloride	ND	250	220		5	88	8.3	70-130	20	03/16/2022 0701
Xylenes (total)	ND	500	510		5	102	0.46	70-130	20	03/16/2022 0701
Surrogate	Q % Re		ptance mit							
Bromofluorobenzene	96	70	)-130							
1,2-Dichloroethane-d4	100	70	)-130							
Toluene-d8	92	70	)-130							

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ35438-001 Batch: 35438

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	03/18/2022 2059
Benzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Bromodichloromethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Bromoform	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	03/18/2022 2059
2-Butanone (MEK)	ND		1	10	2.0	ug/L	03/18/2022 2059
Carbon disulfide	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Chlorobenzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Chloroethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Chloroform	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Cyclohexane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Dibromochloromethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Ethylbenzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
2-Hexanone	ND		1	10	2.0	ug/L	03/18/2022 2059
Isopropylbenzene	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Methyl acetate	ND		1	1.0	0.40	ug/L	03/18/2022 2059
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	03/18/2022 2059
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	03/18/2022 2059
Methylcyclohexane	ND		1	5.0	0.40	ug/L	03/18/2022 2059
Methylene chloride	ND		1	0.50	0.40	ug/L	03/18/2022 2059
Styrene	ND		1	0.50	0.40	=	03/18/2022 2059
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L ug/L	03/18/2022 2059
Tetrachloroethene	ND		1	0.50	0.40		03/18/2022 2059
Toluene	ND		1	0.50	0.40	ug/L ug/L	03/18/2022 2059
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.40	ug/L ug/L	03/18/2022 2059
1,2,4-Trichlorobenzene	ND		1	0.50	0.42	ug/L ug/L	03/18/2022 2059
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	03/18/2022 2059

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

### Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ35438-001 Batch: 35438

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Result	Q Dil	LOQ	DL	Units	Analysis Date
ND	1	0.50	0.40	ug/L	03/18/2022 2059
ND	1	0.50	0.40	ug/L	03/18/2022 2059
ND	1	0.50	0.40	ug/L	03/18/2022 2059
ND	1	1.0	0.40	ug/L	03/18/2022 2059
Q % Rec	Acceptance Limit				
81	70-130				
101	70-130				
97	70-130				
	ND ND ND Q % Rec 81 101	ND 1 ND 1 ND 1 ND 1 ND 1 Acceptance	ND 1 0.50 ND 1 0.50 ND 1 0.50 ND 1 1.0  O % Rec Limit  81 70-130 101 70-130	ND 1 0.50 0.40 ND 1 0.50 0.40 ND 1 0.50 0.40 ND 1 1.0 0.50 0.40 ND 1 1.0 0.40  Q % Rec Limit  81 70-130 101 70-130	ND 1 0.50 0.40 ug/L ND 1 1.0 0.40 ug/L  Q % Rec Limit  81 70-130 101 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ35438-002 Batch: 35438 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike					0/ D	
Parameter	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	100		1	104	60-140	03/18/2022 1953
Benzene	50	49		1	97	70-130	03/18/2022 1953
Bromodichloromethane	50	44		1	88	70-130	03/18/2022 1953
Bromoform	50	48		1	96	70-130	03/18/2022 1953
Bromomethane (Methyl bromide)	50	52		1	105	70-130	03/18/2022 1953
2-Butanone (MEK)	100	100		1	102	70-130	03/18/2022 1953
Carbon disulfide	50	47		1	94	70-130	03/18/2022 1953
Carbon tetrachloride	50	44		1	88	70-130	03/18/2022 1953
Chlorobenzene	50	49		1	97	70-130	03/18/2022 1953
Chloroethane	50	46		1	92	70-130	03/18/2022 1953
Chloroform	50	41		1	83	70-130	03/18/2022 1953
Chloromethane (Methyl chloride)	50	47		1	94	60-140	03/18/2022 1953
Cyclohexane	50	45		1	91	70-130	03/18/2022 1953
1,2-Dibromo-3-chloropropane (DBCP)	50	41		1	83	70-130	03/18/2022 1953
Dibromochloromethane	50	47		1	95	70-130	03/18/2022 1953
1,2-Dibromoethane (EDB)	50	49		1	98	70-130	03/18/2022 1953
1,2-Dichlorobenzene	50	48		1	96	70-130	03/18/2022 1953
1,3-Dichlorobenzene	50	49		1	98	70-130	03/18/2022 1953
1,4-Dichlorobenzene	50	47		1	94	70-130	03/18/2022 1953
Dichlorodifluoromethane	50	50		1	100	60-140	03/18/2022 1953
1,1-Dichloroethane	50	44		1	88	70-130	03/18/2022 1953
1,2-Dichloroethane	50	42		1	84	70-130	03/18/2022 1953
1,1-Dichloroethene	50	48		1	95	70-130	03/18/2022 1953
cis-1,2-Dichloroethene	50	45		1	90	70-130	03/18/2022 1953
trans-1,2-Dichloroethene	50	47		1	94	70-130	03/18/2022 1953
1,2-Dichloropropane	50	47		1	95	70-130	03/18/2022 1953
cis-1,3-Dichloropropene	50	49		1	97	70-130	03/18/2022 1953
trans-1,3-Dichloropropene	50	47		1	95	70-130	03/18/2022 1953
Ethylbenzene	50	52		1	104	70-130	03/18/2022 1953
2-Hexanone	100	88		1	88	70-130	03/18/2022 1953
Isopropylbenzene	50	45		1	90	70-130	03/18/2022 1953
Methyl acetate	50	44		1	87	70-130	03/18/2022 1953
Methyl tertiary butyl ether (MTBE)	50	45		1	90	70-130	03/18/2022 1953
4-Methyl-2-pentanone	100	87		1	87	70-130	03/18/2022 1953
Methylcyclohexane	50	56		1	112	70-130	03/18/2022 1953
Methylene chloride	50	41		1	83	70-130	03/18/2022 1953
Styrene	50	50		1	99	70-130	03/18/2022 1953
1,1,2,2-Tetrachloroethane	50	46		1	91	70-130	03/18/2022 1953
Tetrachloroethene	50	54		1	108	70-130	03/18/2022 1953
Toluene	50	53		1	106	70-130	03/18/2022 1953
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	52		1	103	70-130	03/18/2022 1953
1,2,4-Trichlorobenzene	50	46		1	93	70-130	03/18/2022 1953
1,1,1-Trichloroethane	50	46		1	92	70-130	03/18/2022 1953
1,1,2-Trichloroethane	50	47		1	95	70-130	03/18/2022 1953

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

### Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ35438-002 Batch: 35438

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	48	1	97	70-130	03/18/2022 1953
Trichlorofluoromethane	50	51	1	103	70-130	03/18/2022 1953
Vinyl chloride	50	47	1	93	70-130	03/18/2022 1953
Xylenes (total)	100	96	1	96	70-130	03/18/2022 1953
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	99	70-130				
1,2-Dichloroethane-d4	85	70-130				
Toluene-d8	101	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: XQ34890-001 Batch: 34890

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	03/15/2022 1039
Ethene	ND		1	10	2.5	ug/L	03/15/2022 1039
Methane	ND		1	10	2.5	ug/L	03/15/2022 1039

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

### Dissolved Gases - LCS

Sample ID: XQ34890-002 Batch: 34890

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	550	580		1	106	70-130	03/15/2022 0954
Ethene	520	550		1	107	70-130	03/15/2022 0954
Methane	300	320		1	107	70-130	03/15/2022 0954

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Dissolved Gases - LCSD

Sample ID: XQ34890-003 Batch: 34890

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Ethane	550	580		1	105	0.70	70-130	30	03/15/2022 1008
Ethene	520	550		1	106	0.81	70-130	30	03/15/2022 1008
Methane	300	310		1	107	0.44	70-130	30	03/15/2022 1008

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Dissolved Gases - MB

Sample ID: XQ35565-001 Batch: 35565

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	03/21/2022 0955
Ethene	ND		1	10	2.5	ug/L	03/21/2022 0955
Methane	ND		1	10	2.5	ug/L	03/21/2022 0955

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Dissolved Gases - LCS

Sample ID: XQ35565-002

Batch: 35565 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	550	590		1	107	70-130	03/21/2022 0918
Ethene	520	560		1	108	70-130	03/21/2022 0918
Methane	300	310		1	107	70-130	03/21/2022 0918

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Metals - MB

Sample ID: XQ34232-001 Batch: 34232

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 03/10/2022 1012

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	0.10	0.040	mg/L	03/11/2022 2039
Manganese	ND		1	0.015	0.0019	mg/L	03/11/2022 2039

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Metals - LCS

Sample ID: XQ34232-002 Batch: 34232

Batch: 34232 Analytical Method: 6010D Matrix: Aqueous Prep Method: 3005A

Prep Date: 03/10/2022 1012

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	20	18		1	91	80-120	03/11/2022 2043
Manganese	2.0	2.0		1	102	80-120	03/11/2022 2043

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# ICP-AES Metals - MB

Sample ID: XQ35213-001 Batch: 35213

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 03/18/2022 0946

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Dissolved Iron	ND		1	0.10	0.040	mg/L	03/18/2022 2210
Dissolved Manganese	ND		1	0.015	0.0019	mg/L	03/18/2022 2210

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# ICP-AES Metals - LCS

Sample ID: XQ35213-002

Batch: 35213 Analytical Method: 6010D Matrix: Aqueous Prep Method: 3005A

Prep Date: 03/18/2022 0946

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	20	21		1	104	80-120	03/18/2022 2215
Dissolved Manganese	2.0	2.1		1	105	80-120	03/18/2022 2215

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# ICP-AES Metals - MS

Sample ID: XC08061-001MS

Batch: 35213

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 03/18/2022 0946

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	ND	20	21		1	103	75-125	03/18/2022 2224
Dissolved Manganese	0.68	2.0	2.7		1	104	75-125	03/18/2022 2224

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# ICP-AES Metals - MSD

Sample ID: XC08061-001MD

Batch: 35213

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 03/18/2022 0946

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Dissolved Iron	ND	20	20		1	100	2.7	75-125	20	03/18/2022 2228
Dissolved Manganese	0.68	2.0	2.8		1	106	1.4	75-125	20	03/18/2022 2228

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Chain of Custody and Miscellaneous Documents

	tical	
	ialy	•
-	PaceAr	

106 Vantage Point Drive • West Columbia, SC 29172 Telephone No. 803-791-\$700 Fax No. 803-791-9111 www.pacelabs.com

Number 132115

The same	Belon	Barrel to Contact					
PFC0M		SALL DACK		respondente No. / E-mail			Quote Ma.
Aptress	Same	Samular's Simples		2	TOTAL CONTRACTOR COM	Hay:	
10 Research Dr.		0		Analysis (Minch list if nove spage is needed)	Minore spage is need	(just)	. 6
	X X	1412378	Þ	φ(γ) 	300		Page 1 or of
3	52	Prigled Namo		1 K	80 50		
Shakesocare Connorsity Structure	_	Juston Rotton	Har	103 ARE	231 4CP 7+12		XCOROR1
Project No.				57	hod hod		100000
			Avaira Ey Fresevador Type	C Geo.	力		CSD
Containers for each sample to / Description [Containers for each sample may be continued an one time.]	Calkedian Collection Time Date(c) (Mittary)	1000 to 1000 t	HOSE SENSON	20 V 20 CE 20 CE 20 CE	المالية المراجعة المراعة المراجعة المراجعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة المراعة الماعة الم المراعة الماعة الماعة الم الماعة الماعة الماعة الم الماعة الماعة الم الماعة الماعة الماعة الماعة الماعة الماعة الماع الماعة الماعة الماعة الماعة الماعة الماعة الماعة الماعة الم		Romania / Contact D
ERD-085W-1I	3/8/22 10th	1	* \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	a >	( ) ( )		
-	-			< <	×	+	
	318/22 1110	×	7 - 7	XXX	XXX		
ERD-OBSW-1	318/22 1335	× 9	7 - 1 - 2	×	XXX		
MW-10	3/3/2c 1435	×	2115	` ×	; >		
18.10	Ţ	r -		-	\ \ \		
		×	8	×		-	
						-	
						1	1
						+	
	(Paddied TAT.) Sample D.	sposaí	Passible Hazard Mentification				
Standard - Rush (Specify)	L1 Setan fi	El Refere to Steer 🖭 Osposai dy Lab		C Skin triffem	Poison T. Unknown	CAC Hayavaments (Specify)	(Specify)
Salva Salva Salva	Date ST 4	Date Time	7. Received by		1	Zafe 7	Типе
2. Registratory	900	T	_				
	CARGO	SUMP	2. Received by			Cate 7	Jan B
3. Ferlinquished by	Date	Time	3. Received by			Date	Птв
4. Relinquished by	Date	Tinte	4 Laboratory received by			C Called	The War
Note: All samples are retained for four wooks from	r four woods from	1		en charach	200	NA 22	NA 22 10 XI
unless other arrangements are made.	ents are made.	ecelpi	LAB USE ONLY  Backled on the Collected Alle			7 W.	Temp Stead   D v 3-17
			Hamman (W) We (Dame)	SERVICE ON THE PERSON	December James	5	

DISTRIBUTION: WHITE & YELLOW-Ratem to laboratory with Sample(s); PlAK-Feak/Clean Copy

Document Number: ME003N2-01



# Samples Receipt Checklist (SRC) (ME0018C-15)

Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020 Page 1 of 1

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: KDRW / 3/8/2022 Lot #: XC08061
Means of receipt: Pace   Client   UPS   FedEx   Other:
Yes No 1. Were custody seals present on the cooler?
L Yes No V NA 2. If custody seals were present, were they intact and unbroken?
pH Strip ID: NA Trested by NA  Thereof by NA
Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA 3.4 /3.4 °C NA /NA °C NA /NA °C NA /NA °C NA /NA °C
Method: Temperature Blank Against Boltles IR Gun ID: 5 IR Gun Correction Factor: 0 °C  Method of coolant: Wet Ice I Ice Packs Dry Ice None
Yes No No NA 3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified?
PWi was Notified by: phone / email / face-to-face (circle one)
and the state of t
<ul> <li>✓ Yes</li> <li>✓ No</li> <li>S. Were proper custody procedures (relinquished/received) followed?</li> <li>✓ Yes</li> <li>No</li> <li>Were sample IDs listed on the COC?</li> </ul>
The state of the coor
Yes No 7. Were sample IDs listed on all sample containers?  No 8. Was collection date & time listed on the COC?
The state of the coopy
sample containers?
The state of the container and
parametrisied in the Coc?
Yes No 12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes No 13. Was adequate sample volume available?
Yes No 14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
15. Were any samples containers missing/excess (circle one) samples Not listed on COC2
Yes No NA To. For VOA and KSK-1/5 samples, were bubbles present > nea-size" (1/2 or 6mm in diameter)
in any of the york years?
✓ Yes No NA 17. Were all DRO/metals/nutrient samples received at a pH of < 2?
1 to 1 NO (Y NA 18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 00
Yes No No NA 19. Were all applicable NH <sub>2</sub> /TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
Yes No No NA 20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc)
correctly transcribed from the COC into the comment section in LIMS?
Yes No 21. Was the quote number listed on the container label? If yes, Quote #
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)
Some left NA
in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA
. If more than one preservative is needed, please note in the comments below.
Sample(s) NA were received with hubbles >6 mm in diameter.
Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is no) and were
adjusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Shealy ID: $NA$
SR barcode labels applied by: KDRW Date: 3/8/2022
Comments:



# **Report of Analysis**

# AECOM

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Shakespeare - Signify

Project Number: 60635197 Lot Number: **XG20043** 

Date Completed:08/26/2022

08/28/2022 10:23 PM Approved and released by: Project Manager II: **Cathy S. Dover** 





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

# Case Narrative AECOM Lot Number: XG20043

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

### **VOA 8260D**

Samples XG20043-001 (MW-10) and XG20043-005 (ISCO-OBSW-1s) were diluted due to the nature of the sample matrix. The LOQ has been elevated to reflect the dilution.

The laboratory control sample (LCS) for analytical batch 48752 exceeded acceptance criteria for Acetone (166%). This analyte was biased high and was not detected in the associated samples: XG20043-001, XG20043-002, XG20043-003, XG20043-004, XG20043-006, XG20043-007, XG20043-008, and XG20043-009.

XG20043-001 (MW-10) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-002 (ERD-OBSW-1S) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-003 (MW-10 i) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-004 (ERD-OBSW-1i) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-006 (TMW-31) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-007 (MW-2) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-008 (DW-01) (Run 1) (Analysis Batch 48752) TCL VOC XG20043-009 (TB-01) (Run 1) (Analysis Batch 48752) TCL VOC

Sample XG20043-007 (MW-2) was run out of a previously run headspace vial to reanalyze for cis-1,2-Dichloroethene due to suspected carryover.

The MSD for batch 48752 and parent sample XG20043-008 (DW-01), recovered outside the lower limit for Trichloroethene. The associated LCS passed for Trichloroethene.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

### Nitrate 353.2

The MS/MSD for batch 48599 and parent sample XG20043-003 (MW-10 i) was inadvertently spiked with nitrite spike only, which caused the nitrate recovery to be calculated as negative, but for nitrite spike recovery is 105% and RPD is within 20%; therefore, results have been reported. The associated nitrate LCS passed acceptance criteria.

### Chloride 300.0

Sample XG20043-005 (ISCO-OBSW-1s) was diluted due to dark purple color. The LOQ has been elevated to reflect the dilution.

## **TOC SM5310C**

Due to the lab TOC instrument being down and not being able to perform a good calibration within holding times, the TOC samples XG20043-001 (MW-10), XG20043-002 (ERD-OBSW-1S), XG20043-003 (MW-10 i) and XG20043-004 (ERD-OBSW-1i) were analyzed and reported outside holding time.

For the TOC Run 2, the closing/ opening continuing calibration verification (CCV) associated with sample XG20043-001 (MW-10) and XG20043-002 (ERD-OBSW-1S), did not meet criteria for TOC SM5310C. The associated samples were analyzed twice with similar results. Both runs have been reported.

Reanalysis of the following samples was performed outside of the analytical holding time and the associated with a CCV and CCB exceeded the upper limit: XG20043-003 (MW-10 i) and XG20043-004 (ERD-OBSW-1i). These samples were reanalyzed for Run 3. All three analyses are reported for these two samples.

The MS/MSD for 51457 and parent sample XF30066-004 (ERD-OBSW-11), recovered marginally outside the upper control limit. The associated LCS passed acceptance criteria.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

# Sample Summary AECOM

Lot Number: XG20043

Project Name: Shakespeare - Signify Project Number: 60635197

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-10	Aqueous	07/19/2022 0930	07/20/2022
002	ERD-OBSW-1S	Aqueous	07/19/2022 1100	07/20/2022
003	MW-10 i	Aqueous	07/19/2022 1220	07/20/2022
004	ERD-OBSW-1i	Aqueous	07/19/2022 1420	07/20/2022
005	ISCO-OBSW-1s	Aqueous	07/20/2022 0840	07/20/2022
006	TMW-31	Aqueous	07/20/2022 0930	07/20/2022
007	MW-2	Aqueous	07/20/2022 1035	07/20/2022
800	DW-01	Aqueous	07/20/2022	07/20/2022
009	TB-01	Aqueous	07/20/2022	07/20/2022

(9 samples)

# Detection Summary AECOM

Lot Number: XG20043

Project Name: Shakespeare - Signify Project Number: 60635197

Sample	e Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-10	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	330		mg CaCO3/L	7
001	MW-10	Aqueous	Chloride	300.0	25		mg/L	7
001	MW-10	Aqueous	Nitrite - N	353.2	0.72		mg/L	7
001	MW-10	Aqueous	Sulfate	300.0	1.3		mg/L	7
001	MW-10	Aqueous	TOC	SM 5310C-	360	Н	mg/L	7
001	MW-10	Aqueous	Trichloroethene	8260D	760		ug/L	9
001	MW-10	Aqueous	Ethene	RSK - 175	8.0	J	ug/L	10
001	MW-10	Aqueous	Methane	RSK - 175	9100		ug/L	10
001	MW-10	Aqueous	Dissolved Iron	6010D	11		mg/L	11
001	MW-10	Aqueous	Iron	6010D	31		mg/L	12
002	ERD-OBSW-1S	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	33		mg CaCO3/L	13
002	ERD-OBSW-1S	Aqueous	Chloride	300.0	110		mg/L	13
002	ERD-OBSW-1S	Aqueous	Nitrate - N	353.2	0.29		mg/L	13
002	ERD-OBSW-1S	Aqueous	Nitrite - N	353.2	0.053		mg/L	13
002	ERD-OBSW-1S	Aqueous	TOC	SM 5310C-	5.9	Н	mg/L	13
002	ERD-OBSW-1S	Aqueous	Acetone	8260D	5.8	JL	ug/L	14
002	ERD-OBSW-1S	Aqueous	1,2-Dichloroethane	8260D	0.92		ug/L	14
002	ERD-OBSW-1S	Aqueous	cis-1,2-Dichloroethene	8260D	110		ug/L	14
002	ERD-OBSW-1S	Aqueous	Styrene	8260D	0.45	J	ug/L	14
002	ERD-OBSW-1S	Aqueous	Trichloroethene	8260D	150		ug/L	15
002	ERD-OBSW-1S	Aqueous	Methane	RSK - 175	270		ug/L	16
002	ERD-OBSW-1S	Aqueous	Dissolved Iron	6010D	1.5		mg/L	17
002	ERD-OBSW-1S	Aqueous	Iron	6010D	1.8		mg/L	18
003	MW-10 i	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	39		mg CaCO3/L	19
003	MW-10 i	Aqueous	= :	300.0	8.7		mg/L	19
003	MW-10 i		Nitrate - N	353.2	0.070	S	mg/L	19
003	MW-10 i		Nitrite - N	353.2	0.025		mg/L	19
003	MW-10 i	Aqueous		SM 5310C-	7.1	Н	mg/L	19
003	MW-10 i	Aqueous	1,2-Dichloroethane	8260D	1.1		ug/L	20
003	MW-10 i	Aqueous	1,1-Dichloroethene	8260D	1.4		ug/L	20
003	MW-10 i	•	cis-1,2-Dichloroethene	8260D	570		ug/L	20
	MW-10 i		Methylene chloride	8260D	0.45	J	ug/L	20
003	MW-10 i		Trichloroethene	8260D	57		ug/L	21
003	MW-10 i	Aqueous	Vinyl chloride	8260D	0.49	J	ug/L	21
003	MW-10 i		Methane	RSK - 175	1700		ug/L	22
003	MW-10 i	Aqueous	Dissolved Iron	6010D	12		mg/L	23
003	MW-10 i	Aqueous		6010D	15		mg/L	24
004	ERD-OBSW-1i		Alkalinity @ pH 4.5 su	SM 2320B-	320		mg CaCO3/L	25
004	ERD-OBSW-1i	Aqueous		300.0	8.6		mg/L	25
004	ERD-OBSW-1i		Nitrate - N	353.2	0.21		mg/L	25
004	ERD-OBSW-1i	-	Nitrite - N	353.2	0.020		mg/L	25
004	ERD-OBSW-1i	Aqueous		SM 5310C-	89	Н	mg/L	25
004	ERD-OBSW-1i		1,2-Dichloroethane	8260D	0.94		ug/L	26
501		. 140000	.,_ 2.0	02000	0.71		. <u>J</u> . –	_0

# **Detection Summary (Continued)**

Lot Number: XG20043

Sample	e Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	ERD-OBSW-1i	Aqueous	1,1-Dichloroethene	8260D	1.7		ug/L	26
004	ERD-OBSW-1i	Aqueous	cis-1,2-Dichloroethene	8260D	420		ug/L	26
004	ERD-OBSW-1i	Aqueous	trans-1,2-Dichloroethene	8260D	3.1		ug/L	26
004	ERD-OBSW-1i	Aqueous	Methyl acetate	8260D	5.7		ug/L	26
004	ERD-OBSW-1i	Aqueous	Methylene chloride	8260D	0.49	J	ug/L	26
004	ERD-OBSW-1i	Aqueous	Styrene	8260D	0.57		ug/L	26
004	ERD-OBSW-1i	Aqueous	Trichloroethene	8260D	180		ug/L	27
004	ERD-OBSW-1i	Aqueous	Vinyl chloride	8260D	4.5		ug/L	27
004	ERD-OBSW-1i	Aqueous	Ethene	RSK - 175	11		ug/L	28
004	ERD-OBSW-1i	Aqueous	Methane	RSK - 175	8700		ug/L	28
004	ERD-OBSW-1i	Aqueous	Dissolved Iron	6010D	0.049	J	mg/L	29
004	ERD-OBSW-1i	Aqueous	Iron	6010D	11		mg/L	30
005	ISCO-OBSW-1s	Aqueous	Chloride	300.0	7.0		mg/L	31
005	ISCO-OBSW-1s	Aqueous	Nitrate - N	353.2	2.4		mg/L	31
005	ISCO-OBSW-1s	Aqueous	Nitrite - N	353.2	0.37		mg/L	31
005	ISCO-OBSW-1s	Aqueous	TDS	SM 2540C-	340		mg/L	31
006	TMW-31	Aqueous	Chloride	300.0	5.6		mg/L	34
006	TMW-31	Aqueous	Nitrate - N	353.2	1.3		mg/L	34
006	TMW-31	Aqueous	Nitrite - N	353.2	0.011	J	mg/L	34
006	TMW-31	Aqueous	TDS	SM 2540C-	62		mg/L	34
006	TMW-31	Aqueous	cis-1,2-Dichloroethene	8260D	9.6		ug/L	35
006	TMW-31	Aqueous	Styrene	8260D	7.5		ug/L	35
006	TMW-31	Aqueous	Trichloroethene	8260D	860		ug/L	36
800	DW-01	Aqueous	cis-1,2-Dichloroethene	8260D	9.5		ug/L	39
800	DW-01	Aqueous	Styrene	8260D	5.0		ug/L	39
800	DW-01	Aqueous	Trichloroethene	8260D	1200		ug/L	40

(69 detections)

# Inorganic non-metals

Client: AECOM
Description: MW-10
Date Sampled:07/19/2022 0930
Date Received: 07/20/2022
Project Number: 60635197

Run Prep Method
Analytical Method
Dilution
Analysis Date Analyst
Prep Date
Batch

Run Prep M	Analytical Method alinity @) SM 2320B-2011	Dilution 1	Analysis Date Analyst 07/28/2022 1740 TAD	Prep Date	Batch 49627
1	(Chloride) 300.0	1	08/03/2022 2225 BMG2		50171
1	(Nitrate - N) 353.2	1	07/20/2022 2005 KKP		48599
1	(Nitrite - N) 353.2	1	07/20/2022 2005 KKP		48598
1	(Sulfate) 300.0	1	08/03/2022 2225 BMG2		50172
1	(TOC) SM 5310C-2011	20	08/18/2022 1019 CMM		51457
2	(TOC) SM 5310C-2011	20	08/23/2022 1121 CMM		51833

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	330		20	20	mg CaCO3/L	1
Chloride		300.0	25		1.0	0.25	mg/L	1
Nitrate - N		353.2	ND		0.020	0.010	mg/L	1
Nitrite - N		353.2	0.72		0.020	0.010	mg/L	1
Sulfate		300.0	1.3		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	390	Н	20	20	mg/L	1
TOC		SM 5310C-2011	360	Н	20	20	mg/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# Volatile Organic Compounds by GC/MS

Client: AECOM

Description: MW-10

Laboratory ID: XG20043-001

Matrix: Aqueous

Date Sampled:07/19/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 50 07/22/2022 0231 JMM2 48752

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Rur
Acetone	67-64-1	8260D	ND L	500	200	ug/L	1
Benzene	71-43-2	8260D	ND	25	20	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	25	20	ug/L	1
Bromoform	75-25-2	8260D	ND	25	20	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	25	20	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	500	100	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	25	20	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	25	20	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	25	20	ug/L	1
Chloroethane	75-00-3	8260D	ND	25	20	ug/L	1
Chloroform	67-66-3	8260D	ND	25	20	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	25	20	ug/L	1
Cyclohexane	110-82-7	8260D	ND	25	20	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	25	20	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	25	20	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	25	20	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	25	20	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	25	20	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	25	20	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	25	20	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	25	20	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	25	20	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	25	20	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	25	20	ug/L	1
rans-1,2-Dichloroethene	156-60-5	8260D	ND	25	20	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	25	20	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	25	20	ug/L	1
rans-1,3-Dichloropropene	10061-02-6	8260D	ND	25	20	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	25	20	ug/L	1
2-Hexanone	591-78-6	8260D	ND	500	100	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	25	20	ug/L	1
Methyl acetate	79-20-9	8260D	ND	50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	25	20	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	500	100	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	250	20	ug/L	1
Methylene chloride	75-09-2	8260D	ND	25	20	ug/L	1
Styrene	100-42-5	8260D	ND	25	21	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	25	20	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	25	20	ug/L	1
Toluene	108-88-3	8260D	ND	25	20	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	50	21	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	25	20	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	25	20	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	25	20	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

# Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XG20043-001

Description: MW-10 Matrix: Aqueous

Date Sampled:07/19/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 50 07/22/2022 0231 JMM2 48752

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	760	25	20	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	25	20	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	25	20	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	50	20	ug/L	1

Surrogate	Run 1 Acceptance Q % Recovery Limits	
Bromofluorobenzene	94 70-130	
1,2-Dichloroethane-d4	112 70-130	
Toluene-d8	96 70-130	

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

 $\begin{aligned} & DL = Detection \ Limit \\ & J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **Dissolved Gases**

Client: AECOM Laboratory ID: XG20043-001

Description: MW-10 Matrix: Aqueous

Date Sampled:07/19/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date Analyst
 Prep Date
 Batch

 1
 RSK - 175
 1
 07/30/2022 1456 BBW
 49598

 2
 RSK - 175
 5
 08/02/2022 1350 BBW
 49868

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	8.0 J	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	9100	50	13	ug/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES Metals**

Client: AECOM Laboratory ID: XG20043-001

Description: MW-10 Matrix: Aqueous

Date Sampled:07/19/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/02/2022 0513
 JMH
 07/30/2022 0755
 49579

CAS Analytical Number Parameter Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 11 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES Metals**

Client: AECOM Laboratory ID: XG20043-001

Description: MW-10 Matrix: Aqueous

Date Sampled:07/19/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/01/2022 1022
 JMH
 07/30/2022 0822
 49580

CAS Analytical Number Parameter Result Q LOQ DL Units Run Method 6010D Iron 7439-89-6 31 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# Inorganic non-metals

Client: AECOM Laboratory ID: XG20043-002 Description: ERD-OBSW-1S Matrix: Aqueous Date Sampled:07/19/2022 1100 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch (Alkalinity @) SM 2320B-2011 07/25/2022 1833 TAD 49119 1 1 (Chloride) 300.0 1 08/03/2022 2244 BMG2 50171 1 (Nitrate - N) 353.2 1 07/20/2022 2006 KKP 48599 1 (Nitrite - N) 353.2 1 07/20/2022 2006 KKP 48598 1 (Sulfate) 300.0 1 08/03/2022 2244 BMG2 50172 1 (TOC) SM 5310C-2011 1 08/18/2022 1031 CMM 51457

08/23/2022 1133 CMM

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	33		20	20	mg CaCO3/L	1
Chloride		300.0	110		1.0	0.25	mg/L	1
Nitrate - N		353.2	0.29		0.020	0.010	mg/L	1
Nitrite - N		353.2	0.053		0.020	0.010	mg/L	1
Sulfate		300.0	ND		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	6.3	Н	1.0	1.0	mg/L	1
TOC		SM 5310C-2011	5.9	Н	1.0	1.0	mg/L	2

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

2

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

(TOC) SM 5310C-2011

1

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated result < LOQ and <math>\geq DL$ 

51833

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XG20043-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:07/19/2022 1100 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D107/21/2022 2327 JMM248752

Parameter	CAS Number	Analytical Method	Result C	LOQ	DL	Units	Rui
Acetone	67-64-1	8260D	5.8 J	L 10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	
,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	
,2-Dichloroethane	107-06-2	8260D	0.92	0.50	0.40	ug/L	1
,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	110	0.50	0.40	ug/L	1
rans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
sis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
rans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	0.45 J	0.50	0.41	ug/L	1
,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
etrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
oluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1
I,1,2-Trichloroethane	79-00-5	8260D	ND	0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

# Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XG20043-002 Description: ERD-OBSW-1S Matrix: Aqueous Date Sampled:07/19/2022 1100 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 07/21/2022 2327 JMM2 48752 1 CAS Analytical Parameter Result Q LOQ DL Units Number Run Method Trichloroethene 79-01-6 8260D 150 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D 75-69-4 ND 0.50 ug/L 1 0.40

8260D

8260D

ND

ND

0.50

1.0

0.40

0.40

ug/L

ug/L

1

1

Surrogate	Run 1 Acceptance Q % Recovery Limits
Bromofluorobenzene	90 70-130
1,2-Dichloroethane-d4	109 70-130
Toluene-d8	94 70-130

75-01-4

1330-20-7

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

Vinyl chloride

Xylenes (total)

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# **Dissolved Gases**

Client: AECOM Laboratory ID: XG20043-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:07/19/2022 1100 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 07/30/2022 1511 BBW 49598

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	270	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES Metals**

Client: AECOM Laboratory ID: XG20043-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:07/19/2022 1100 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/02/2022 0533
 JMH
 07/30/2022 0755
 49579

CAS Analytical Number Parameter Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 1.5 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES Metals**

Client: AECOM Laboratory ID: XG20043-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:07/19/2022 1100 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/01/2022 1025 JMH 07/30/2022 0822 49580

CAS Analytical Number Parameter Result Q LOQ DL Units Run Method 6010D Iron 7439-89-6 1.8 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

Client: AECOM

Description: MW-10 i

Date Sampled: 07/19/2022 1220

Project Name: Shakespeare - Signify

Date Received: 07/20/2022

Project Number: 60635197

Run Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1	(Alkalinity @) SM 2320B-2011	1	07/25/2022 1838 TAD		49119
1	(Chloride) 300.0	1	08/03/2022 2303 BMG2		50171
1	(Nitrate - N) 353.2	1	07/20/2022 2008 KKP		48599
1	(Nitrite - N) 353.2	1	07/20/2022 2008 KKP		48598
1	(Sulfate) 300.0	1	08/03/2022 2303 BMG2		50172
1	(TOC) SM 5310C-2011	1	08/18/2022 1043 CMM		51457
2	(TOC) SM 5310C-2011	1	08/23/2022 1209 CMM		51833
3	(TOC) SM 5310C-2011	1	08/25/2022 1037 CMM		52067

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	39		20	20	mg CaCO3/L	1
Chloride		300.0	8.7		1.0	0.25	mg/L	1
Nitrate - N		353.2	0.070	S	0.020	0.010	mg/L	1
Nitrite - N		353.2	0.025		0.020	0.010	mg/L	1
Sulfate		300.0	ND		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	10	Н	1.0	1.0	mg/L	1
TOC		SM 5310C-2011	8.0	Н	1.0	1.0	mg/L	2
TOC		SM 5310C-2011	7.1	Н	1.0	1.0	mg/L	3

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# Volatile Organic Compounds by GC/MS

Client: AECOM

Description: MW-10 i

Laboratory ID: XG20043-003

Matrix: Aqueous

Date Sampled:07/19/2022 1220 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 07/21/2022 2353 JMM2 48752 1 2 5030B 07/24/2022 2019 JMM2 48924 8260D 10

Parameter	CAS Number	Analytical Method	Result Q	. LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND L	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	1.1	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	1.4	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	570	5.0	4.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	0.45 J	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit  $J = Estimated result < LOQ and <math>\geq DL$ 

# Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XG20043-003 Description: MW-10 i Matrix: Aqueous Date Sampled:07/19/2022 1220 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 07/21/2022 2353 JMM2 48752 2 5030B 48924 8260D 10 07/24/2022 2019 JMM2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260D	ND	0.50	0.40	ug/L	1
Trichloroethene	79-01-6	8260D	57	0.50	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	0.50	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	0.49 J	0.50	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	1.0	0.40	ug/L	1
	Dun 1 Assess	D.	2				

Surrogate Q	Run 1 / % Recovery	Acceptance Limits Q	Run 2 A % Recovery	cceptance Limits
Bromofluorobenzene	97	70-130	94	70-130
1,2-Dichloroethane-d4	109	70-130	93	70-130
Toluene-d8	99	70-130	100	70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# **Dissolved Gases**

Client: AECOM

Description: MW-10 i

Laboratory ID: XG20043-003

Matrix: Aqueous

Date Sampled:07/19/2022 1220 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 07/30/2022 1527 BBW 49598

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	1700	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ \mbox{(formerly Shealy Environmental Services, Inc.)}$ 

# **ICP-AES** Metals

Client: AECOM

Description: MW-10 i

Laboratory ID: XG20043-003

Matrix: Aqueous

Date Sampled:07/19/2022 1220 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 08/02/2022 0556
 JMH
 07/30/2022 0755
 49579

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Dissolved Iron	7439-89-6	6010D	12	0.10	0.040	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# **ICP-AES** Metals

Client: AECOM

Description: MW-10 i

Laboratory ID: XG20043-003

Matrix: Aqueous

Date Sampled:07/19/2022 1220 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 2
 3005A
 6010D
 1
 08/02/2022 0325
 JMH
 07/30/2022 0822
 49580

	CAS	Analytical					
Parameter	Number	Method	Result Q	LOQ	DL	Units	Run
Iron	7439-89-6	6010D	15	0.10	0.040	mg/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

Client: AECOM

Description: ERD-OBSW-1i

Date Sampled: 07/19/2022 1420

Project Name: Shakespeare - Signify

Date Received: 07/20/2022

Project Number: 60635197

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1		(Alkalinity @) SM 2320B-2011	1	07/25/2022 1853 TAD		49119
1		(Chloride) 300.0	1	08/03/2022 2128 BMG2		50171
1		(Nitrate - N) 353.2	1	07/20/2022 2010 KKP		48599
1		(Nitrite - N) 353.2	1	07/20/2022 2010 KKP		48598
1		(Sulfate) 300.0	1	08/03/2022 2128 BMG2		50172
1		(TOC) SM 5310C-2011	1	08/18/2022 1054 CMM		51457
2		(TOC) SM 5310C-2011	2	08/23/2022 1220 CMM		51833
3		(TOC) SM 5310C-2011	2	08/25/2022 1050 CMM		52067

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	320		20	20	mg CaCO3/L	1
Chloride		300.0	8.6		1.0	0.25	mg/L	1
Nitrate - N		353.2	0.21		0.020	0.010	mg/L	1
Nitrite - N		353.2	0.020		0.020	0.010	mg/L	1
Sulfate		300.0	ND		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	96	HS	1.0	1.0	mg/L	1
TOC		SM 5310C-2011	89	Н	2.0	2.0	mg/L	2
TOC		SM 5310C-2011	89	Н	2.0	2.0	mg/L	3

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$ 

Client: AECOM Laboratory ID: XG20043-004

Description: ERD-OBSW-1i Matrix: Aqueous

Date Sampled:07/19/2022 1420 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 07/22/2022 0018 JMM2 48752 2 5030B 48924 8260D 10 07/24/2022 2044 JMM2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND L	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	0.94	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	1.7	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	420	5.0	4.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	3.1	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	5.7	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	0.49 J	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	0.57	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1

$$\label{eq:ND} \begin{split} ND &= Not \ detected \ at \ or \ above \ the \ DL \\ H &= Out \ of \ holding \ time \\ \end{split} \qquad \qquad N = Recovery \ is \ out \ of \ criteria \\ W &= Reported \ on \ wet \ weight \ basis \end{split}$$

LOQ = Limit of Quantitation

E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

Client: AECOM Laboratory ID: XG20043-004 Description: ERD-OBSW-1i Matrix: Aqueous Date Sampled:07/19/2022 1420 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 07/22/2022 0018 JMM2 48752 1 2 48924 5030B 8260D 10 07/24/2022 2044 JMM2 CAS Analytical Parameter Number Method Result Q LOQ DL Units Run 1,1,2-Trichloroethane 79-00-5 ND 0.50 8260D ug/L 1 0.40 Trichloroethene 79-01-6 8260D 180 0.50 ug/L 0.40 1 Trichlorofluoromethane 75-69-4 8260D ND 0.50 ug/L 0.40 1 Vinyl chloride 75-01-4 8260D 4.5 0.50 1 ug/L 0.40 8260D Xylenes (total) 1330-20-7 ND 1.0 ug/L 0.40 1 Run 1 Acceptance Run 2 Acceptance % Recovery

70-130

70-130

70-130

Limits

70-130

70-130

70-130

92

94

97

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and  $\geq$  DL L = LCS/LCSD failure H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

Q

% Recovery

93

109

95

Surrogate

Toluene-d8

Bromofluorobenzene

1,2-Dichloroethane-d4

### **Dissolved Gases**

Client: AECOM Laboratory ID: XG20043-004

Description: ERD-OBSW-1i Matrix: Aqueous

Date Sampled:07/19/2022 1420 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 RSK - 175
 1
 07/30/2022 1543
 BBW
 49598

 2
 RSK - 175
 5
 08/02/2022 1407
 BBW
 49868

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	11	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	8700	50	13	ug/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XG20043-004

Description: ERD-OBSW-1i Matrix: Aqueous

Date Sampled:07/19/2022 1420 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 08/02/2022 0600 JMH 07/30/2022 0755 49579

CAS Analytical Number Parameter Result Q LOQ DL Units Run Method Dissolved Iron 6010D 7439-89-6 0.049 J 0.10 0.040 mg/L

LOQ = Limit of Quantitation
ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XG20043-004

Description: ERD-OBSW-1i Matrix: Aqueous

Date Sampled:07/19/2022 1420 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 2 3005A 6010D 1 08/02/2022 0329 JMH 07/30/2022 0822 49580

CAS Analytical Number Parameter Result Q LOQ DL Units Run Method 6010D Iron 7439-89-6 11 0.10 0.040 mg/L 2

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Inorganic non-metals

Client: AECOM Laboratory ID: XG20043-005 Description: ISCO-OBSW-1s Matrix: Aqueous Date Sampled:07/20/2022 0840 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch (Chloride) 300.0 08/06/2022 0049 BMG2 50778 2 48599 1 (Nitrate - N) 353.2 07/20/2022 2036 KKP 1 (Nitrite - N) 353.2 1 07/20/2022 2026 KKP 48598 (TDS) SM 2540C-2011 1 1 07/26/2022 1717 CVR 49131

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Chloride		300.0	7.0	5.0	1.3	mg/L	1
Nitrate - N		353.2	2.4	0.040	0.020	mg/L	1
Nitrite - N		353.2	0.37	0.020	0.010	mg/L	1
TDS	SN	1 2540C-2011	340	25	25	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Client: AECOM Laboratory ID: XG20043-005

Description: ISCO-OBSW-1s Matrix: Aqueous

Date Sampled:07/20/2022 0840 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 50 07/22/2022 1612 BWS 48797

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	500	200	ug/L	1
Benzene	71-43-2	8260D	ND	25	20	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	25	20	ug/L	1
Bromoform	75-25-2	8260D	ND	25	20	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	25	20	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	500	100	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	25	20	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	25	20	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	25	20	ug/L	1
Chloroethane	75-00-3	8260D	ND	25	20	ug/L	1
Chloroform	67-66-3	8260D	ND	25	20	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	25	20	ug/L	1
Cyclohexane	110-82-7	8260D	ND	25	20	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	25	20	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	25	20	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	25	20	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	25	20	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	25	20	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	25	20	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	25	20	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	25	20	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	25	20	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	25	20	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	25	20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	25	20	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	25	20	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	25	20	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	25	20	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	25	20	ug/L	1
2-Hexanone	591-78-6	8260D	ND	500	100	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	25	20	ug/L	1
Methyl acetate	79-20-9	8260D	ND	50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	25	20	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	500	100	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	250	20	ug/L	1
Methylene chloride	75-09-2	8260D	ND	25	20	ug/L	1
Styrene	100-42-5	8260D	ND	25	21	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	25	20	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	25	20	ug/L	1
Toluene	108-88-3	8260D	ND	25	20	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	50	21	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	25	20	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	25	20	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	25	20	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XG20043-005 Description: ISCO-OBSW-1s Matrix: Aqueous Date Sampled:07/20/2022 0840 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 07/22/2022 1612 BWS 48797

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	ND	25	20	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	25	20	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	25	20	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	50	20	ug/L	1

Surrogate	Run 1 Acceptance Q % Recovery Limits	
Bromofluorobenzene	88 70-130	
1,2-Dichloroethane-d4	111 70-130	
Toluene-d8	92 70-130	

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

#### Inorganic non-metals

Client: AECOM Laboratory ID: XG20043-006 Description: TMW-31 Matrix: Aqueous Date Sampled:07/20/2022 0930 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch (Chloride) 300.0 08/16/2022 0225 MSG 51293 48599 1 (Nitrate - N) 353.2 1 07/20/2022 2016 KKP 1 (Nitrite - N) 353.2 1 07/20/2022 2016 KKP 48598

Parameter	CAS Number	Analytical Method	Result	Q LOQ	DL	Units	Run
Chloride		300.0	5.6	1.0	0.25	mg/L	1
Nitrate - N		353.2	1.3	0.020	0.010	mg/L	1
Nitrite - N		353.2	0.011	J 0.020	0.010	mg/L	1
TDS		SM 2540C-2011	62	25	25	mg/L	1

07/27/2022 1734 CVR

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

(TDS) SM 2540C-2011

1

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq$  DL

49287

Client: AECOM

Description: TMW-31

Laboratory ID: XG20043-006

Matrix: Aqueous

Date Sampled:07/20/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 10 07/22/2022 0140 JMM2 48752

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Rur
Acetone	67-64-1	8260D	ND L	100	40	ug/L	1
Benzene	71-43-2	8260D	ND	5.0	4.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	5.0	4.0	ug/L	1
Bromoform	75-25-2	8260D	ND	5.0	4.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	5.0	4.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	100	20	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	5.0	4.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	5.0	4.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	5.0	4.0	ug/L	1
Chloroethane	75-00-3	8260D	ND	5.0	4.0	ug/L	1
Chloroform	67-66-3	8260D	ND	5.0	4.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	5.0	4.0	ug/L	1
Cyclohexane	110-82-7	8260D	ND	5.0	4.0	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	5.0	4.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	5.0	4.0	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	5.0	4.0	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	5.0	4.0	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	5.0	4.0	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	5.0	4.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	5.0	4.0	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	5.0	4.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	5.0	4.0	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	5.0	4.0	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	9.6	5.0	4.0	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	5.0	4.0	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	5.0	4.0	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	5.0	4.0	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	5.0	4.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	5.0	4.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND	100	20	ug/L	1
sopropylbenzene	98-82-8	8260D	ND	5.0	4.0	ug/L	1
Methyl acetate	79-20-9	8260D	ND	10	4.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	5.0	4.0	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	100	20	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	50	4.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND	5.0	4.0	ug/L	1
Styrene	100-42-5	8260D	7.5	5.0	4.1	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	5.0	4.0	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	5.0	4.0	ug/L	1
Toluene	108-88-3	8260D	ND	5.0	4.0	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	10	4.2	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	5.0	4.0	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	5.0	4.0	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	5.0	4.0	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

L = LCS/LCSD failure

S = MS/MSD failure

J = Estimated result < LOQ and  $\geq$  DL

Client: AECOM

Laboratory ID: XG20043-006

Description: TMW-31 Matrix: Aqueous

Date Sampled:07/20/2022 0930 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 10 07/22/2022 0140 JMM2 48752

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	860	5.0	4.0	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	5.0	4.0	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	5.0	4.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	10	4.0	ug/L	1

Surrogate	Run 1 Acceptance Q % Recovery Limits
Bromofluorobenzene	92 70-130
1,2-Dichloroethane-d4	110 70-130
Toluene-d8	94 70-130

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM Laboratory ID: XG20043-007
Description: MW-2 Matrix: Aqueous

Date Sampled:07/20/2022 1035 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 1 07/22/2022 0049 JMM2 48752 3 5030B 8260D 49080 1 07/26/2022 1110 BBW

Parameter	CAS Number	Analytical Method	Result	Q LC	Q DL	Units	Run
Acetone	67-64-1	8260D	ND		10 4.0		1
Benzene	71-43-2	8260D	ND	0.5			1
Bromodichloromethane	75-27-4	8260D	ND	0.0			1
Bromoform	75-25-2	8260D	ND	0.0	00		1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	2.0	00		1
2-Butanone (MEK)	78-93-3	8260D	ND		10 2.0		1
Carbon disulfide	75-15-0	8260D	ND	0.5		•	1
Carbon tetrachloride	56-23-5	8260D	ND	0.5		3	1
Chlorobenzene	108-90-7	8260D	ND	0.5		3	1
Chloroethane	75-00-3	8260D	ND	0.0		3	1
Chloroform	67-66-3	8260D	ND	0.0			1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.0			1
Cyclohexane	110-82-7	8260D	ND	0.5		3	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.0		3	1
Dibromochloromethane	124-48-1	8260D	ND	0.5			1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.5		_	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.5		_	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.5		_	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.5			1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.5		_	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.5		_	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.5		_	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.5			1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	0.5			3
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.5			1
1,2-Dichloropropane	78-87-5	8260D	ND	0.5			1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.5			1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.5			1
Ethylbenzene	100-41-4	8260D	ND	0.5			1
2-Hexanone	591-78-6	8260D	ND		10 2.0		1
Isopropylbenzene	98-82-8	8260D	ND	0.5			1
Methyl acetate	79-20-9	8260D	ND	1	.0 0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.5	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		10 2.0		1
Methylcyclohexane	108-87-2	8260D	ND	5	.0 0.40		1
Methylene chloride	75-09-2	8260D	ND	0.5	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.5			1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.5			1
Tetrachloroethene	127-18-4	8260D	ND	0.5		•	1
Toluene	108-88-3	8260D	ND	0.5	0.40		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		.0 0.42		1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.5			1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.5			1

 $\label{eq:LOQ} \begin{aligned} \text{LOQ} &= \text{Limit of Quantitation} & & B \\ \text{ND} &= \text{Not detected at or above the DL} & & N \\ \text{H} &= \text{Out of holding time} & & W \end{aligned}$ 

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

Client: AECOM Laboratory ID: XG20043-007 Description: MW-2 Matrix: Aqueous Date Sampled:07/20/2022 1035 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Analysis Date Analyst Batch Dilution Prep Date 5030B 8260D 07/22/2022 0049 JMM2 48752 1 3 49080 5030B 8260D 1 07/26/2022 1110 BBW CAS Analytical Parameter Number Method Result Q LOQ DL Units Run 1,1,2-Trichloroethane 79-00-5 ND 0.50 8260D ug/L 1 0.40 Trichloroethene 79-01-6 8260D ND 0.50 ug/L 0.40 1 Trichlorofluoromethane 75-69-4 8260D ND 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 1 ug/L 0.40 8260D Xylenes (total) 1330-20-7 ND 1.0 ug/L 0.40 1 Run 1 Acceptance Run 3 Acceptance % Recovery Surrogate Q % Recovery Limits Bromofluorobenzene 89 70-130 88 70-130 1,2-Dichloroethane-d4 111 70-130 94 70-130 Toluene-d8 94 70-130 94 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Client: AECOM Laboratory ID: XG20043-008

Description: DW-01 Matrix: Aqueous

Date Sampled:07/20/2022 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 5 07/22/2022 0115 JMM2 48752 2 5030B 20 48924 8260D 07/24/2022 2109 JMM2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND L	50	20	ug/L	1
Benzene	71-43-2	8260D	ND	2.5	2.0	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	2.5	2.0	ug/L	1
Bromoform	75-25-2	8260D	ND	2.5	2.0	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	2.5	2.0	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	50	10	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	2.5	2.0	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	2.5	2.0	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	2.5	2.0	ug/L	1
Chloroethane	75-00-3	8260D	ND	2.5	2.0	ug/L	1
Chloroform	67-66-3	8260D	ND	2.5	2.0	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	2.5	2.0	ug/L	1
Cyclohexane	110-82-7	8260D	ND	2.5	2.0	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	2.5	2.0	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	2.5	2.0	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	2.5	2.0	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	2.5	2.0	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	2.5	2.0	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	2.5	2.0	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	2.5	2.0	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	2.5	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	2.5	2.0	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	2.5	2.0	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	9.5	2.5	2.0	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	2.5	2.0	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	2.5	2.0	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	2.5	2.0	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	2.5	2.0	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	2.5	2.0	ug/L	1
2-Hexanone	591-78-6	8260D	ND	50	10	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	2.5	2.0	ug/L	1
Methyl acetate	79-20-9	8260D	ND	5.0	2.0	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	2.5	2.0	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	50	10	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	25	2.0	ug/L	1
Methylene chloride	75-09-2	8260D	ND	2.5	2.0	ug/L	1
Styrene	100-42-5	8260D	5.0	2.5	2.1	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	2.5	2.0	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	2.5	2.0	ug/L	1
Toluene	108-88-3	8260D	ND	2.5	2.0	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	5.0	2.1	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	2.5	2.0	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	2.5	2.0	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XG20043-008 Description: DW-01 Matrix: Aqueous Date Sampled:07/20/2022 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Batch Prep Date 5030B 8260D 07/22/2022 0115 JMM2 48752 1 2 20 48924 5030B 8260D 07/24/2022 2109 JMM2 CAS Analytical Parameter Number Method Result Q LOQ DL Units Run 1,1,2-Trichloroethane 79-00-5 ND 2.5 8260D ug/L 1 2.0 Trichloroethene 79-01-6 8260D 1200 10 ug/L 2 8.0 Trichlorofluoromethane 75-69-4 8260D ND 2.5 ug/L 1 2.0 Vinyl chloride 75-01-4 8260D ND 2.5 1 ug/L 2.0 8260D Xylenes (total) 1330-20-7 ND 5.0 ug/L 2.0 1 Run 1 Acceptance Run 2 Acceptance % Recovery % Recovery Surrogate Q Limits Bromofluorobenzene 92 70-130 95 70-130 1,2-Dichloroethane-d4 109 70-130 94 70-130 Toluene-d8 94 70-130 99 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$ 

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

Client: AECOM Laboratory ID: XG20043-009
Description: TB-01 Matrix: Aqueous

Date Sampled:07/20/2022 Project Name: Shakespeare - Signify

Date Received: 07/20/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D107/21/2022 2302 JMM248752

Parameter	CAS Number	Analytical Method	Result C	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND L	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50		ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.40	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		0.41		1
Tetrachloroethene	79-34-5 127-18-4	8260D 8260D	ND ND	0.50 0.50	0.40 0.40	ug/L	1 1
Toluene	127-18-4	8260D 8260D	ND ND	0.50		ug/L	1
	76-13-1				0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane		8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XG20043-009 Description: TB-01 Matrix: Aqueous Date Sampled:07/20/2022 Project Name: Shakespeare - Signify Date Received: 07/20/2022 Project Number: 60635197 Run Prep Method Analytical Method Analysis Date Analyst Prep Date Batch Dilution 5030B 8260D 07/21/2022 2302 JMM2 48752 CAS Analytical Parameter Result Q LOQ DL Units Number Run Method Trichloroethene 79-01-6 8260D ND 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D 75-69-4 ND 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 Xylenes (total) 1330-20-7 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 92 70-130 1,2-Dichloroethane-d4 109 70-130 Toluene-d8 96 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 



Sample ID: XQ48598-001

Batch: 48598 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.010	mg/L	07/20/2022 2000

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ48598-002

Batch: 48598 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
Farantelei	(Hig/L)	(Hig/L)	Q	ווע	70 KEC	LIIIII	Allalysis Date
Nitrite - N	0.40	0.42		1	105	90-110	07/20/2022 2001

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XG20043-003MS

Batch: 48598 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	0.025	0.40	0.44		1	105	90-110	07/20/2022 2018

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XG20043-003MD

Batch: 48598 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Nitrite - N	0.025	0.40	0.44		1	104	1.0	90-110	20	07/20/2022 2020	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ48599-001

Batch: 48599 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.010	mg/L	07/20/2022 2000

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ48599-002

Batch: 48599

Matrix: Aqueous

Analytical Method: 353.2

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.40	0.38		1	94	90-110	07/20/2022 2001

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XG20043-003MS

Batch: 48599 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date	
Nitrate - N	0.070	0.80	ND	N	1	-8.7	90-110	07/20/2022 2018	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XG20043-003MD

Batch: 48599 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.070	0.80	ND	N	1	-8.7	0.00	90-110	20	07/20/2022 2020

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ49119-002

Batch: 49119

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike					
	Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	110	1	105	90-110	07/25/2022 1743

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ49131-001

Batch: 49131

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TDS	ND		1	25	25	mg/L	07/26/2022 1717

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ49131-002

Batch: 49131

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
TDS	50	47		1	94	90-110	07/26/2022 1717

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ49287-001

Batch: 49287

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TDS	ND		1	25	25	mg/L	07/27/2022 1734

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ49287-002

Batch: 49287

Analytical Method: SM 2540C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TDS	50	46		1	92	90-110	07/27/2022 1734

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ49627-002

Batch: 49627

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	100	1	104	90-110	07/28/2022 1716

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ50171-001

Batch: 50171 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND		1	1.0	0.25	mg/L	08/03/2022 1819

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ50171-002

Batch: 50171 Analytical Method: 300.0 Matrix: Aqueous

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Chloride	20	20		1	102	90-110	08/03/2022 2031

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ50172-001

Batch: 50172 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND		1	1.0	0.25	mg/L	08/03/2022 1819

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - LCS

Sample ID: XQ50172-002

Batch: 50172 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	20	20		1	98	90-110	08/03/2022 2031

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: XQ50778-001

Batch: 50778 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND		1	1.0	0.25	mg/L	08/05/2022 2203

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: XQ50778-002

Batch: 50778 Analytical Method: 300.0 Matrix: Aqueous

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Chloride	20	21		1	105	90-110	08/06/2022 0011

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: XQ51293-001 Batch: 51293

Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND		1	1.0	0.25	mg/L	08/15/2022 1837

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: XQ51293-002

Batch: 51293 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	20	20		1	99	90-110	08/15/2022 1915

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MB

Sample ID: XQ51457-001 Batch: 51457

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	08/18/2022 0920

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: XQ51457-002 Batch: 51457

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	20		1	100	90-110	08/18/2022 0931

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MS

Sample ID: XG20043-004MS

Batch: 51457

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	96	50	160	N	1	134	70-130	08/18/2022 1106

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MSD

Sample ID: XG20043-004MD

Batch: 51457

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
TOC	96	50	160	N	1	131	1.1	70-130	20	08/18/2022 1142

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: XQ52067-001 Batch: 52067

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	08/25/2022 1014

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - LCS

Sample ID: XQ52067-002

Batch: 52067

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	20		1	102	90-110	08/25/2022 1026

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ48752-001 Batch: 48752

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	07/21/2022 2108
Benzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Bromodichloromethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Bromoform	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	07/21/2022 2108
2-Butanone (MEK)	ND		1	10	2.0	ug/L	07/21/2022 2108
Carbon disulfide	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Chlorobenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Chloroethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Chloroform	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Cyclohexane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Dibromochloromethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Ethylbenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
2-Hexanone	ND		1	10	2.0	ug/L	07/21/2022 2108
Isopropylbenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Methyl acetate	ND		1	1.0	0.40	ug/L	07/21/2022 2108
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	07/21/2022 2108
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	07/21/2022 2108
Methylcyclohexane	ND		1	5.0	0.40	ug/L	07/21/2022 2108
Methylene chloride	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Styrene	ND		1	0.50	0.41	ug/L	07/21/2022 2108
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Tetrachloroethene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
Toluene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	07/21/2022 2108
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	07/21/2022 2108
.,.,			·	0.00	00	~9 <sup>,</sup> –	2772772022 2100

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ48752-001 Batch: 48752

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	L	DQ	DL	Units	Analysis Date
Trichloroethene	ND		1	0.	50	0.40	ug/L	07/21/2022 2108
Trichlorofluoromethane	ND		1	0.	50	0.40	ug/L	07/21/2022 2108
Vinyl chloride	ND		1	0.	50	0.40	ug/L	07/21/2022 2108
Xylenes (total)	ND		1	1.	0	0.40	ug/L	07/21/2022 2108
Surrogate	Q % Rec		eptance Limit					
Bromofluorobenzene	96	7	70-130					
1,2-Dichloroethane-d4	110	7	70-130					
Toluene-d8	97	7	70-130					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ48752-002 Batch: 48752 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
	Amount	Result			0/ 5	%Rec	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	170	N	1	166	60-140	07/21/2022 2001
Benzene	50	51		1	101	70-130	07/21/2022 2001
Bromodichloromethane	50	50		1	99	70-130	07/21/2022 2001
Bromoform	50	45		1	91	70-130	07/21/2022 2001
Bromomethane (Methyl bromide)	50	52		1	105	70-130	07/21/2022 2001
2-Butanone (MEK)	100	100		1	104	70-130	07/21/2022 2001
Carbon disulfide	50	45		1	90	70-130	07/21/2022 2001
Carbon tetrachloride	50	47		1	93	70-130	07/21/2022 2001
Chlorobenzene	50	49		1	98	70-130	07/21/2022 2001
Chloroethane	50	54		1	107	70-130	07/21/2022 2001
Chloroform	50	49		1	97	70-130	07/21/2022 2001
Chloromethane (Methyl chloride)	50	58		1	116	60-140	07/21/2022 2001
Cyclohexane	50	52		1	103	70-130	07/21/2022 2001
1,2-Dibromo-3-chloropropane (DBCP)	50	51		1	103	70-130	07/21/2022 2001
Dibromochloromethane	50	48		1	96	70-130	07/21/2022 2001
1,2-Dibromoethane (EDB)	50	51		1	101	70-130	07/21/2022 2001
1,2-Dichlorobenzene	50	52		1	104	70-130	07/21/2022 2001
1,3-Dichlorobenzene	50	51		1	101	70-130	07/21/2022 2001
1,4-Dichlorobenzene	50	50		1	100	70-130	07/21/2022 2001
Dichlorodifluoromethane	50	57		1	114	60-140	07/21/2022 2001
1,1-Dichloroethane	50	51		1	101	70-130	07/21/2022 2001
1,2-Dichloroethane	50	52		1	104	70-130	07/21/2022 2001
1,1-Dichloroethene	50	47		1	93	70-130	07/21/2022 2001
cis-1,2-Dichloroethene	50	48		1	96	70-130	07/21/2022 2001
trans-1,2-Dichloroethene	50	48		1	95	70-130	07/21/2022 2001
1,2-Dichloropropane	50	50		1	100	70-130	07/21/2022 2001
cis-1,3-Dichloropropene	50	52		1	103	70-130	07/21/2022 2001
trans-1,3-Dichloropropene	50	51		1	102	70-130	07/21/2022 2001
Ethylbenzene	50	50		1	99	70-130	07/21/2022 2001
2-Hexanone	100	99		1	99	70-130	07/21/2022 2001
Isopropylbenzene	50	52		1	104	70-130	07/21/2022 2001
Methyl acetate	50	53		1	106	70-130	07/21/2022 2001
Methyl tertiary butyl ether (MTBE)	50	50		1	100	70-130	07/21/2022 2001
4-Methyl-2-pentanone	100	110		1	112	70-130	07/21/2022 2001
Methylcyclohexane	50	43		1	87	70-130	07/21/2022 2001
Methylene chloride	50	49		1	98	70-130	07/21/2022 2001
Styrene	50	47		1	93	70-130	07/21/2022 2001
1,1,2,2-Tetrachloroethane	50	53		1	106	70-130	07/21/2022 2001
Tetrachloroethene	50	46		1	93	70-130	07/21/2022 2001
Toluene	50	49		1	99	70-130	07/21/2022 2001
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	47		1	93	70-130	07/21/2022 2001
1,2,4-Trichlorobenzene	50	54		1	108	70-130	07/21/2022 2001
1,1,1-Trichloroethane		47		1	95	70-130	07/21/2022 2001
	50 50						
1,1,2-Trichloroethane	50	49		1	98	70-130	07/21/2022 2001

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ48752-002 Batch: 48752

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	47	1	94	70-130	07/21/2022 2001
Trichlorofluoromethane	50	51	1	103	70-130	07/21/2022 2001
Vinyl chloride	50	55	1	109	70-130	07/21/2022 2001
Xylenes (total)	100	100	1	101	70-130	07/21/2022 2001
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	88	70-130				
1,2-Dichloroethane-d4	97	70-130				
Toluene-d8	87	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MS

Sample ID: XG20043-008MS

Batch: 48752 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	ND	500	610		5	123	60-140	07/22/2022 0256
Benzene	ND	250	280		5	110	70-130	07/22/2022 0256
Bromodichloromethane	ND	250	260		5	104	70-130	07/22/2022 0256
Bromoform	ND	250	230		5	94	70-130	07/22/2022 0256
Bromomethane (Methyl bromide)	ND	250	230		5	110	70-130	07/22/2022 0256
` ,		500	480		5	95	70-130	07/22/2022 0256
2-Butanone (MEK) Carbon disulfide	ND ND	250	260			95 102	70-130 70-130	07/22/2022 0256
Carbon tetrachloride	ND ND	250	270		5 5	102	70-130 70-130	07/22/2022 0256
Chlorobenzene	ND	250	260		5	103	70-130	07/22/2022 0256
Chloroethane	ND	250	280		5	111	70-130	07/22/2022 0256
Chloroform	ND	250	260		5	105	70-130	07/22/2022 0256
Chloromethane (Methyl chloride)	ND	250	300		5	120	60-140	07/22/2022 0256
, , ,	ND	250	300		5	118	70-130	07/22/2022 0256
Cyclohexane		250				94		07/22/2022 0256
1,2-Dibromo-3-chloropropane (DBCP)	ND	250	240 250		5		70-130	
Dibromochloromethane 1,2-Dibromoethane (EDB)	ND ND	250	260		5 5	100 103	70-130 70-130	07/22/2022 0256 07/22/2022 0256
1,2-Dichlorobenzene	ND	250	260		5	103	70-130	07/22/2022 0256
		250	250					07/22/2022 0256
1,3-Dichlorobenzene 1,4-Dichlorobenzene	ND	250	250		5	102 100	70-130 70-130	07/22/2022 0256
, , , , , , , , , , , , , , , , , , ,	ND				5			
Dichlorodifluoromethane	ND	250	290		5	118	60-140	07/22/2022 0256
1,1-Dichloroethane	ND	250	270		5	109	70-130	07/22/2022 0256
1,2-Dichloroethane	ND	250	260		5	105	70-130	07/22/2022 0256
1,1-Dichloroethene	ND o.e	250	260		5	104	70-130	07/22/2022 0256
cis-1,2-Dichloroethene	9.5	250 250	260 260		5	102 102	70-130 70-130	07/22/2022 0256 07/22/2022 0256
trans-1,2-Dichloroethene	ND				5			
1,2-Dichloropropane	ND	250	270		5	108	70-130	07/22/2022 0256
cis-1,3-Dichloropropene	ND	250	260		5	104	70-130	07/22/2022 0256
trans-1,3-Dichloropropene	ND	250	260		5	103	70-130	07/22/2022 0256
Ethylbenzene	ND	250	270		5	107	70-130	07/22/2022 0256
2-Hexanone	ND	500	500		5	100	70-130	07/22/2022 0256
Isopropylbenzene	ND	250	280		5	111	70-130	07/22/2022 0256
Methyl acetate	ND	250	250		5	101	70-130	07/22/2022 0256
Methyl tertiary butyl ether (MTBE)	ND	250	250		5	98	70-130	07/22/2022 0256
4-Methyl-2-pentanone	ND	500	570		5	113	70-130	07/22/2022 0256
Methylcyclohexane	ND	250	240		5	97	70-130	07/22/2022 0256
Methylene chloride	ND	250	250		5	100	70-130	07/22/2022 0256
Styrene	5.0	250	250		5	98	70-130	07/22/2022 0256
1,1,2,2-Tetrachloroethane	ND	250	260		5	104	70-130	07/22/2022 0256
Tetrachloroethene	ND	250	260		5	104	70-130	07/22/2022 0256
Toluene	ND	250	260		5	105	70-130	07/22/2022 0256
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	250	260		5	104	70-130	07/22/2022 0256
1,2,4-Trichlorobenzene	ND	250	250		5	99	70-130	07/22/2022 0256
1,1,1-Trichloroethane	ND	250	270		5	107	70-130	07/22/2022 0256
1,1,2-Trichloroethane	ND	250	250		5	101	70-130	07/22/2022 0256

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MS

Sample ID: XG20043-008MS

Batch: 48752 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	1000	250	1300	Е	5	90	70-130	07/22/2022 0256
Trichlorofluoromethane	ND	250	280		5	112	70-130	07/22/2022 0256
Vinyl chloride	ND	250	290		5	117	70-130	07/22/2022 0256
Xylenes (total)	ND	500	530		5	107	70-130	07/22/2022 0256
Surrogate	Q % Red		ptance mit					
Bromofluorobenzene	89	70	-130					
1,2-Dichloroethane-d4	96	70	-130					
Toluene-d8	91	70	-130					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MSD

Sample ID: XG20043-008MD

Batch: 48752 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q D	iı % Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acetone	ND	500	580	5		5.4	60-140	20	07/22/2022 0321
Benzene	ND	250	270	5		1.6	70-130	20	07/22/2022 0321
Bromodichloromethane	ND	250	260	5		0.23	70-130	20	07/22/2022 0321
Bromoform	ND	250	230	5		0.17	70-130	20	07/22/2022 0321
Bromomethane (Methyl bromide)	ND	250	260	5		4.5	70-130	20	07/22/2022 0321
2-Butanone (MEK)	ND	500	470	5		2.5	70-130	20	07/22/2022 0321
Carbon disulfide	ND	250	250	5		1.9	70-130	20	07/22/2022 0321
Carbon tetrachloride	ND	250	260	5	105	3.1	70-130	20	07/22/2022 0321
Chlorobenzene	ND	250	260	5	103	0.077	70-130	20	07/22/2022 0321
Chloroethane	ND	250	270	5	106	4.5	70-130	20	07/22/2022 0321
Chloroform	ND	250	260	5	103	2.5	70-130	20	07/22/2022 0321
Chloromethane (Methyl chloride)	ND	250	290	5	116	3.4	60-140	20	07/22/2022 0321
Cyclohexane	ND	250	290	5	116	2.0	70-130	20	07/22/2022 0321
1,2-Dibromo-3-chloropropane (DBCP)	ND	250	240	5	95	0.45	70-130	20	07/22/2022 0321
Dibromochloromethane	ND	250	250	5	99	0.37	70-130	20	07/22/2022 0321
1,2-Dibromoethane (EDB)	ND	250	260	5	103	0.0018	70-130	20	07/22/2022 0321
1,2-Dichlorobenzene	ND	250	250	5	102	0.73	70-130	20	07/22/2022 0321
1,3-Dichlorobenzene	ND	250	250	5	101	0.71	70-130	20	07/22/2022 0321
1,4-Dichlorobenzene	ND	250	250	5	99	0.92	70-130	20	07/22/2022 0321
Dichlorodifluoromethane	ND	250	280	5	112	4.6	60-140	20	07/22/2022 0321
1,1-Dichloroethane	ND	250	270	5	107	1.6	70-130	20	07/22/2022 0321
1,2-Dichloroethane	ND	250	260	5	106	0.33	70-130	20	07/22/2022 0321
1,1-Dichloroethene	ND	250	250	5		3.4	70-130	20	07/22/2022 0321
cis-1,2-Dichloroethene	9.5	250	260	5		2.8	70-130	20	07/22/2022 0321
trans-1,2-Dichloroethene	ND	250	250	5		0.64	70-130	20	07/22/2022 0321
1,2-Dichloropropane	ND	250	260	5		2.1	70-130	20	07/22/2022 0321
cis-1,3-Dichloropropene	ND	250	260	5		0.54	70-130	20	07/22/2022 0321
trans-1,3-Dichloropropene	ND	250	260	5		0.093	70-130	20	07/22/2022 0321
Ethylbenzene	ND	250	270	5		0.18	70-130	20	07/22/2022 0321
2-Hexanone	ND	500	500	5		0.10	70-130	20	07/22/2022 0321
Isopropylbenzene	ND	250	280	5		0.98	70-130	20	07/22/2022 0321
Methyl acetate	ND	250	270	5		6.7	70-130	20	07/22/2022 0321
Methyl tertiary butyl ether (MTBE)	ND	250	240	5		1.0	70-130	20	07/22/2022 0321
4-Methyl-2-pentanone	ND	500	550	5		2.8	70-130	20	07/22/2022 0321
Methylcyclohexane	ND	250	240	5		0.51	70-130	20	07/22/2022 0321
Methylene chloride	ND	250	240	5		2.7	70-130	20	07/22/2022 0321
Styrene	5.0	250	250	5		0.25	70-130	20	07/22/2022 0321
1,1,2,2-Tetrachloroethane	ND	250	260	5		0.16	70-130	20	07/22/2022 0321
Tetrachloroethene	ND	250	260	5		0.62	70-130	20	07/22/2022 0321
Toluene	ND	250	260	5		0.25	70-130	20	07/22/2022 0321
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	250	250	5		2.9	70-130	20	07/22/2022 0321
1,2,4-Trichlorobenzene	ND	250	250	5		1.1	70-130	20	07/22/2022 0321
1,1,1-Trichloroethane	ND	250	260	5		1.5	70-130	20	07/22/2022 0321
1,1,2-Trichloroethane	ND	250	250	5	102	0.25	70-130	20	07/22/2022 0321

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MSD

Sample ID: XG20043-008MD

Matrix: Aqueous

Batch: 48752			Р	rep M	letho	d: 5030B		
Analytical Method: 8260D								
Parameter	Sample Amount	Spike Amount	Result	0	Dil	% Rec	% RPD	%Rec

Parameter	Sample Amount (ug/L)	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Trichloroethene	1000	250	1200	N	5	60	6.0	70-130	20	07/22/2022 0321
Trichlorofluoromethane	ND	250	270		5	106	5.5	70-130	20	07/22/2022 0321
Vinyl chloride	ND	250	280		5	113	4.0	70-130	20	07/22/2022 0321
Xylenes (total)	ND	500	530		5	106	1.2	70-130	20	07/22/2022 0321
Surrogate	Q % Red		ptance imit							
Bromofluorobenzene	88	70	0-130							
1,2-Dichloroethane-d4	96	70	0-130							
Toluene-d8	91	70	0-130							

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ48797-001 Batch: 48797

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	07/22/2022 0947
Benzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Bromodichloromethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Bromoform	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	07/22/2022 0947
2-Butanone (MEK)	ND		1	10	2.0	ug/L	07/22/2022 0947
Carbon disulfide	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Chlorobenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Chloroethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Chloroform	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Cyclohexane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Dibromochloromethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Ethylbenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
2-Hexanone	ND		1	10	2.0	ug/L	07/22/2022 0947
Isopropylbenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Methyl acetate	ND		1	1.0	0.40	ug/L	07/22/2022 0947
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	07/22/2022 0947
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	07/22/2022 0947
Methylcyclohexane	ND		1	5.0	0.40	ug/L	07/22/2022 0947
Methylene chloride	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Styrene	ND		1	0.50	0.41	ug/L	07/22/2022 0947
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Tetrachloroethene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
Toluene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	07/22/2022 0947
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	07/22/2022 0947

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ48797-001 Batch: 48797

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Result	Q	Dil	LOQ	DL	Units	Analysis Date
ND		1	0.50	0.40	ug/L	07/22/2022 0947
ND		1	0.50	0.40	ug/L	07/22/2022 0947
ND		1	0.50	0.40	ug/L	07/22/2022 0947
ND		1	1.0	0.40	ug/L	07/22/2022 0947
Q % Re	c A	cceptance Limit				
89		70-130				
106		70-130				
93		70-130				
	ND ND ND ND Q % Re- 89 106	ND ND ND ND Q % Rec 89 106	ND 1 ND 1 ND 1 ND 1 ND 1 Acceptance Limit  89 70-130 106 70-130	ND 1 0.50 ND 1 0.50 ND 1 0.50 ND 1 1.0  O % Rec Limit  89 70-130 106 70-130	ND 1 0.50 0.40 ND 1 0.50 0.40 ND 1 0.50 0.40 ND 1 1.0 0.50 0.40 ND 1 1.0 0.40  Q % Rec Limit  89 70-130 106 70-130	ND 1 0.50 0.40 ug/L ND 1 1.0 0.40 ug/L  Q % Rec Limit  89 70-130 106 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ48797-002 Batch: 48797 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike	<b>D</b>				%Rec	
Parameter	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	120		1	125	60-140	07/22/2022 0856
Benzene	50	52		1	104	70-130	07/22/2022 0856
Bromodichloromethane	50	51		1	102	70-130	07/22/2022 0856
Bromoform	50	47		1	93	70-130	07/22/2022 0856
Bromomethane (Methyl bromide)	50	53		1	106	70-130	07/22/2022 0856
2-Butanone (MEK)	100	91		1	91	70-130	07/22/2022 0856
Carbon disulfide	50	47		1	94	70-130	07/22/2022 0856
Carbon tetrachloride	50	49		1	98	70-130	07/22/2022 0856
Chlorobenzene	50	49		1	99	70-130	07/22/2022 0856
Chloroethane	50	52		1	104	70-130	07/22/2022 0856
Chloroform	50	50		1	100	70-130	07/22/2022 0856
Chloromethane (Methyl chloride)	50	58		1	115	60-140	07/22/2022 0856
Cyclohexane	50	52		1	104	70-130	07/22/2022 0856
1,2-Dibromo-3-chloropropane (DBCP)	50	49		1	97	70-130	07/22/2022 0856
Dibromochloromethane	50	50		1	100	70-130	07/22/2022 0856
1,2-Dibromoethane (EDB)	50	51		1	102	70-130	07/22/2022 0856
1,2-Dichlorobenzene	50	52		1	103	70-130	07/22/2022 0856
1,3-Dichlorobenzene	50	50		1	100	70-130	07/22/2022 0856
1,4-Dichlorobenzene	50	50		1	99	70-130	07/22/2022 0856
Dichlorodifluoromethane	50	54		1	107	60-140	07/22/2022 0856
1,1-Dichloroethane	50	51		1	103	70-130	07/22/2022 0856
1,2-Dichloroethane	50	53		1	106	70-130	07/22/2022 0856
1,1-Dichloroethene	50	48		1	95	70-130	07/22/2022 0856
cis-1,2-Dichloroethene	50	49		1	97	70-130	07/22/2022 0856
trans-1,2-Dichloroethene	50	49		1	97	70-130	07/22/2022 0856
1,2-Dichloropropane	50	51		1	102	70-130	07/22/2022 0856
cis-1,3-Dichloropropene	50	52		1	105	70-130	07/22/2022 0856
trans-1,3-Dichloropropene	50	52		1	104	70-130	07/22/2022 0856
Ethylbenzene	50	49		1	99	70-130	07/22/2022 0856
2-Hexanone	100	96		1	96	70-130	07/22/2022 0856
Isopropylbenzene	50	53		1	105	70-130	07/22/2022 0856
Methyl acetate	50	52		1	104	70-130	07/22/2022 0856
Methyl tertiary butyl ether (MTBE)	50	51		1	102	70-130	07/22/2022 0856
4-Methyl-2-pentanone	100	110		1	107	70-130	07/22/2022 0856
Methylcyclohexane	50	44		1	88	70-130	07/22/2022 0856
Methylene chloride	50	50		1	101	70-130	07/22/2022 0856
Styrene	50	47		1	94	70-130	07/22/2022 0856
1,1,2,2-Tetrachloroethane	50	53		1	106	70-130	07/22/2022 0856
Tetrachloroethene	50	47		1	95	70-130	07/22/2022 0856
Toluene	50	50		1	99	70-130	07/22/2022 0856
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	47		1	95	70-130	07/22/2022 0856
1,2,4-Trichlorobenzene	50	53		1	106	70-130	07/22/2022 0856
1,1,1-Trichloroethane	50	49		1	98	70-130	07/22/2022 0856
1,1,2-Trichloroethane	50	50		1	100	70-130	07/22/2022 0856

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ48797-002 Batch: 48797

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	49	1	97	70-130	07/22/2022 0856
Trichlorofluoromethane	50	51	1	103	70-130	07/22/2022 0856
Vinyl chloride	50	55	1	109	70-130	07/22/2022 0856
Xylenes (total)	100	100	1	101	70-130	07/22/2022 0856
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	87	70-130				
1,2-Dichloroethane-d4	94	70-130				
Toluene-d8	87	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ48924-001 Batch: 48924

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
cis-1,2-Dichloroethene	ND	1	0.50	0.40	ug/L	07/24/2022 1446
Trichloroethene	ND	1	0.50	0.40	ug/L	07/24/2022 1446
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	93	70-130				
1,2-Dichloroethane-d4	92	70-130				
Toluene-d8	98	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ48924-002 Batch: 48924

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
cis-1,2-Dichloroethene	50	49	1	97	70-130	07/24/2022 1342
Trichloroethene	50	47	1	94	70-130	07/24/2022 1342
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	98	70-130				
1,2-Dichloroethane-d4	95	70-130				
Toluene-d8	101	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ49080-001 Batch: 49080

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
cis-1,2-Dichloroethene	ND	1	0.50	0.40	ug/L	07/26/2022 0956
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	92	70-130				
1,2-Dichloroethane-d4	96	70-130				
Toluene-d8	98	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ49080-002 Batch: 49080

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
cis-1,2-Dichloroethene	50	46	1	93	70-130	07/26/2022 0853
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	96	70-130				
1,2-Dichloroethane-d4	88	70-130				
Toluene-d8	98	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: XQ49598-001 Batch: 49598

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	07/30/2022 1327
Ethene	ND		1	10	2.5	ug/L	07/30/2022 1327
Methane	ND		1	10	2.5	ug/L	07/30/2022 1327

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCS

Sample ID: XQ49598-002

Batch: 49598 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	550	500		1	90	70-130	07/30/2022 1241
Ethene	520	480		1	92	70-130	07/30/2022 1241
Methane	300	310		1	104	70-130	07/30/2022 1241

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCSD

Sample ID: XQ49598-003

Batch: 49598 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Ethane	550	480		1	87	3.4	70-130	30	07/30/2022 1255
Ethene	520	460		1	89	3.4	70-130	30	07/30/2022 1255
Methane	300	290		1	99	4.3	70-130	30	07/30/2022 1255

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

\* = RSD is out of criteria

P = The RPD between two GC columns exceeds 40% + = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: XQ49868-001 Batch: 49868

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Methane	ND		1	10	2.5	ug/L	08/02/2022 1134

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCS

Sample ID: XQ49868-002

Batch: 49868 Analytical Method: RSK - 175 Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Methane	300	260		1	90	70-130	08/02/2022 1026

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCSD

Sample ID: XQ49868-003

Batch: 49868 Analytical Method: RSK - 175 Matrix: Aqueous

	Spike								
	Amount	Result					%Rec	% RPD	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	% RPD	Limit	Limit	Analysis Date
Methane	300	310		1	106	16	70-130	30	08/02/2022 1040

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MB

Sample ID: XQ49579-001 Batch: 49579

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 07/30/2022 0755

Parameter	Result	Q	Dil	l	LOQ	DL	Units	Analysis Date
Dissolved Iron	ND		1	(	0.10	0.040	mg/L	08/02/2022 0549

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

#### ICP-AES Metals - LCS

Sample ID: XQ49579-002 Batch: 49579

Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 07/30/2022 0755

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	20	21		1	105	80-120	08/02/2022 0509

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MS

Sample ID: XG20043-002MS

Batch: 49579

Matrix: Aqueous Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 07/30/2022 0755

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	1.5	20	23		1	107	75-125	08/02/2022 0537

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MSD

Sample ID: XG20043-002MD

Batch: 49579

Matrix: Aqueous Prep Method: 3005A

Prep Date: 07/30/2022 0755

Analytical Method: 6010D

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Dissolved Iron	1.5	20	23		1	108	0.79	75-125	20	08/02/2022 0541

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

# ICP-AES Metals - MB

Sample ID: XQ49580-001 Batch: 49580

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 07/30/2022 0822

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	0.10	0.040	mg/L	08/01/2022 0937

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### ICP-AES Metals - LCS

Sample ID: XQ49580-002 Batch: 49580 Matrix: Aqueous Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 07/30/2022 0822

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	20	20		1	101	80-120	08/01/2022 0949

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody and Miscellaneous Documents

137756	Gusta No.	XG20043	Remarks / Caoler I.D.				22,02-1			s (Specify)	Time	Time	Trive	TP2)	Chamber All Common Manner Manustra
Number	Ler Com	70	CH-CELL 20T			×	* * *			QC Requirements (Specify)	Date	Date	Date	Date 7 Colde	7
	Telephone No. 15 mail 863 201 9662 SizeTT, Ross C. Aftern. Co.M. Analysis Allach Hat Il more space is needed?	215.6 50 Christ 70 Christ 60 C	Voc's Parents Res Res Res Res Res Res Res Res Res Re	* * * * * * * * * * * * * * * * * * *	メール・	x	* *	××		Possible Mazard identification With an Hazard III Remindeble III Skin Imitari III Folson III Unknown				The Mapan	Sucue) 1998 No too Plante Becelot Tempo
PACE ANALYTICAL SERVICES, LLC 106 Vantage Point Drive · West Columbia, SC 29172 Telephone No. 803-791-9700 Fax No. 803-791-9111 www.pacelabs.com	Ress /	Laylant T	Matrix No of Continues No of C	× × × 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	-	2 2 2	2 2	7			Tris 1. Perceived by	Time 2. Received by	Time 3. Received by	Trans 4. Laboratory received by	Received on los (Occup. 1988
PACE 106 Vanteg Telephone	Report to Contact Scient Re	Ranka Marie	despectation Time despectation (American)	0930 G	৩	1420 P	0430 6	·5		and IAT.) Semble Disposed  Return to Offent X Disposed by Lab	Date 7.23-27	Osic	Date	Date	our weeks from receip
Pace Analytical "	Slent Accepm	101 RESSARCH DIX C. SHALE ZO CODE STATE STOCKED STOCKE	Project No. 6 6 35 19 7 Connection Connectica Connection Connectica Connection Connectio	22.91.1°	21-01250-15 MID-101	582 - 085 w - 1 i		Duz-22	10.01	1 6	Standard Hush (Specify)  1. Retingulahed by (	2. Remanished by	3. Rethrquiched by	4. Hekinguished by	Note: All samples are retained for four weeks from receipt uniess other arrangements are made.

DISTRIBUTION: VOHITE & YELLOW-Geturn to isobratory with Sumple(s); PRINC-Febrickent Capy

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com



#### Samples Receipt Checklist (SRC) (ME0018C-15)

Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020 Page 1 of 1

# Sample Receipt Checklist (SRC)

Client: AECOM	Cooler Inspected by/date: CBP / 07/20/2022 Lot #: XG20043
	ace VClient UPS FedEx Other:
Yes ✓ No	Were custody seals present on the cooler?
	2. If custody scals were present, were they intact and unbroken?
pH Strip ID: 21-852	Chlorine Strip ID: NA Tested by: CBP
Original temperature upon 2.4 /1.4 °C NA /N	n receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA NA °C NA /NA °C NA /NA °C
7.00	
	BlankMgainst Bottles
	12 15 to married of survey 1 1 1 5 per Prince 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
☐ Yes ☐ No ☑ NA	PM was Notified by: phone / email / face-to-face (circle one),
Yes No NA	4. Is the commercial courier's packing slip attached to this form?
Yes No	<ol><li>Were proper custody procedures (relinquished/received) followed?</li></ol>
✓ Yes  No	6. Were sample IDs listed on the COC?
Yes No	7. Were sample IDs listed on all sample containers?
✓ Yes  No	8. Was collection date & time listed on the COC?
✓ Yes ☐ No	9. Was collection date & time listed on all sample containers?
✓ Yes No	Did all container label information (ID, date, time) agree with the COC?      Were tests to be performed listed on the COC?
✓ Yes □No	12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes L No	13. Was adequate sample volume available?
✓ Yes No	14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes ✓ No	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes ☑ No ☐ NA	16. For VOA and RSK-175 samples, were bubbles present >"pca-size" (%"or 6mm in diameter) in any of the VOA vials?
✓ Yes No NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
✓ Yes □ No □NA	19. Were all applicable NH <sub>2</sub> /TKN/cvanide/pheno//625.1/608.2.(<0.5mg/l.) seconds free of
E TO CINA	residual chlorine?
☐Yes ☐No ☑NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc) correctly transcribed from the COC into the comment section in LIMS?
Yes V No	21. Was the quote number listed on the container label? If yes, Quote #
Sample Preservation (?	Must be completed for any sample(s) incorrectly preserved or with headspace.)
Sample(s) NA	were received incorrectly preserved and were adjusted accordingly
in sample receiving with	mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA
Time of preservation NA	. If more than one preservative is needed, please note in the comments below.
Sample(s) NA	were received with bubbles >6 mm in diameter.
Samples(s) NA adjusted accordingly in sar	were received with TRC > 0.5 mg/L (If #19 is $no$ ) and were mple receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Shealy ID: NA
SR barcode labels applied	
Comments:	
Commens.	



# **Report of Analysis**

#### **AECOM**

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Shakespeare - Signify

Project Number: 60675505

Lot Number: XL19029

Date Completed:02/09/2023

02/10/2023 12:45 PM Approved and released by:

Project Manager II: Cathy S. Dover





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

# Case Narrative AECOM Lot Number: XL19029

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

#### **VOA 8260D**

Due to a power outage in the lab, an MS/MSD was not analyzed with the sequence. Since opening QC passes, data has been reported. Associated batch samples:

XL19029-001 (MW-10) (Run 1) (Analysis Batch 63526)

XL19029-002 (ERD-OBSW-1S) (Run 1) (Analysis Batch 63526)

XL19029-003 (MW-10I) (Run 1) (Analysis Batch 63526)

XL19029-004 (ERD-OBSW-1I) (Run 1) (Analysis Batch 63526)

XL19029-005 (TB-01) (Run 1) (Analysis Batch 63526)

Insufficient sample volume was provided to perform matrix spike/matrix spike duplicate (MS/MSD) for analytical batch 64027. An LCS/LCSD was run in lieu of an MS/MSD. Associated batch sample: XL19029-003 (MW-10I) (Run 2) (Analysis Batch 64027)

The following samples required a dilution for cis-1,2-DCE, which was performed outside of the analytical holding time: XL19029-003 and XL19029-004. Both analytical runs have been reported.

XL19029-003 (MW-10I) (Run 2) (Analysis Batch 64027) XL19029-004 (ERD-OBSW-1I) (Run 2) (Analysis Batch 64061)

#### **Dissolved Gases RSK175**

The method blank associated with batch 63257 had Methane detected at a concentration that was above the DL but below the LOQ. All samples associated with this method blank that have detections for Methane have been flagged with a "B".

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

#### Nitrite 353.2

The reanalysis for sample XL19029-002 (ERD-OBSW-1S) was performed outside of the analytical holding time. The original analysis (Run 1) was inside holding time. Run 1 analysis yielded a result of 0.022mg/L, which is qualified with a J and has an elevated LOQ. Reanalysis outside of holding time (Run 2) was analyzed undiluted and the result was 0.06mg/L, which is above the LOQ. Both runs have been reported.

#### Nitrate 353.2

The MS/MSD for batch 63431 and parent sample XL19029-003 (MW-10I), recovered outside the lower control limit. The associated LCS passed acceptance criteria.

#### **TOC SM5310C**

The following samples: XL19029-001, XL19029-002, XL19029-003, and XL19029-004 associated with batch 63400 had failing instrument QC and were scheduled for reanalysis. One CCV exceeded the upper limit of 110% recovery and one CCB exceeded 1/2 LOQ. Due to the instrument issues, the first reanalysis data was lost during the instrument and computer trouble shooting. Due to instrument issues, the samples could not be reanalyzed within holding time again. The client was contacted and we have reported the original analysis.

XL19029-001 (MW-10) (Run 1) (Analysis Batch 63400) TOC XL19029-002 (ERD-OBSW-1S) (Run 1) (Analysis Batch 63400) TOC XL19029-003 (MW-10I) (Run 1) (Analysis Batch 63400) TOC XL19029-004 (ERD-OBSW-1I) (Run 1) (Analysis Batch 63400) TOC

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

# Sample Summary AECOM

Lot Number: XL19029

Project Name: Shakespeare - Signify Project Number: 60675505

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-10	Aqueous	12/19/2022 1130	12/19/2022
002	ERD-OBSW-1S	Aqueous	12/19/2022 1250	12/19/2022
003	MW-10I	Aqueous	12/19/2022 1410	12/19/2022
004	ERD-OBSW-1I	Aqueous	12/19/2022 1515	12/19/2022
005	TB-01	Aqueous	12/19/2022	12/19/2022

(5 samples)

# Detection Summary AECOM

Lot Number: XL19029

Project Name: Shakespeare - Signify Project Number: 60675505

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-10	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	110		mg CaCO3/L	7
001	MW-10	Aqueous	Chloride	300.0	20		mg/L	7
001	MW-10	Aqueous	Nitrate - N	353.2	0.12		mg/L	7
001	MW-10	Aqueous	TOC	SM 5310C-	250		mg/L	7
001	MW-10	Aqueous	1,2-Dichloroethane	8260D	5.7		ug/L	8
001	MW-10	Aqueous	cis-1,2-Dichloroethene	8260D	15		ug/L	8
001	MW-10	Aqueous	2-Hexanone	8260D	28	J	ug/L	8
001	MW-10	Aqueous	Trichloroethene	8260D	500		ug/L	9
001	MW-10	Aqueous	Xylenes (total)	8260D	4.3	J	ug/L	9
001	MW-10	Aqueous	Methane	RSK - 175	7500		ug/L	10
001	MW-10	Aqueous	Dissolved Iron	6010D	14		mg/L	11
001	MW-10	Aqueous	Iron	6010D	43		mg/L	12
002	ERD-OBSW-1S	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	24		mg CaCO3/L	13
002	ERD-OBSW-1S	Aqueous	Chloride	300.0	87		mg/L	13
002	ERD-OBSW-1S	Aqueous	Nitrate - N	353.2	0.71		mg/L	13
002	ERD-OBSW-1S	Aqueous	TOC	SM 5310C-	3.1		mg/L	13
002	ERD-OBSW-1S	Aqueous	Nitrite - N	353.2	0.060	Н	mg/L	13
002	ERD-OBSW-1S	Aqueous	Acetone	8260D	7.9	J	ug/L	14
002	ERD-OBSW-1S	Aqueous	1,2-Dichloroethane	8260D	1.2		ug/L	14
002	ERD-OBSW-1S	Aqueous	cis-1,2-Dichloroethene	8260D	110		ug/L	14
002	ERD-OBSW-1S	Aqueous	Styrene	8260D	0.48	J	ug/L	14
002	ERD-OBSW-1S	Aqueous	Trichloroethene	8260D	240		ug/L	15
002	ERD-OBSW-1S	Aqueous	Xylenes (total)	8260D	0.43	J	ug/L	15
002	ERD-OBSW-1S	Aqueous	Methane	RSK - 175	200	В	ug/L	16
002	ERD-OBSW-1S	Aqueous	Dissolved Iron	6010D	0.98		mg/L	17
002	ERD-OBSW-1S	Aqueous	Iron	6010D	1.2		mg/L	18
003	MW-10I	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	41		mg CaCO3/L	19
003	MW-10I	Aqueous	Chloride	300.0	8.4		mg/L	19
003	MW-10I	Aqueous	Nitrate - N	353.2	0.078	S	mg/L	19
003	MW-10I	Aqueous	TOC	SM 5310C-	3.7		mg/L	19
003	MW-10I	Aqueous	1,2-Dichloroethane	8260D	1.1		ug/L	20
003	MW-10I	Aqueous	1,1-Dichloroethene	8260D	1.3		ug/L	20
003	MW-10I	Aqueous	Trichloroethene	8260D	55		ug/L	21
003	MW-10I	Aqueous	cis-1,2-Dichloroethene	8260D	550	Н	ug/L	22
003	MW-10I	Aqueous	Methane	RSK - 175	1500	В	ug/L	24
003	MW-10I	Aqueous	Dissolved Iron	6010D	12		mg/L	25
003	MW-10I	Aqueous	Iron	6010D	12		mg/L	26
004	ERD-OBSW-1I	Aqueous	Alkalinity @ pH 4.5 su	SM 2320B-	280		mg CaCO3/L	27
004	ERD-OBSW-1I	Aqueous	Chloride	300.0	7.9		mg/L	27
004	ERD-OBSW-1I	Aqueous	Nitrate - N	353.2	0.59		mg/L	27
004	ERD-OBSW-1I	·	Nitrite - N	353.2	0.022		mg/L	27
004	ERD-OBSW-1I	•	TOC	SM 5310C-	150		mg/L	27
004	ERD-OBSW-1I	·	Benzene	8260D	0.42	J	ug/L	28

# **Detection Summary (Continued)**

Lot Number: XL19029

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	ERD-OBSW-1I	Aqueous	Chloroethane	8260D	0.42	J	ug/L	28
004	ERD-OBSW-1I	Aqueous	1,2-Dichloroethane	8260D	0.70		ug/L	28
004	ERD-OBSW-1I	Aqueous	1,1-Dichloroethene	8260D	0.93		ug/L	28
004	ERD-OBSW-1I	Aqueous	trans-1,2-Dichloroethene	8260D	1.0		ug/L	28
004	ERD-OBSW-1I	Aqueous	Methyl acetate	8260D	3.5		ug/L	28
004	ERD-OBSW-1I	Aqueous	Toluene	8260D	0.45	J	ug/L	28
004	ERD-OBSW-1I	Aqueous	Trichloroethene	8260D	83		ug/L	29
004	ERD-OBSW-1I	Aqueous	Vinyl chloride	8260D	4.6		ug/L	29
004	ERD-OBSW-1I	Aqueous	Xylenes (total)	8260D	0.55	J	ug/L	29
004	ERD-OBSW-1I	Aqueous	cis-1,2-Dichloroethene	8260D	340	Н	ug/L	30
004	ERD-OBSW-1I	Aqueous	Ethene	RSK - 175	9.6	J	ug/L	32
004	ERD-OBSW-1I	Aqueous	Methane	RSK - 175	8300		ug/L	32
004	ERD-OBSW-1I	Aqueous	Dissolved Iron	6010D	2.6		mg/L	33
004	ERD-OBSW-1I	Aqueous	Iron	6010D	14		mg/L	34

(57 detections)

# Inorganic non-metals

Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
(Alkalinity @) SM 2320B-2011	1	12/27/2022 1031 JJM		63686
(Chloride) 300.0	1	12/22/2022 2331 SJL		63989
(Nitrate - N) 353.2	1	12/20/2022 1544 CMM		63431
(Nitrite - N) 353.2	1	12/20/2022 1544 CMM		63430
(Sulfate) 300.0	1	12/22/2022 2331 SJL		63988
(TOC) SM 5310C-2011	20	12/22/2022 1644 CMM		63400
	(Alkalinity @) SM 2320B-2011 (Chloride) 300.0 (Nitrate - N) 353.2 (Nitrite - N) 353.2 (Sulfate) 300.0	(Alkalinity @) SM 2320B-2011 1 (Chloride) 300.0 1 (Nitrate - N) 353.2 1 (Nitrite - N) 353.2 1 (Sulfate) 300.0 1	(Chloride) 300.0 1 12/22/2022 2331 SJL (Nitrate - N) 353.2 1 12/20/2022 1544 CMM (Nitrite - N) 353.2 1 12/20/2022 1544 CMM (Sulfate) 300.0 1 12/22/2022 2331 SJL	(Alkalinity @) SM 2320B-2011 1 12/27/2022 1031 JJM (Chloride) 300.0 1 12/22/2022 2331 SJL (Nitrate - N) 353.2 1 12/20/2022 1544 CMM (Nitrite - N) 353.2 1 12/20/2022 1544 CMM (Sulfate) 300.0 1 12/22/2022 2331 SJL

CAS Number	Analytical Method Res	sult Q	LOQ	DL	Units	Run
SM 2	2320B-2011	110	20	20	mg CaCO3/L	1
	300.0	20	1.0	0.25	mg/L	1
	353.2 C	).12	0.020	0.010	mg/L	1
	353.2	ND	0.020	0.010	mg/L	1
	300.0	ND	1.0	0.25	mg/L	1
SM 5	310C-2011	250	20	20	mg/L	1
	Number SM 2	Number Method Res SM 2320B-2011 300.0 353.2 353.2	Number         Method         Result         Q           SM 2320B-2011         110         300.0         20           353.2         0.12         353.2         ND           300.0         ND         ND         ND	Number         Method         Result         Q         LOQ           SM 2320B-2011         110         20           300.0         20         1.0           353.2         0.12         0.020           353.2         ND         0.020           300.0         ND         1.0	Number         Method         Result         Q         LOQ         DL           SM 2320B-2011         110         20         20           300.0         20         1.0         0.25           353.2         0.12         0.020         0.010           353.2         ND         0.020         0.010           300.0         ND         1.0         0.25	Number         Method         Result         Q         LOQ         DL         Units           SM 2320B-2011         110         20         20         mg CaCO3/L           300.0         20         1.0         0.25         mg/L           353.2         0.12         0.020         0.010         mg/L           353.2         ND         0.020         0.010         mg/L           300.0         ND         1.0         0.25         mg/L

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ (\mbox{formerly Shealy Environmental Services, Inc.})$ 

Client: AECOM Laboratory ID: XL19029-001
Description: MW-10 Matrix: Aqueous

Date Sampled:12/19/2022 1130 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D1012/23/2022 0431BBW63526

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Rı
Acetone	67-64-1	8260D	ND	100	40	ug/L	-
Benzene	71-43-2	8260D	ND	5.0	4.0	ug/L	
Bromodichloromethane	75-27-4	8260D	ND	5.0	4.0	ug/L	-
Bromoform	75-25-2	8260D	ND	5.0	4.0	ug/L	
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	5.0	4.0	ug/L	-
2-Butanone (MEK)	78-93-3	8260D	ND	100	20	ug/L	
Carbon disulfide	75-15-0	8260D	ND	5.0	4.0	ug/L	
Carbon tetrachloride	56-23-5	8260D	ND	5.0	4.0	ug/L	
Chlorobenzene	108-90-7	8260D	ND	5.0	4.0	ug/L	
Chloroethane	75-00-3	8260D	ND	5.0	4.0	ug/L	
Chloroform	67-66-3	8260D	ND	5.0	4.0	ug/L	
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	5.0	4.0	ug/L	
Cyclohexane	110-82-7	8260D	ND	5.0	4.0	ug/L	
,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	5.0	4.0	ug/L	
Dibromochloromethane	124-48-1	8260D	ND	5.0	4.0	ug/L	
,2-Dibromoethane (EDB)	106-93-4	8260D	ND	5.0	4.0	ug/L	
,2-Dichlorobenzene	95-50-1	8260D	ND	5.0	4.0	ug/L	
,3-Dichlorobenzene	541-73-1	8260D	ND	5.0	4.0	ug/L	
,4-Dichlorobenzene	106-46-7	8260D	ND	5.0	4.0	ug/L	
vichlorodifluoromethane	75-71-8	8260D	ND	5.0	4.0	ug/L	
,1-Dichloroethane	75-34-3	8260D	ND	5.0	4.0	ug/L	
,2-Dichloroethane	107-06-2	8260D	5.7	5.0	4.0	ug/L	
,1-Dichloroethene	75-35-4	8260D	ND	5.0	4.0	ug/L	
is-1,2-Dichloroethene	156-59-2	8260D	15	5.0	4.0	ug/L	
ans-1,2-Dichloroethene	156-60-5	8260D	ND	5.0	4.0	ug/L	
2-Dichloropropane	78-87-5	8260D	ND	5.0	4.0	ug/L	
s-1,3-Dichloropropene	10061-01-5	8260D	ND	5.0	4.0	ug/L	
ans-1,3-Dichloropropene	10061-02-6	8260D	ND	5.0	4.0	ug/L	
thylbenzene	100-41-4	8260D	ND	5.0	4.0	ug/L	
-Hexanone	591-78-6	8260D	28 J	100	20	ug/L	
sopropylbenzene	98-82-8	8260D	ND	5.0	4.0	ug/L	
1ethyl acetate	79-20-9	8260D	ND	10	4.0	ug/L	
1ethyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	5.0	4.0	ug/L	
-Methyl-2-pentanone	108-10-1	8260D	ND	100	20	ug/L	
1ethylcyclohexane	108-87-2	8260D	ND	50	4.0	ug/L	
1ethylene chloride	75-09-2	8260D	ND	5.0	4.0	ug/L	
tyrene	100-42-5	8260D	ND	5.0	4.1	ug/L	
,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	5.0	4.0	ug/L	
etrachloroethene	127-18-4	8260D	ND	5.0	4.0	ug/L	
oluene	108-88-3	8260D	ND	5.0	4.0	ug/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	10	4.2	ug/L	
,2,4-Trichlorobenzene	120-82-1	8260D	ND	5.0	4.0	ug/L	
,1,1-Trichloroethane	71-55-6	8260D	ND	5.0	4.0	ug/L	
1,1,2-Trichloroethane	79-00-5	8260D	ND	5.0	4.0	ug/L	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

ND = Not detected at or above the DL

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

N = Recovery is out of criteria

W = Reported on wet weight basis

P = The RPD between two GC columns exceeds 40%

 $J = Estimated \ result < LOQ \ and \ge DL$ 

L = LCS/LCSD failure

S = MS/MSD failure

Client: AECOM Laboratory ID: XL19029-001

Description: MW-10 Matrix: Aqueous

Date Sampled:12/19/2022 1130 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 10 12/23/2022 0431 BBW 63526

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	500	5.0	4.0	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	5.0	4.0	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	5.0	4.0	ug/L	1
Xylenes (total)	1330-20-7	8260D	4.3 J	10	4.0	ug/L	1

Surrogate	Run 1 Acceptance Q % Recovery Limits	
Bromofluorobenzene	97 70-130	
1,2-Dichloroethane-d4	115 70-130	
Toluene-d8	102 70-130	

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

# **Dissolved Gases**

Client: AECOM

Description: MW-10

Laboratory ID: XL19029-001

Matrix: Aqueous

Date Sampled:12/19/2022 1130 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date Analyst
 Prep Date
 Batch

 1
 RSK - 175
 1
 12/20/2022 1405
 JM1
 63257

 2
 RSK - 175
 5
 12/29/2022 1411
 JWG
 63821

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	7500	50	13	ug/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-001

Description: MW-10 Matrix: Aqueous

Date Sampled:12/19/2022 1130 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 12/30/2022 0246 JMH 12/28/2022 0912 63404

CAS Analytical Parameter Number LOQ DL Units Run Method Result Q Dissolved Iron 7439-89-6 6010D 14 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-001
Description: MW-10 Matrix: Aqueous

Date Sampled:12/19/2022 1130 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 12/22/2022 1247 JAB2 12/21/2022 0911 63212

CAS Analytical Parameter Number LOQ DL Units Run Method Result Q 7439-89-6 Iron 6010D 43 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

Client: AECOM
Description: ERD-OBSW-1S
Date Sampled: 12/19/2022 1250
Project Name: Shakespeare - Signify
Date Received: 12/19/2022
Project Number: 60675505

Run Prep Method
Analytical Method Dilution Analysis Date Analyst Prep Date Batch

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Bate 1 (Alkalinity @) SM 2320B-2011 1 12/27/2022 1036 JJM 6368	6
1 (Chloride) 300.0 1 12/22/2022 2350 SJL 6398	9
1 (Nitrate - N) 353.2 2 12/20/2022 1546 CMM 6343	1
1 (Nitrite - N) 353.2 2 12/20/2022 1546 CMM 6343	0
2 (Nitrite - N) 353.2 1 12/24/2022 1040 CMM 6361	3
1 (Sulfate) 300.0 1 12/22/2022 2350 SJL 6398	8
1 (TOC) SM 5310C-2011 1 12/22/2022 1656 CMM 6340	0

Parameter	CAS Number	Analytical Method	Result	Q LO	Q DL	Units	Run
Alkalinity @ pH 4.5 su	Ç	SM 2320B-2011	24	2	0 20	mg CaCO3/L	1
Chloride		300.0	87	1.	0.25	mg/L	1
Nitrate - N		353.2	0.71	0.04	0.020	mg/L	1
Sulfate		300.0	ND	1.	0.25	mg/L	1
Nitrite - N		353.2	0.022 J	0.04	0.020	mg/L	1
TOC	S	SM 5310C-2011	3.1	1.	1.0	mg/L	1
Nitrite - N		353.2	0.060 H	0.02	0.010	mg/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Client: AECOM Laboratory ID: XL19029-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:12/19/2022 1250 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 12/23/2022 0252 BBW 63526 2 5030B 5 63947 8260D 12/31/2022 0634 BBW

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	7.9 J	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	1.2	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	110	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	0.48 J	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit  $J = Estimated result < LOQ and <math>\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

Client: AECOM Laboratory ID: XL19029-002 Description: ERD-OBSW-1S Matrix: Aqueous Date Sampled:12/19/2022 1250 Project Name: Shakespeare - Signify Date Received: 12/19/2022 Project Number: 60675505 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 12/23/2022 0252 BBW 63526 1

2	5030B	8260D	5 12/3	1/2022 0634 BBV	V	639	47		
Parame	ter		CAS Number	Analytical Method	Result	Q LOC	Ω DL	Units	Run
1,1,2-Tri	chloroethane		79-00-5	8260D	ND	0.50	0.40	ug/L	1
Trichlor	oethene		79-01-6	8260D	240	2.5	2.0	ug/L	2
Trichlord	ofluoromethane		75-69-4	8260D	ND	0.50	0.40	ug/L	1
Vinyl chl	oride		75-01-4	8260D	ND	0.50	0.40	ug/L	1

8260D

0.43 J

1.0

0.40

ug/L

Surrogate	Q	Run 1 A % Recovery	Acceptance Limits	Q	Run 2 A % Recovery	cceptance Limits
Bromofluorobenzene		92	70-130		107	70-130
1,2-Dichloroethane-d4		109	70-130		112	70-130
Toluene-d8		107	70-130		115	70-130

1330-20-7

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

Xylenes (total)

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### **Dissolved Gases**

Client: AECOM Laboratory ID: XL19029-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:12/19/2022 1250 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 12/20/2022 1421 JM1 63257

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	200 B	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:12/19/2022 1250 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 12/30/2022 0249
 JMH
 12/28/2022 0912
 63404

CAS Analytical Parameter Number LOQ DL Units Run Method Result Q Dissolved Iron 7439-89-6 6010D 0.98 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-002

Description: ERD-OBSW-1S Matrix: Aqueous

Date Sampled:12/19/2022 1250 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 12/22/2022 1306 JAB2 12/21/2022 0911 63212

CAS Analytical Parameter Number Result LOQ DL Units Run Method Q 7439-89-6 Iron 6010D 1.2 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

Client: AECOM
Description: MW-10I
Date Sampled: 12/19/2022 1410
Project Name: Shakespeare - Signify
Date Received: 12/19/2022
Project Number: 60675505

Run	Prep Method	Analytical Method (Alkalinity @) SM 2320B-2011	Dilution	Analysis Date Analyst 12/27/2022 1040 JJM	Prep Date	Batch 63686
1		(Chloride) 300.0	1	12/23/2022 1040 JJIVI 12/23/2022 0047 SJL		63989
1		(Nitrate - N) 353.2	1	12/20/2022 1548 CMM		63431
1		(Nitrite - N) 353.2	1	12/20/2022 1548 CMM		63430
1		(Sulfate) 300.0	1	12/23/2022 0047 SJL		63988
1		(TOC) SM 5310C-2011	1	12/22/2022 1708 CMM		63400
		·				

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	41	20	20	mg CaCO3/L	1
Chloride		300.0	8.4	1.0	0.25	mg/L	1
Nitrate - N		353.2	0.078 S	0.020	0.010	mg/L	1
Nitrite - N		353.2	ND	0.020	0.010	mg/L	1
Sulfate		300.0	ND	1.0	0.25	mg/L	1
TOC		SM 5310C-2011	3.7	1.0	1.0	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Client: AECOM

Description: MW-10I

Laboratory ID: XL19029-003

Matrix: Aqueous

Date Sampled:12/19/2022 1410 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 12/23/2022 0317 BBW 63526 1 2 5030B 64027 8260D 10 01/03/2023 1856 CDA

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	1.1	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	1.3	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	680 E	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = \mbox{Quantitation of compound exceeded the calibration range} \quad DL = \mbox{Detection Limit} \\ P = \mbox{The RPD between two GC columns exceeds 40\%} \qquad \qquad J = \mbox{Estimated result} \\ \label{eq:detection}$ 

J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM
Description: MW-10I
Date Sampled: 12/19/2022 1410
Date Received: 12/19/2022
Project Number: 60675505

Laboratory ID: XL19029-003
Matrix: Aqueous
Project Name: Shakespeare - Signify
Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 12/23/2022 0317 BBW 63526 1 2 5030B 64027 8260D 10 01/03/2023 1856 CDA

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
1,1,2-Trichloroethane	79-00-5	8260D	ND	0.50	0.40	ug/L	1
Trichloroethene	79-01-6	8260D	55	0.50	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	0.50	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	0.50	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	1.0	0.40	ug/L	1
	Run 1 Accept	ance I	Run 2 Accepta	nce			

Surrogate	Q	% Recovery	Limits	Q	% Recovery	Limits	
Bromofluorobenzene		92	70-130	Н	109	70-130	
1,2-Dichloroethane-d4		108	70-130	Н	106	70-130	
Toluene-d8		108	70-130	Н	111	70-130	

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM

Description: MW-10I

Laboratory ID: XL19029-003

Matrix: Aqueous

Date Sampled:12/19/2022 1410 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 1 12/23/2022 0317 BBW 63526 1 2 5030B 64027 8260D 10 01/03/2023 1856 CDA

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND HL	100	40	ug/L	2
Benzene	71-43-2	8260D	ND H	5.0	4.0	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND H	5.0	4.0	ug/L	2
Bromoform	75-25-2	8260D	ND H	5.0	4.0	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND H	5.0	4.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND H	100	20	ug/L	2
Carbon disulfide	75-15-0	8260D	ND H	5.0	4.0	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND H	5.0	4.0	ug/L	2
Chlorobenzene	108-90-7	8260D	ND H	5.0	4.0	ug/L	2
Chloroethane	75-00-3	8260D	ND H	5.0	4.0	ug/L	2
Chloroform	67-66-3	8260D	ND H	5.0	4.0	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND H	5.0	4.0	ug/L	2
Cyclohexane	110-82-7	8260D	ND H	5.0	4.0	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND H	5.0	4.0	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND H	5.0	4.0	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND H	5.0	4.0	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND H	5.0	4.0	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND H	5.0	4.0	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND H	5.0	4.0	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND H	5.0	4.0	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND H	5.0	4.0	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	ND H	5.0	4.0	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND H	5.0	4.0	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	550 H	5.0	4.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND H	5.0	4.0	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND H	5.0	4.0	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND H	5.0	4.0	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND H	5.0	4.0	ug/L	2
Ethylbenzene	100-41-4	8260D	ND H	5.0	4.0	ug/L	2
2-Hexanone	591-78-6	8260D	ND H	100	20	ug/L	2
Isopropylbenzene	98-82-8	8260D	ND H	5.0	4.0	ug/L	2
Methyl acetate	79-20-9	8260D	ND H	10	4.0	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND H	5.0	4.0	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND H	100	20	ug/L	2
Methylcyclohexane	108-87-2	8260D	ND H	50	4.0	ug/L	2
Methylene chloride	75-09-2	8260D	ND H	5.0	4.0	ug/L	2
Styrene	100-42-5	8260D	ND H	5.0	4.1	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND H	5.0	4.0	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND H	5.0	4.0	ug/L	2
Toluene	108-88-3	8260D	ND H	5.0	4.0	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND H	10	4.2	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND H	5.0	4.0	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND H	5.0	4.0	ug/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Client: AECOM
Description: MW-10I
Matrix: Aqueous

Date Sampled: 12/19/2022 1410
Project Name: Shakespeare - Signify

Date Received: 12/19/2022
Project Number: 60675505

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1	5030B	8260D	1	12/23/2022 0317 BBW		63526
2	5030B	8260D	10	01/03/2023 1856 CDA		64027

Parameter		C.A Numb		nalytica Method		Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloroethane		79-00	1-5	8260	)D	ND F	1	5.0	4.0	ug/L	2
Trichloroethene		79-01	-6	8260	)D	46 H	1	5.0	4.0	ug/L	2
Trichlorofluoromethane		75-69	-4	8260	)D	ND F	1	5.0	4.0	ug/L	2
Vinyl chloride		75-01	-4	8260	)D	ND F	1	5.0	4.0	ug/L	2
Xylenes (total)		1330-20	)-7	8260	)D	ND F	1	10	4.0	ug/L	2
Surrogate	Q	Run 1 / % Recovery	Acceptanc Limits		Rur % Rec		ceptance Limits				
Bromofluorobenzene		92	70-130	Н	10	)9	70-130				
1,2-Dichloroethane-d4		108	70-130	Н	10	)6	70-130				
Toluene-d8		108	70-130	Н	11	11	70-130				

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

DL = Detection Limit  $J = Estimated result < LOQ and \ge DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

#### **Dissolved Gases**

Client: AECOM

Description: MW-10I

Laboratory ID: XL19029-003

Matrix: Aqueous

Date Sampled:12/19/2022 1410 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 12/20/2022 1437 JM1 63257

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	1500 B	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

 $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-003

Description: MW-10I Matrix: Aqueous

Date Sampled:12/19/2022 1410 Project Name: Shakespeare - Signify

 Date Received: 12/19/2022
 Project Number: 60675505

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 12/30/2022 0253
 JMH
 12/28/2022 0912
 63404

CAS Analytical Parameter Number Result LOQ DL Units Run Method Q Dissolved Iron 7439-89-6 6010D 12 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM

Description: MW-10I

Laboratory ID: XL19029-003

Matrix: Aqueous

Date Sampled:12/19/2022 1410 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 12/22/2022 1310 JAB2 12/21/2022 0911 63212

CAS Analytical Parameter Number Result LOQ DL Units Run Method Q 7439-89-6 Iron 6010D 12 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

# Inorganic non-metals

Client: AECOM
Description: ERD-OBSW-1I
Date Sampled: 12/19/2022 1515
Project Name: Shakespeare - Signify
Date Received: 12/19/2022
Project Number: 60675505

Run Prep Method (Alkalinity @) SM 2320B-2011
Project Number: 60675505

Laboratory ID: XL19029-004
Matrix: Aqueous

Project Number: 60675505

Batch 63686

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1		(Alkalinity @) SM 2320B-2011	1	12/27/2022 1048 JJM		63686
1		(Chloride) 300.0	1	12/23/2022 0144 SJL		63989
1		(Nitrate - N) 353.2	1	12/20/2022 1558 CMM		63431
1		(Nitrite - N) 353.2	1	12/20/2022 1558 CMM		63430
1		(Sulfate) 300.0	1	12/23/2022 0144 SJL		63988
1		(TOC) SM 5310C-2011	2	12/22/2022 1744 CMM		63400

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su		SM 2320B-2011	280		20	20	mg CaCO3/L	1
Chloride		300.0	7.9		1.0	0.25	mg/L	1
Nitrate - N		353.2	0.59		0.020	0.010	mg/L	1
Nitrite - N		353.2	0.022		0.020	0.010	mg/L	1
Sulfate		300.0	ND		1.0	0.25	mg/L	1
TOC		SM 5310C-2011	150		2.0	2.0	mg/L	1

LOQ = Limit of QuantitationB = Detected in the method blankE = Quantitation of compound exceeded the calibration rangeDL = Detection LimitQ = Surrogate failureND = Not detected at or above the DLN = Recovery is out of criteriaP = The RPD between two GC columns exceeds 40%J = Estimated result < LOQ and  $\geq$  DLL = LCS/LCSD failureH = Out of holding timeW = Reported on wet weight basisS = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Client: AECOM Laboratory ID: XL19029-004

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:12/19/2022 1515 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 12/23/2022 0406 BBW 63526 2 5030B 5 64061 8260D 01/04/2023 0453 JMM2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	10	4.0	ug/L	1
Benzene	71-43-2	8260D	0.42 J	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	0.42 J	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	0.70	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	0.93	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	440 E	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	1.0	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	3.5	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	0.45 J	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1

$$\label{eq:ND} \begin{split} ND &= \text{Not detected at or above the DL} & \qquad N = \text{Recovery is out of criteria} \\ H &= \text{Out of holding time} & \qquad W = \text{Reported on wet weight basis} \end{split}$$

LOQ = Limit of Quantitation

 $E = \mbox{Quantitation of compound exceeded the calibration range} \quad DL = \mbox{Detection Limit} \\ P = \mbox{The RPD between two GC columns exceeds 40\%} \qquad \qquad J = \mbox{Estimated result} \\ \label{eq:detection}$ 

J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

Client: AECOM
Description: ERD-OBSW-1I
Date Sampled: 12/19/2022 1515
Project Name: Shakespeare - Signify
Date Received: 12/19/2022
Project Number: 60675505

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1	5030B	8260D	1	12/23/2022 0406 BBW		63526
2	5030B	8260D	5	01/04/2023 0453 JMM2		64061

100

Parameter		CA Numbe		nalytical Method	Result	Q	LOQ	DL	Units	Run
1,1,2-Trichloroethane		79-00-	5	8260D	) ND		0.50	0.40	ug/L	1
Trichloroethene		79-01-	6	8260D	83		0.50	0.40	ug/L	1
Trichlorofluoromethane		75-69-	4	8260D	ND		0.50	0.40	ug/L	1
Vinyl chloride		75-01-	4	8260D	4.6		0.50	0.40	ug/L	1
Xylenes (total)		1330-20-	7	8260D	0.55	J	1.0	0.40	ug/L	1
Surrogate	Q	Run 1 A % Recovery	cceptance Limits		Run 2 A % Recovery	cceptanc Limits	е			
Bromofluorobenzene		93	70-130	Н	104	70-130				
1,2-Dichloroethane-d4		110	70-130	Н	106	70-130				

Н

111

70-130

70-130

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

Toluene-d8

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical-Services} \mbox{ LLC } \mbox{ (formerly Shealy Environmental Services, Inc.)}$ 

Client: AECOM Laboratory ID: XL19029-004

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:12/19/2022 1515 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 12/23/2022 0406 BBW 63526 2 5030B 5 64061 8260D 01/04/2023 0453 JMM2

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND H	50	20	ug/L	2
Benzene	71-43-2	8260D	ND H	2.5	2.0	ug/L	2
Bromodichloromethane	75-27-4	8260D	ND H	2.5	2.0	ug/L	2
Bromoform	75-25-2	8260D	ND H	2.5	2.0	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260D	ND H	2.5	2.0	ug/L	2
2-Butanone (MEK)	78-93-3	8260D	ND H	50	10	ug/L	2
Carbon disulfide	75-15-0	8260D	ND H	2.5	2.0	ug/L	2
Carbon tetrachloride	56-23-5	8260D	ND H	2.5	2.0	ug/L	2
Chlorobenzene	108-90-7	8260D	ND H	2.5	2.0	ug/L	2
Chloroethane	75-00-3	8260D	ND H	2.5	2.0	ug/L	2
Chloroform	67-66-3	8260D	ND H	2.5	2.0	ug/L	2
Chloromethane (Methyl chloride)	74-87-3	8260D	ND H	2.5	2.0	ug/L	2
Cyclohexane	110-82-7	8260D	ND H	2.5	2.0	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND H	2.5	2.0	ug/L	2
Dibromochloromethane	124-48-1	8260D	ND H	2.5	2.0	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND H	2.5	2.0	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260D	ND H	2.5	2.0	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260D	ND H	2.5	2.0	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260D	ND H	2.5	2.0	ug/L	2
Dichlorodifluoromethane	75-71-8	8260D	ND H	2.5	2.0	ug/L	2
1,1-Dichloroethane	75-34-3	8260D	ND H	2.5	2.0	ug/L	2
1,2-Dichloroethane	107-06-2	8260D	ND H	2.5	2.0	ug/L	2
1,1-Dichloroethene	75-35-4	8260D	ND H	2.5	2.0	ug/L	2
cis-1,2-Dichloroethene	156-59-2	8260D	340 H	2.5	2.0	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260D	ND H	2.5	2.0	ug/L	2
1,2-Dichloropropane	78-87-5	8260D	ND H	2.5	2.0	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260D	ND H	2.5	2.0	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260D	ND H	2.5	2.0	ug/L	2
Ethylbenzene	100-41-4	8260D	ND H	2.5	2.0	ug/L	2
2-Hexanone	591-78-6	8260D	ND H	50	10	ug/L	2
Isopropylbenzene	98-82-8	8260D	ND H	2.5	2.0	ug/L	2
Methyl acetate	79-20-9	8260D	ND H	5.0	2.0	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND H	2.5	2.0	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260D	ND H	50	10	ug/L	2
Methylcyclohexane	108-87-2	8260D	ND H	25	2.0	ug/L	2
Methylene chloride	75-09-2	8260D	ND H	2.5	2.0	ug/L	2
Styrene	100-42-5	8260D	ND H	2.5	2.1	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND H	2.5	2.0	ug/L	2
Tetrachloroethene	127-18-4	8260D	ND H	2.5	2.0	ug/L	2
Toluene	108-88-3	8260D	ND H	2.5	2.0	ug/L	2
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND H	5.0	2.1	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260D	ND H	2.5	2.0	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260D	ND H	2.5	2.0	ug/L	2

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM
Description: ERD-OBSW-1I
Date Sampled: 12/19/2022 1515
Project Name: Shakespeare - Signify
Date Received: 12/19/2022
Project Number: 60675505

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1	5030B	8260D	1	12/23/2022 0406 BBW		63526
2	5030B	8260D	5	01/04/2023 0453 JMM2		64061

Parameter		C.A Numb		nalytica Method		esult Q	LOQ	DL	Units	Run
1,1,2-Trichloroethane		79-00	-5	8260	)D	ND H	2.5	2.0	ug/L	2
Trichloroethene		79-01	-6	8260	)D	64 H	2.5	2.0	ug/L	2
Trichlorofluoromethane		75-69	-4	8260	)D	ND H	2.5	2.0	ug/L	2
Vinyl chloride		75-01	-4	8260	)D	3.6 H	2.5	2.0	ug/L	2
Xylenes (total)		1330-20	-7	8260	)D	ND H	5.0	2.0	ug/L	2
Surrogate	Q	Run 1 / % Recovery	Acceptance Limits		Run 2 % Recov					
Bromofluorobenzene		93	70-130	Н	104	70-1	30			<u> </u>
1,2-Dichloroethane-d4		110	70-130	Н	106	70-1	30			
Toluene-d8		100	70-130	Н	111	70-1	30			

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%  $\begin{aligned} &DL = Detection \ Limit \\ &J = Estimated \ result < LOQ \ and \ \geq DL \end{aligned}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### **Dissolved Gases**

Client: AECOM Laboratory ID: XL19029-004

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:12/19/2022 1515 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date Analyst
 Prep Date
 Batch

 1
 RSK - 175
 1
 12/20/2022 1453
 JM1
 63257

 2
 RSK - 175
 10
 12/29/2022 1427
 JWG
 63821

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	9.6 J	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	8300	100	25	ug/L	2

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

 $\label{thm:pace-analytical} \mbox{Pace Analytical Services, LLC} \ \ (\mbox{formerly Shealy Environmental Services, Inc.})$ 

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-004

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:12/19/2022 1515 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 12/30/2022 0312 JMH 12/28/2022 0912 63404

CAS Analytical Parameter Number Result LOQ DL Units Run Method Q Dissolved Iron 7439-89-6 6010D 2.6 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds 40\%}$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### **ICP-AES Metals**

Client: AECOM Laboratory ID: XL19029-004

Description: ERD-OBSW-1I Matrix: Aqueous

Date Sampled:12/19/2022 1515 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 3005A 6010D 1 12/22/2022 1314 JAB2 12/21/2022 0911 63212

CAS Analytical Parameter Number LOQ DL Units Run Method Result Q 7439-89-6 Iron 6010D 14 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XL19029-005
Description: TB-01 Matrix: Aqueous

Date Sampled:12/19/2022 Project Name: Shakespeare - Signify

Date Received: 12/19/2022 Project Number: 60675505

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 1 12/23/2022 0024 BBW 63526

Parameter	CAS Number	Analytical Method	Result C	2 LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND	0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND	0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND	0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND	0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND	0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND	10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND	0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND	0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	0.50	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XL19029-005 Description: TB-01 Matrix: Aqueous Date Sampled:12/19/2022 Project Name: Shakespeare - Signify Date Received: 12/19/2022 Project Number: 60675505 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 12/23/2022 0024 BBW 63526 CAS Analytical Parameter Number LOQ DL Units Result Q Run Method Trichloroethene 79-01-6 8260D ND 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D ug/L 75-69-4 ND 0.50 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 Xylenes (total) 1330-20-7 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance Surrogate % Recovery Q Limits Bromofluorobenzene 91 70-130 1,2-Dichloroethane-d4 113 70-130 Toluene-d8 105 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

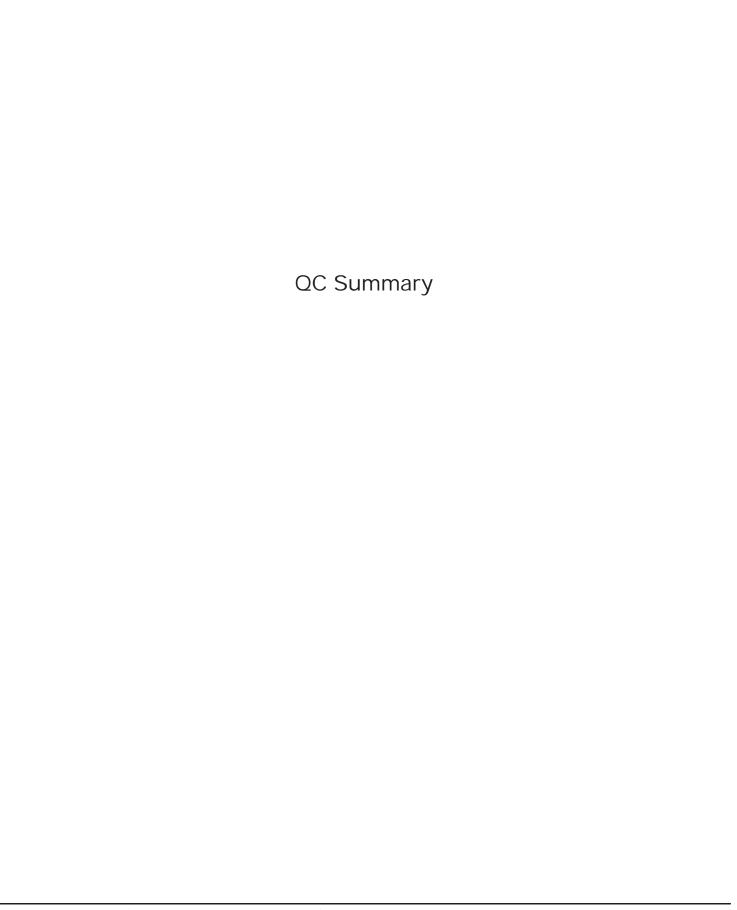
H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure



Sample ID: XQ63400-001 Batch: 63400

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TOC	ND		1	1.0	1.0	mg/L	12/22/2022 1557

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

Sample ID: XQ63400-002 Batch: 63400

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
TOC	20	19		1	94	90-110	12/22/2022 1608

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-003MS

Batch: 63400

Analytical Method: SM 5310C-2011

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TOC	3.7	50	50		1	92	70-130	12/22/2022 1719

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-003MD

Batch: 63400

Analytical Method: SM 5310C-2011

Matrix: Aqueous

_F	Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec		%Rec Limit	% RPD Limit	Analysis Date
T	oc	3.7	50	47		1	86	5.9	70-130	20	12/22/2022 1731

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63430-001 Batch: 63430

Analytical Method: 353.2

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.010	mg/L	12/20/2022 1541

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63430-002

Batch: 63430 Analytical Method: 353.2 Matrix: Aqueous

	Spike						
Doromotor	Amount	Result	0	5.1	9/ Doo	%Rec	Analysis Data
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Nitrite - N	0.40	0.37		1	92	90-110	12/20/2022 1543

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-003MS

Batch: 63430 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	ND	0.40	0.37		1	93	90-110	12/20/2022 1549

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-003MD

Batch: 63430 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrite - N	ND	0.40	0.37		1	93	0.27	90-110	20	12/20/2022 1551

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63431-001 Batch: 63431

Analytical Method: 353.2

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.010	mg/L	12/20/2022 1541

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63431-002

Batch: 63431 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	0	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.40	0.42		1	105	90-110	12/20/2022 1543

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-003MS

Batch: 63431 Analytical Method: 353.2 Matrix: Aqueous

_ Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrate - N	0.078	0.40	0.042	N	1	-9.0	90-110	12/20/2022 1549

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-003MD

Batch: 63431 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.078	0.40	0.033	N,+	1	-11	23	90-110	20	12/20/2022 1551

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63613-001 Batch: 63613

Analytical Method: 353.2

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.010	mg/L	12/24/2022 1030

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63613-002

Batch: 63613 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	0.40	0.36		1	90	90-110	12/24/2022 1031

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XQ63686-002 Batch: 63686

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike					
	Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	98	1	98	90-110	12/27/2022 1025

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: YQ63988-001

Batch: 63988 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND	•	1	1.0	0.25	mg/L	12/22/2022 1751

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: YQ63988-002

Batch: 63988

Matrix: Aqueous

Analytical	Method:	300.0

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Sulfate	20	20		1	101	90-110	12/22/2022 1829

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-002MS

Batch: 63988 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Sulfate	ND	10	9.9		1	99	90-110	12/23/2022 0009

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-002MD

Batch: 63988 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Sulfate	ND	10	9.9		1	99	0.17	90-110	20	12/23/2022 0028	_

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: YQ63989-001

Batch: 63989 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND	·	1	1.0	0.25	mg/L	12/22/2022 1751

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: YQ63989-002

Batch: 63989

Matrix: Aqueous

|--|

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Chloride	20	21		1	104	90-110	12/22/2022 1829

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-002MS

Batch: 63989 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date	
Chloride	87	10	96		1	97	90-110	12/23/2022 0009	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Sample ID: XL19029-002MD

Batch: 63989 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil % Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Chloride	87	10	96		1 94	0.34	90-110	20	12/23/2022 0028

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ63526-001 Batch: 63526 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	12/22/2022 2244
Benzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Bromodichloromethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Bromoform	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	12/22/2022 2244
2-Butanone (MEK)	ND		1	10	2.0	ug/L	12/22/2022 2244
Carbon disulfide	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Chlorobenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Chloroethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Chloroform	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Cyclohexane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Dibromochloromethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Ethylbenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
2-Hexanone	ND		1	10	2.0	ug/L	12/22/2022 2244
Isopropylbenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Methyl acetate	ND		1	1.0	0.40	ug/L	12/22/2022 2244
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	12/22/2022 2244
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	12/22/2022 2244
Methylcyclohexane	ND		1	5.0	0.40	ug/L	12/22/2022 2244
Methylene chloride	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Styrene	ND		1	0.50	0.41	ug/L	12/22/2022 2244
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Tetrachloroethene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
Toluene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	12/22/2022 2244
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	12/22/2022 2244
1,1,2-THORIOTOCHIANE	ND		į	0.50	0.40	ug/L	1212212022 2244

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ63526-001 Batch: 63526

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	12/22/2022 2244
Trichlorofluoromethane	ND	1	0.50	0.40	ug/L	12/22/2022 2244
Vinyl chloride	ND	1	0.50	0.40	ug/L	12/22/2022 2244
Xylenes (total)	ND	1	1.0	0.40	ug/L	12/22/2022 2244
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	89	70-130				
1,2-Dichloroethane-d4	112	70-130				
Toluene-d8	106	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ63526-002 Batch: 63526 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
Daramatar	Amount	Result	0	D.11	9/ Doo	%Rec	Analysis Data
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	99		1	99	60-140	12/22/2022 2109
Benzene	50	51		1	102	70-130	12/22/2022 2109
Bromodichloromethane	50	51		1	103	70-130	12/22/2022 2109
Bromoform	50	54		1	107	70-130	12/22/2022 2109
Bromomethane (Methyl bromide)	50	60		1	119	70-130	12/22/2022 2109
2-Butanone (MEK)	100	97		1	97	70-130	12/22/2022 2109
Carbon disulfide	50	50		1	99	70-130	12/22/2022 2109
Carbon tetrachloride	50	50		1	101	70-130	12/22/2022 2109
Chlorobenzene	50	51		1	103	70-130	12/22/2022 2109
Chloroethane	50	50		1	101	70-130	12/22/2022 2109
Chloroform	50	49		1	98	70-130	12/22/2022 2109
Chloromethane (Methyl chloride)	50	54		1	109	60-140	12/22/2022 2109
Cyclohexane	50	54		1	107	70-130	12/22/2022 2109
1,2-Dibromo-3-chloropropane (DBCP)	50	50		1	101	70-130	12/22/2022 2109
Dibromochloromethane	50	54		1	109	70-130	12/22/2022 2109
1,2-Dibromoethane (EDB)	50	52		1	104	70-130	12/22/2022 2109
1,2-Dichlorobenzene	50	52		1	104	70-130	12/22/2022 2109
1,3-Dichlorobenzene	50	52		1	104	70-130	12/22/2022 2109
1,4-Dichlorobenzene	50	49		1	99	70-130	12/22/2022 2109
Dichlorodifluoromethane	50	62		1	125	60-140	12/22/2022 2109
1,1-Dichloroethane	50	49		1	97	70-130	12/22/2022 2109
1,2-Dichloroethane	50	50		1	99	70-130	12/22/2022 2109
1,1-Dichloroethene	50	50		1	99	70-130	12/22/2022 2109
cis-1,2-Dichloroethene	50	50		1	99	70-130	12/22/2022 2109
trans-1,2-Dichloroethene	50	50		1	101	70-130	12/22/2022 2109
1,2-Dichloropropane	50	50		1	101	70-130	12/22/2022 2109
cis-1,3-Dichloropropene	50	53		1	106	70-130	12/22/2022 2109
trans-1,3-Dichloropropene	50	54		1	108	70-130	12/22/2022 2109
Ethylbenzene	50	54		1	107	70-130	12/22/2022 2109
2-Hexanone	100	100		1	100	70-130	12/22/2022 2109
Isopropylbenzene	50	56		1	111	70-130	12/22/2022 2109
Methyl acetate	50	54		1	109	70-130	12/22/2022 2109
Methyl tertiary butyl ether (MTBE)	50	51		1	109	70-130	12/22/2022 2109
4-Methyl-2-pentanone		97			97	70-130	12/22/2022 2109
	100			1			
Methylcyclohexane	50	54		1	108	70-130	12/22/2022 2109
Methylene chloride	50	51		1	102	70-130	12/22/2022 2109
Styrene	50	57		1	114	70-130	12/22/2022 2109
1,1,2,2-Tetrachloroethane	50	54		1	108	70-130	12/22/2022 2109
Tetrachloroethene	50	51		1	103	70-130	12/22/2022 2109
Toluene	50	55		1	110	70-130	12/22/2022 2109
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	54		1	108	70-130	12/22/2022 2109
1,2,4-Trichlorobenzene	50	53		1	106	70-130	12/22/2022 2109
1,1,1-Trichloroethane	50	50		1	100	70-130	12/22/2022 2109
1,1,2-Trichloroethane	50	52		1	103	70-130	12/22/2022 2109

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ63526-002 Batch: 63526 Matrix: Aqueous Prep Method: 5030B

Analytical Method: 8260D

Parameter	Spike Amount (ug/L)	Result (ug/L) C	Ω Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	48	1	95	70-130	12/22/2022 2109
Trichlorofluoromethane	50	59	1	118	70-130	12/22/2022 2109
Vinyl chloride	50	55	1	111	70-130	12/22/2022 2109
Xylenes (total)	100	110	1	110	70-130	12/22/2022 2109
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	97	70-130				
1,2-Dichloroethane-d4	94	70-130				
Toluene-d8	103	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: XQ63947-001 Batch: 63947 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	12/30/2022 2203
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	110	70-130				
1,2-Dichloroethane-d4	100	70-130				
Toluene-d8	108	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: XQ63947-002 Batch: 63947 Matrix: Aqueous Prep Method: 5030B

Batch: 63947 Analytical Method: 8260D

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	49	1	98	70-130	12/30/2022 2035
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	106	70-130				
1,2-Dichloroethane-d4	103	70-130				
Toluene-d8	106	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MS

Sample ID: XL19029-002MS

Batch: 63947 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	240	250	500		5	105	70-130	12/31/2022 0657
Surrogate	Q % Red		eptance <sub>-</sub> imit					
Bromofluorobenzene	112	7	0-130					
1,2-Dichloroethane-d4	112	7	0-130					
Toluene-d8	118	7	0-130					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MSD

Sample ID: XL19029-002MD Batch: 63947

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Trichloroethene	240	250	500		5	102	1.8	70-130	20	12/31/2022 0720
Surrogate	Q % Rec	Ac	ceptance Limit							
Bromofluorobenzene	115		70-130							
1,2-Dichloroethane-d4	111		70-130							
Toluene-d8	118		70-130							

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: YQ64027-001 Batch: 64027 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	01/03/2023 1401
Benzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Bromodichloromethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Bromoform	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	01/03/2023 1401
2-Butanone (MEK)	ND		1	10	2.0	ug/L	01/03/2023 1401
Carbon disulfide	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Chlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Chloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Chloroform	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Cyclohexane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Dibromochloromethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1.1-Dichloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Ethylbenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
2-Hexanone	ND		1	10	2.0	ug/L	01/03/2023 1401
Isopropylbenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Methyl acetate	ND		1	1.0	0.40	ug/L	01/03/2023 1401
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	01/03/2023 1401
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	01/03/2023 1401
Methylcyclohexane	ND		1	5.0	0.40	ug/L	01/03/2023 1401
Methylene chloride	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Styrene	ND		1	0.50	0.41	ug/L	01/03/2023 1401
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 1401
Tetrachloroethene	ND		1	0.50	0.40	ug/L ug/L	01/03/2023 1401
Toluene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	01/03/2023 1401
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 1401
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L ug/L	01/03/2023 1401
1,1,2-Trichloroethane	ND		1	0.50	0.40		01/03/2023 1401
1,1,2-THURIOTOETHATIE	אט		ı	0.50	0.40	ug/L	01/03/2023 1401

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: YQ64027-001 Batch: 64027

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	01/03/2023 1401
Trichlorofluoromethane	ND	1	0.50	0.40	ug/L	01/03/2023 1401
Vinyl chloride	ND	1	0.50	0.40	ug/L	01/03/2023 1401
Xylenes (total)	ND	1	1.0	0.40	ug/L	01/03/2023 1401
Surrogate	Q % Rec	Acceptano Limit	е			
Bromofluorobenzene	108	70-130				
1,2-Dichloroethane-d4	105	70-130				
Toluene-d8	111	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: YQ64027-002 Batch: 64027 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
Parameter	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Acetone	100	110		1	110	60-140	01/03/2023 1032
Benzene	50	43		1	86	70-130	01/03/2023 1032
Bromodichloromethane	50	44		1	88	70-130	01/03/2023 1032
Bromoform	50	45		1	90	70-130	01/03/2023 1032
Bromomethane (Methyl bromide)	50	47		1	93	70-130	01/03/2023 1032
2-Butanone (MEK)	100	92		1	92	70-130	01/03/2023 1032
Carbon disulfide	50	42		1	84	70-130	01/03/2023 1032
Carbon tetrachloride	50	44		1	87	70-130	01/03/2023 1032
Chlorobenzene	50	43		1	87	70-130	01/03/2023 1032
Chloroethane	50	42		1	84	70-130	01/03/2023 1032
Chloroform	50	43		1	86	70-130	01/03/2023 1032
Chloromethane (Methyl chloride)	50	40		1	81	60-140	01/03/2023 1032
Cyclohexane	50	42		1	85	70-130	01/03/2023 1032
1,2-Dibromo-3-chloropropane (DBCP)	50	43		1	86	70-130	01/03/2023 1032
Dibromochloromethane	50	45		1	90	70-130	01/03/2023 1032
1,2-Dibromoethane (EDB)	50	44		1	88	70-130	01/03/2023 1032
1,2-Dichlorobenzene	50	43		1	87	70-130	01/03/2023 1032
1,3-Dichlorobenzene	50	44		1	88	70-130	01/03/2023 1032
1,4-Dichlorobenzene	50	43		1	86	70-130	01/03/2023 1032
Dichlorodifluoromethane	50	35		1	71	60-140	01/03/2023 1032
1,1-Dichloroethane	50	43		1	87	70-130	01/03/2023 1032
1,2-Dichloroethane	50	45		1	89	70-130	01/03/2023 1032
1,1-Dichloroethene	50	43		1	87	70-130	01/03/2023 1032
cis-1,2-Dichloroethene	50	45		1	90	70-130	01/03/2023 1032
trans-1,2-Dichloroethene	50	45		1	90	70-130	01/03/2023 1032
1,2-Dichloropropane	50	44		1	88	70-130	01/03/2023 1032
cis-1,3-Dichloropropene	50	45		1	91	70-130	01/03/2023 1032
trans-1,3-Dichloropropene	50	44		1	89	70-130	01/03/2023 1032
Ethylbenzene	50	44		1	88	70-130	01/03/2023 1032
2-Hexanone	100	78		1	78	70-130	01/03/2023 1032
Isopropylbenzene	50	44		1	88	70-130	01/03/2023 1032
Methyl acetate	50	48		1	95	70-130	01/03/2023 1032
Methyl tertiary butyl ether (MTBE)	50	45		1	89	70-130	01/03/2023 1032
4-Methyl-2-pentanone	100	89		1	89	70-130	01/03/2023 1032
Methylcyclohexane	50	42		1	85	70-130	01/03/2023 1032
Methylene chloride	50	45		1	89	70-130	01/03/2023 1032
Styrene	50	45		1	89	70-130	01/03/2023 1032
1,1,2,2-Tetrachloroethane	50	42		1	84	70-130	01/03/2023 1032
Tetrachloroethene	50	43		1	86	70-130	01/03/2023 1032
Toluene	50	43		1	87	70-130	01/03/2023 1032
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	41		1	83	70-130	01/03/2023 1032
1,2,4-Trichlorobenzene	50	46		1	91	70-130	01/03/2023 1032
1,1,1-Trichloroethane	50	43		1	85	70-130	01/03/2023 1032
1,1,2-Trichloroethane	50	44		1	88	70-130	01/03/2023 1032

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: YQ64027-002 Batch: 64027 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	43		1	87	70-130	01/03/2023 1032
Trichlorofluoromethane	50	47		1	94	70-130	01/03/2023 1032
Vinyl chloride	50	44		1	89	70-130	01/03/2023 1032
Xylenes (total)	100	85		1	85	70-130	01/03/2023 1032
Surrogate	Q % Rec	Acceptance Limit	е				
Bromofluorobenzene	92	70-130					
1,2-Dichloroethane-d4	86	70-130					
Toluene-d8	90	70-130					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Volatile Organic Compounds by GC/MS - LCSD

Sample ID: YQ64027-003 Batch: 64027 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Acetone	100	160	N,+	1	164	39	60-140	20	01/03/2023 1230
Benzene	50	47		1	94	9.1	70-130	20	01/03/2023 1230
Bromodichloromethane	50	51		1	102	15	70-130	20	01/03/2023 1230
Bromoform	50	52		1	105	16	70-130	20	01/03/2023 1230
Bromomethane (Methyl bromide)	50	47		1	95	1.6	70-130	20	01/03/2023 1230
2-Butanone (MEK)	100	130	+	1	126	32	70-130	20	01/03/2023 1230
Carbon disulfide	50	46		1	92	9.5	70-130	20	01/03/2023 1230
Carbon tetrachloride	50	53		1	107	20	70-130	20	01/03/2023 1230
Chlorobenzene	50	51		1	103	17	70-130	20	01/03/2023 1230
Chloroethane	50	42		1	84	0.80	70-130	20	01/03/2023 1230
Chloroform	50	50		1	100	15	70-130	20	01/03/2023 1230
Chloromethane (Methyl chloride)	50	36		1	71	13	60-140	20	01/03/2023 1230
Cyclohexane	50	51		1	103	19	70-130	20	01/03/2023 1230
1,2-Dibromo-3-chloropropane (DBCP)	50	50		1	100	15	70-130	20	01/03/2023 1230
Dibromochloromethane	50	52		1	103	14	70-130	20	01/03/2023 1230
1,2-Dibromoethane (EDB)	50	52		1	103	15	70-130	20	01/03/2023 1230
1,2-Dichlorobenzene	50	50		1	101	15	70-130	20	01/03/2023 1230
1,3-Dichlorobenzene	50	51		1	103	16	70-130	20	01/03/2023 1230
1,4-Dichlorobenzene	50	51		1	101	17	70-130	20	01/03/2023 1230
Dichlorodifluoromethane	50	41		1	82	14	60-140	20	01/03/2023 1230
1,1-Dichloroethane	50	51		1	103	17	70-130	20	01/03/2023 1230
1,2-Dichloroethane	50	55	+	1	111	21	70-130	20	01/03/2023 1230
1,1-Dichloroethene	50	49		1	97	12	70-130	20	01/03/2023 1230
cis-1,2-Dichloroethene	50	52		1	104	14	70-130	20	01/03/2023 1230
trans-1,2-Dichloroethene	50	52		1	103	14	70-130	20	01/03/2023 1230
1,2-Dichloropropane	50	53		1	106	18	70-130	20	01/03/2023 1230
cis-1,3-Dichloropropene	50	55		1	109	18	70-130	20	01/03/2023 1230
trans-1,3-Dichloropropene	50	54	+	1	109	21	70-130	20	01/03/2023 1230
Ethylbenzene	50	52		1	104	17	70-130	20	01/03/2023 1230
2-Hexanone	100	110	+	1	106	30	70-130	20	01/03/2023 1230
Isopropylbenzene	50	54		1	108	20	70-130	20	01/03/2023 1230

1

1

1

1

110

102

124

102

104

103

98

102

100

112

104

101

103

14

13

33

18

15

14

15

18

14

30

13

16

16

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

Methyl acetate

4-Methyl-2-pentanone

1,1,2,2-Tetrachloroethane

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Methylcyclohexane

Methylene chloride

Tetrachloroethene

Styrene

Methyl tertiary butyl ether (MTBE)

1,1,2-Trichloro-1,2,2-Trifluoroethane

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

70-130

70-130

70-130

70-130

70-130

70-130

70-130

70-130

70-130

70-130

70-130

70-130

70-130

20

20

20

20

20

20

20

20

20

20

20

20

20

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

01/03/2023 1230

55

51

120

51

52

51

49

51

50

56

52

50

52

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

50

50

100

50

50

50

50

50

50

50

50

50

50

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCSD

Sample ID: YQ64027-003 Batch: 64027 Matrix: Aqueous Prep Method: 5030B

Analytical Method: 8260D

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Trichloroethene	50	54 +	1	108	22	70-130	20	01/03/2023 1230
Trichlorofluoromethane	50	45	1	90	4.8	70-130	20	01/03/2023 1230
Vinyl chloride	50	44	1	88	1.1	70-130	20	01/03/2023 1230
Xylenes (total)	100	100	1	101	17	70-130	20	01/03/2023 1230
Surrogate	Q % Rec	Acceptance Limit						
Bromofluorobenzene	104	70-130						_
1,2-Dichloroethane-d4	100	70-130						
Toluene-d8	107	70-130						

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: YQ64061-001 Batch: 64061 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	01/03/2023 2311
Benzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Bromodichloromethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Bromoform	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	01/03/2023 2311
2-Butanone (MEK)	ND		1	10	2.0	ug/L	01/03/2023 2311
Carbon disulfide	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Chlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Chloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Chloroform	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Cyclohexane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Dibromochloromethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Ethylbenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
2-Hexanone	ND		1	10	2.0	ug/L	01/03/2023 2311
Isopropylbenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Methyl acetate	ND		1	1.0	0.40	ug/L	01/03/2023 2311
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	01/03/2023 2311
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	01/03/2023 2311
Methylcyclohexane	ND		1	5.0	0.40	ug/L	01/03/2023 2311
Methylene chloride	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Styrene	ND		1	0.50	0.41	ug/L	01/03/2023 2311
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Tetrachloroethene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
Toluene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	01/03/2023 2311
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	01/03/2023 2311
						J.	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: YQ64061-001 Batch: 64061

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	01/03/2023 2311
Trichlorofluoromethane	ND	1	0.50	0.40	ug/L	01/03/2023 2311
Vinyl chloride	ND	1	0.50	0.40	ug/L	01/03/2023 2311
Xylenes (total)	ND	1	1.0	0.40	ug/L	01/03/2023 2311
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	103	70-130				
1,2-Dichloroethane-d4	105	70-130				
Toluene-d8	107	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: YQ64061-002 Batch: 64061 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
	Amount	Result			0/ 5	%Rec	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	83		1	83	60-140	01/03/2023 2012
Benzene	50	46		1	91	70-130	01/03/2023 2012
Bromodichloromethane	50	46		1	92	70-130	01/03/2023 2012
Bromoform	50	46		1	92	70-130	01/03/2023 2012
Bromomethane (Methyl bromide)	50	49		1	97	70-130	01/03/2023 2012
2-Butanone (MEK)	100	99		1	99	70-130	01/03/2023 2012
Carbon disulfide	50	42		1	85	70-130	01/03/2023 2012
Carbon tetrachloride	50	46		1	91	70-130	01/03/2023 2012
Chlorobenzene	50	47		1	94	70-130	01/03/2023 2012
Chloroethane	50	44		1	87	70-130	01/03/2023 2012
Chloroform	50	46		1	91	70-130	01/03/2023 2012
Chloromethane (Methyl chloride)	50	41		1	81	60-140	01/03/2023 2012
Cyclohexane	50	39		1	78	70-130	01/03/2023 2012
1,2-Dibromo-3-chloropropane (DBCP)	50	42		1	84	70-130	01/03/2023 2012
Dibromochloromethane	50	47		1	94	70-130	01/03/2023 2012
1,2-Dibromoethane (EDB)	50	47		1	94	70-130	01/03/2023 2012
1,2-Dichlorobenzene	50	46		1	92	70-130	01/03/2023 2012
1,3-Dichlorobenzene	50	47		1	94	70-130	01/03/2023 2012
1,4-Dichlorobenzene	50	46		1	92	70-130	01/03/2023 2012
Dichlorodifluoromethane	50	39		1	78	60-140	01/03/2023 2012
1,1-Dichloroethane	50	45		1	91	70-130	01/03/2023 2012
1,2-Dichloroethane	50	49		1	97	70-130	01/03/2023 2012
1,1-Dichloroethene	50	45		1	90	70-130	01/03/2023 2012
cis-1,2-Dichloroethene	50	48		1	96	70-130	01/03/2023 2012
trans-1,2-Dichloroethene	50	48		1	96	70-130	01/03/2023 2012
1,2-Dichloropropane	50	47		1	94	70-130	01/03/2023 2012
cis-1,3-Dichloropropene	50	47		1	94	70-130	01/03/2023 2012
trans-1,3-Dichloropropene	50	47		1	93	70-130	01/03/2023 2012
Ethylbenzene	50	48		1	95	70-130	01/03/2023 2012
2-Hexanone	100	110		1	109	70-130	01/03/2023 2012
Isopropylbenzene	50	46		1	92	70-130	01/03/2023 2012
Methyl acetate	50	49		1	98	70-130	01/03/2023 2012
Methyl tertiary butyl ether (MTBE)	50	45		1	90	70-130	01/03/2023 2012
4-Methyl-2-pentanone	100	94		1	94	70-130	01/03/2023 2012
Methylcyclohexane	50	46		1	91	70-130	01/03/2023 2012
Methylene chloride	50	46		1	92	70-130	01/03/2023 2012
Styrene	50	47		1	95	70-130	01/03/2023 2012
1,1,2,2-Tetrachloroethane	50	45		1	90	70-130	01/03/2023 2012
Tetrachloroethene	50	47		1	94	70-130	01/03/2023 2012
Toluene	50	47		1	94	70-130	01/03/2023 2012
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	43		1	85	70-130	01/03/2023 2012
1,2,4-Trichlorobenzene	50	48		1	96	70-130	01/03/2023 2012
1,1,1-Trichloroethane	50	44		1	89	70-130	01/03/2023 2012
1,1,2-Trichloroethane	50	48		1	96	70-130	01/03/2023 2012

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: YQ64061-002 Batch: 64061

Prep Method: 5030B

Matrix: Aqueous

Analytical Method: 8260D

Parameter	Spike Amount (ug/L)	Result (ug/L) C	Ω Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	46	1	92	70-130	01/03/2023 2012
Trichlorofluoromethane	50	50	1	101	70-130	01/03/2023 2012
Vinyl chloride	50	45	1	90	70-130	01/03/2023 2012
Xylenes (total)	100	91	1	91	70-130	01/03/2023 2012
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	100	70-130				
1,2-Dichloroethane-d4	92	70-130				
Toluene-d8	98	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: XQ63257-001 Batch: 63257

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	12/20/2022 1038
Ethene	ND		1	10	2.5	ug/L	12/20/2022 1038
Methane	2.8	J	1	10	2.5	ug/L	12/20/2022 1038

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Dissolved Gases - LCS

Sample ID: XQ63257-002 Batch: 63257

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	550	690		1	125	70-130	12/20/2022 0931
Ethene	520	620		1	120	70-130	12/20/2022 0931
Methane	300	330		1	111	70-130	12/20/2022 0931

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Dissolved Gases - LCSD

Sample ID: XQ63257-003 Batch: 63257

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Ethane	550	700		1	126	0.82	70-130	30	12/20/2022 0945
Ethene	520	620		1	121	0.75	70-130	30	12/20/2022 0945
Methane	300	330		1	112	1.1	70-130	30	12/20/2022 0945

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: XQ63821-001 Batch: 63821

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Methane	ND		1	10	2.5	ug/L	12/29/2022 1338

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Dissolved Gases - LCS

Sample ID: XQ63821-002 Batch: 63821

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Methane	300	300		1	102	70-130	12/29/2022 1247

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Dissolved Gases - LCSD

Sample ID: XQ63821-003 Batch: 63821

Analytical Method: RSK - 175

Matrix: Aqueous

	Spike								
Parameter	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Methane	300	310		1	104	1.5	70-130	30	12/29/2022 1300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## ICP-AES Metals - MB

Sample ID: XQ63212-001 Batch: 63212

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 12/21/2022 0911

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	0.10	0.040	mg/L	12/22/2022 1201

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## ICP-AES Metals - LCS

Sample ID: XQ63212-002 Batch: 63212 Matrix: Aqueous Prep Method: 3005A

Prep Date: 12/21/2022 0911

Analytical Method: 6010D

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Iron	20	22		1	108	80-120	12/22/2022 1205

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## ICP-AES Metals - MS

Sample ID: XL19029-001MS

Batch: 63212

Matrix: Aqueous Prep Method: 3005A

Prep Date: 12/21/2022 0911

Analytical Method: 6010D

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	43	20	64		1	106	75-125	12/22/2022 1251

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MSD

Sample ID: XL19029-001MD

Batch: 63212 Analytical Method: 6010D Matrix: Aqueous Prep Method: 3005A

Prep Date: 12/21/2022 0911

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil % Rec	% RPD		% RPD Limit	Analysis Date
Iron	43	20	64		1 105	0.26	75-125	20	12/22/2022 1255

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## ICP-AES Metals - MB

Sample ID: XQ63404-001 Batch: 63404

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 12/28/2022 0912

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Dissolved Iron	ND		1	0.10	0.040	mg/L	12/30/2022 0225

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## ICP-AES Metals - LCS

Sample ID: XQ63404-002 Batch: 63404 Matrix: Aqueous Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 12/28/2022 0912

	Spike Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Dissolved Iron	20	21		1	107	80-120	12/30/2022 0242

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## ICP-AES Metals - MS

Sample ID: XL19029-003MS

Batch: 63404

Prep Method: 3005A

Analytical Method: 6010D

Prep Date: 12/28/2022 0912

Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Dissolved Iron	12	20	34		1	110	75-125	12/30/2022 0257

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MSD

Sample ID: XL19029-003MD

Batch: 63404 Analytical Method: 6010D Matrix: Aqueous Prep Method: 3005A

Prep Date: 12/28/2022 0912

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date	
Dissolved Iron	12	20	35		1	113	1.9	75-125	20	12/30/2022 0301	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Chain of Custody and Miscellaneous Documents

		Number 140007
PACE ANALYTICAL SERVICES, LLC	106 Vantage Point Drive • West Columbia, SC 29172	Telephone No. 803-791-9700 Fax No. 803-791-9111
**	ace Analytical	

Telephone No. 803-791-9700 Fax No. 803-791-9111 www.pacelabs.com

XL19029 Lot & Bar Code (lab use only) jo. CSD Choke No. Terrup Blank OC Requirements (Specify) Trne True Trne 21/10/12 Q Scott Besse Ageson, Com Qe39 Ortho 588 シムト こうしん X X X. Analysis (Alboh list if more space (9 needed) 100 Pecnical Temp. × × D Unknown X Ŋ, Y Я × Listed 1 Polson. \* × Y Telephone No. / E-mail 11500 7 los Pack X × C Skin Irritant 30W ¥ Y Received on ice (Circle) (Yes) No 5000 X × \* Y. Possible Hazard Identification
Killon-Hazard ID Plenmishe рекозы РРЫ ION EGGE No of Containers by Preserveive Type ANDROV 1. Received by 2. Acceived by S. Received by JAMES (ELYHAY) V 1 5 N OH 5 ЕСЯМ 75.55 NOGW( southy) 60 140 843 Return to Chaut's Coopseal by Lab ecody ven pios 130 Assert elline elline STATE TABLE Man snoonby Report to Control Sampler's Signal. 12-19-22 despired - O Note: All samples are retained for four wests from receipt Φ ঠ Ø ď. Sample Disposal Colection Time (MMTag) 1410 a ž, Ž (130 Date Date Date 12 uniess other arrangements are made. lugn Around Time Required (Prior Isb approval required for expedited 181.) 12-19-22 Collection Detection 202 P.O. No. 100 210 Cods Sign V (Contenent for each sample may be combined on one line.) ار خر RESEASION Sample 10 / Description Project No. 60 (55197 Project Marma S. G. V. Y. Y. T1 - C823 - C87 Standard | Rush (Spacify 62-D-035W-1 そのいか Glowky. M 61 - 27 M 1. Rukraushed by 3. Relinquistred by 2. Relinguistical by 4. Relinquished by ME. 10 16.01 2

DISTRIBUTION: WHITE & YELLOW-Ratum to laboratory with Samole(s); PINK-Plaio/Culm Copy

Document Number: ME003V2-01

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.) 106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

	Sample Receipt Checklist (SRC)	
Client: AECOM	Cooler Inspected by/date: BRB / 12/19/22 Lot #: XI.19029	
	ace ✓ Client UPS FedEx Other:	
Yes ✓ No	Were custody seals present on the cooler?	
Yes No NA H Strip ID: <sup>22-1949</sup>	A 2. If custody seals were present, were they intact and unbroken?  Chlorine Strip ID: 22-1698 Tested by: BRB	
	Chlorine Strip ID: 22-1698 Tested by: BRB  n receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA	
1.5 /1.5 °C NA /2	NA °C NA /NA °C NA /NA °C	-
	Blank Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 6 °C	
Method of coolant:	Wet Ice ☐ Ice Packs ☐ Dry Ice ✓ None	
✓ Yes No NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified?	
	PM was Notified by: phone / email / face-to-face (circle one).	
	4. Is the commercial courier's packing slip attached to this form?	
✓ Yes No	5. Were proper custody procedures (relinquished/received) followed?  6. Were sample ID: listed on the COC and all countly post in and	
✓ Yes No	Were sample IDs listed on the COC and all sample containers?      Was collection date & time listed on the COC and all sample containers?	
✓ Yes No	8. Did all container label information (ID, date, time) agree with the COC?  8. Did all container label information (ID, date, time) agree with the COC?	
✓ Yes No	9. Were tests to be performed listed on the COC?  9. Were tests to be performed listed on the COC?	
✓ Yes No	10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
✓ Yes No	11. Was adequate sample volume available?	
✓ Yes No	12. Were all samples received within 1/2 the holding time or 48 hours, whichever comes first?	•
✓Yes No	13. Were all samples containers accounted for? (No missing/excess)	
√Yes No NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (44"or 6mm in	_
	(dameter) in any of the VOA vials?	
	15. Were all DRO/metals/mutrient samples received at a pH of < 2?	
F	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9.  17. Were all applicable NH <sub>3</sub> /TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/l <sub>2</sub> ) samples free of	?
✓Yes No No	residual chlorine?	
Yes √No NA	19 Wenths mate combating in the second secon	
ample Preservation ()	Must be completed for any sample(s) incorrectly preserved or with headspace.)	
ample(s) NA	were received incorrectly preserved and were adjusted according	ıolv
sample receiving with 1	nA anL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA	51
ime of preservation NA	. If more than one preservative is needed, please note in the comments below.	
ample(s) NA	were received with bubbles >6 mm in diameter.	
amples(s) NA	trans received with TDC > 0.6 N (16.11.0.)	_
	were received with TRC > 0.5 mg/L (If #19 is $no$ ) and were mple receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA	
omments:		
***************************************		



## **Report of Analysis**

#### **AECOM**

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Signify
Project Number: 60635197
Lot Number: XL28017
Date Completed: 02/09/2023

02/10/2023 1:15 PM
Approved and released by:
Project Manager II: Cathy S. Dover





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approval.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

## PACE ANALYTICAL SERVICES, LLC

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

# Case Narrative AECOM Lot Number: XL28017

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report. Where sampling is conducted by the client, results relate to the accuracy of the information provided, and as the samples are received.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

#### **VOA 8260D**

Sample XL28017-002 (ISCO-OBSW-1S) was diluted due to the nature of the sample matrix. The LOQ has been elevated to reflect the dilution.

#### Nitrite 353.2

The MS/MSD for batch 63917 and parent sample XL28017-003 (MW-2), recovered marginally outside the lower control limit. The associated LCS passed acceptance criteria.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

## PACE ANALYTICAL SERVICES, LLC

# Sample Summary AECOM

Lot Number: XL28017 Project Name: Signify Project Number: 60635197

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	TMW-31	Aqueous	12/28/2022 0950	12/28/2022
002	ISCO-OBSW-1S	Aqueous	12/28/2022 1050	12/28/2022
003	MW-2	Aqueous	12/28/2022 1150	12/28/2022

(3 samples)

## PACE ANALYTICAL SERVICES, LLC

# Detection Summary AECOM

Lot Number: XL28017 Project Name: Signify Project Number: 60635197

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	TMW-31	Aqueous	Chloride	300.0	3.2		mg/L	5
001	TMW-31	Aqueous	TDS	SM 2540C-	55		mg/L	5
001	TMW-31	Aqueous	cis-1,2-Dichloroethene	8260D	32		ug/L	6
001	TMW-31	Aqueous	Trichloroethene	8260D	3600		ug/L	7
002	ISCO-OBSW-1S	Aqueous	Chloride	300.0	6.1		mg/L	8
002	ISCO-OBSW-1S	Aqueous	TDS	SM 2540C-	110		mg/L	8
003	MW-2	Aqueous	Chloride	300.0	2.2		mg/L	11
003	MW-2	Aqueous	Nitrate - N	353.2	0.074		mg/L	11
003	MW-2	Aqueous	TDS	SM 2540C-	26		mg/L	11
003	MW-2	Aqueous	Acetone	8260D	11		ug/L	12

(10 detections)

#### Inorganic non-metals

Client: AECOM Laboratory ID: XL28017-001

Description: TMW-31 Matrix: Aqueous

Date Sampled:12/28/2022 0950 Project Name: Signify
Date Received: 12/28/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 (Chloride) 300.0
 1
 01/04/2023 1733
 SJL
 64171

 1
 (TDS) SM 2540C-2015
 1
 01/02/2023 0924
 CBP
 64041

Parameter	CAS Analytical Number Method	Result	Q LOQ	DL	Units	Run
Chloride	300.0	3.2	1.0	0.25	mg/L	1
TDS	SM 2540C-2015	55	25	25	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XL28017-001 Description: TMW-31 Matrix: Aqueous

Date Sampled:12/28/2022 0950 Project Name: Signify Date Received: 12/28/2022 Project Number: 60635197

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date	Batch
1	5030B	8260D	50	01/05/2023 0506 BBW		64150

Parameter	CAS Number	Analytical Method	Result	Q LOQ	DL	Units	Run
Acetone	67-64-1	8260D	ND	500	200	ug/L	1
Benzene	71-43-2	8260D	ND	25	20	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND	25	20	ug/L	1
Bromoform	75-25-2	8260D	ND	25	20	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND	25	20	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	500	100	ug/L	1
Carbon disulfide	75-15-0	8260D	ND	25	20	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND	25	20	ug/L	1
Chlorobenzene	108-90-7	8260D	ND	25	20	ug/L	1
Chloroethane	75-00-3	8260D	ND	25	20	ug/L	1
Chloroform	67-66-3	8260D	ND	25	20	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND	25	20	ug/L	1
Cyclohexane	110-82-7	8260D	ND	25	20	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND	25	20	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND	25	20	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND	25	20	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND	25	20	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND	25	20	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND	25	20	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND	25	20	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND	25	20	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	25	20	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	25	20	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	32	25	20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND	25	20	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND	25	20	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND	25	20	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND	25	20	ug/L	1
Ethylbenzene	100-41-4	8260D	ND	25	20	ug/L	1
2-Hexanone	591-78-6	8260D	ND	500	100	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND	25	20	ug/L	1
Methyl acetate	79-20-9	8260D	ND	50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	25	20	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	500	100	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	250	20	ug/L	1
Methylene chloride	75-09-2	8260D	ND	25	20	ug/L	1
Styrene	100-42-5	8260D	ND	25	21	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND	25	20	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND	25	20	ug/L	1
Toluene	108-88-3	8260D	ND	25	20	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND	50	21	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND	25	20	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND	25	20	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND	25	20	ug/L	1

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

N = Recovery is out of criteria W = Reported on wet weight basis

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

P = The RPD between two GC columns exceeds 40%  $J = Estimated \ result < LOQ \ and \ge DL$ 

### Volatile Organic Compounds by GC/MS

Client: AECOM
Description: TMW-31
Date Sampled: 12/28/2022 0950
Laboratory ID: XL28017-001
Matrix: Aqueous
Project Name: Signify

Date Received: 12/28/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 5030B 8260D 50 01/05/2023 0506 BBW 64150

Parameter	CAS Number	Analytical Method	Result	Q LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	3600	25	20	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	25	20	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	25	20	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	50	20	ug/L	1

Surrogate Q Run 1 Acceptance Limits

Bromofluorobenzene 105 70-130
1,2-Dichloroethane-d4 108 70-130
Toluene-d8 110 70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### Inorganic non-metals

Client: AECOM

Description: ISCO-OBSW-1S

Laboratory ID: XL28017-002

Matrix: Aqueous

Date Sampled:12/28/2022 1050 Project Name: Signify
Date Received: 12/28/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 (Chloride) 300.0
 1
 01/04/2023 1848
 SJL
 64171

 1
 (TDS) SM 2540C-2015
 1
 01/02/2023 0924
 CBP
 64041

Parameter	CAS Analytical Number Method	Result	Q LOQ	DL	Units	Run
Chloride	300.0	6.1	1.0	0.25	mg/L	1
TDS	SM 2540C-2015	110	25	25	mg/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XL28017-002

Description: ISCO-OBSW-1S Matrix: Aqueous

Date Sampled:12/28/2022 1050 Project Name: Signify
Date Received: 12/28/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D5001/05/2023 0530BBW64150

Parameter	CAS Number	Analytical Method	Result	Q LO	QC	DL	Units	Run
Acetone	67-64-1	8260D	ND	5	00	200	ug/L	1
Benzene	71-43-2	8260D	ND		25	20	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		25	20	ug/L	1
Bromoform	75-25-2	8260D	ND		25	20	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		25	20	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	5	00	100	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		25	20	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		25	20	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		25	20	ug/L	1
Chloroethane	75-00-3	8260D	ND		25	20	ug/L	1
Chloroform	67-66-3	8260D	ND		25	20	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		25	20	ug/L	1
Cyclohexane	110-82-7	8260D	ND		25	20	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		25	20	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		25	20	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		25	20	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		25	20	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		25	20	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		25	20	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		25	20	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		25	20	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		25	20	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		25	20	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		25	20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		25	20	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		25	20	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		25	20	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		25	20	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		25	20	ug/L	1
2-Hexanone	591-78-6	8260D	ND	5	00	100	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		25	20	ug/L	1
Methyl acetate	79-20-9	8260D	ND		50	20	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		25	20	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND	5	00	100	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND	2	50	20	ug/L	1
Methylene chloride	75-09-2	8260D	ND		25	20	ug/L	1
Styrene	100-42-5	8260D	ND		25	21	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		25	20	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		25	20	ug/L	1
Toluene	108-88-3	8260D	ND		25	20	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		50	21	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		25	20	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		25	20	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		25	20	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XL28017-002 Description: ISCO-OBSW-1S Matrix: Aqueous Date Sampled: 12/28/2022 1050 Project Name: Signify Date Received: 12/28/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 01/05/2023 0530 BBW 64150 CAS Analytical Parameter Number LOQ DL Units Method Result Q Run Trichloroethene 79-01-6 8260D ND 25 20 ug/L 1 Trichlorofluoromethane 8260D 25 ug/L 75-69-4 ND 1 20 Vinyl chloride 75-01-4 8260D ND 25 ug/L 1 20 50 Xylenes (total) 1330-20-7 8260D ND ug/L 20 1 Run 1 Acceptance Surrogate % Recovery Q Limits

70-130

70-130

70-130

101

107

110

LOQ = Limit of QuantitationB = Detected in the method blankE = Quantitation of compound exceeded the calibration rangeDL = Detection LimitQ = Surrogate failureND = Not detected at or above the DLN = Recovery is out of criteriaP = The RPD between two GC columns exceeds 40%J = Estimated result < LOQ and  $\geq$  DLL = LCS/LCSD failureH = Out of holding timeW = Reported on wet weight basisS = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Bromofluorobenzene

Toluene-d8

1,2-Dichloroethane-d4

#### Inorganic non-metals

Client: AECOM Laboratory ID: XL28017-003 Description: MW-2 Matrix: Aqueous Date Sampled:12/28/2022 1150 Project Name: Signify Date Received: 12/28/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 (Alkalinity @) SM 2320B-2011 01/10/2023 1902 JJM 64598 1 (Chloride) 300.0 1 64171 01/04/2023 2004 SJL 1 (Nitrate - N) 353.2 1 12/30/2022 1113 MSG 63892 1 (Nitrite - N) 353.2 1 12/30/2022 1113 MSG 63917 1 (Sulfate) 300.0 1 01/04/2023 2004 SJL 64177 1 (TDS) SM 2540C-2015 1 01/02/2023 0924 CBP 64041

Parameter	CAS Analytical Number Method	Result Q	LOQ	DL	Units	Run
Alkalinity @ pH 4.5 su	SM 2320B-2011	ND	20	20	mg CaCO3/L	1
Chloride	300.0	2.2	1.0	0.25	mg/L	1
Nitrate - N	353.2	0.074	0.020	0.010	mg/L	1
Nitrite - N	353.2	ND S	0.020	0.010	mg/L	1
Sulfate	300.0	ND	1.0	0.25	mg/L	1
TDS	SM 2540C-2015	26	25	25	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit  $J = Estimated result < LOQ and <math>\geq DL$  Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM

Description: MW-2

Laboratory ID: XL28017-003

Matrix: Aqueous

Date Sampled:12/28/2022 1150 Project Name: Signify
Date Received: 12/28/2022 Project Number: 60635197

RunPrep MethodAnalytical MethodDilutionAnalysis DateAnalystPrep DateBatch15030B8260D101/05/2023 0327BBW64150

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Acetone	67-64-1	8260D	11		10	4.0	ug/L	1
Benzene	71-43-2	8260D	ND		0.50	0.40	ug/L	1
Bromodichloromethane	75-27-4	8260D	ND		0.50	0.40	ug/L	1
Bromoform	75-25-2	8260D	ND		0.50	0.40	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260D	ND		0.50	0.40	ug/L	1
2-Butanone (MEK)	78-93-3	8260D	ND		10	2.0	ug/L	1
Carbon disulfide	75-15-0	8260D	ND		0.50	0.40	ug/L	1
Carbon tetrachloride	56-23-5	8260D	ND		0.50	0.40	ug/L	1
Chlorobenzene	108-90-7	8260D	ND		0.50	0.40	ug/L	1
Chloroethane	75-00-3	8260D	ND		0.50	0.40	ug/L	1
Chloroform	67-66-3	8260D	ND		0.50	0.40	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260D	ND		0.50	0.40	ug/L	1
Cyclohexane	110-82-7	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260D	ND		0.50	0.40	ug/L	1
Dibromochloromethane	124-48-1	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260D	ND		0.50	0.40	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260D	ND		0.50	0.40	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260D	ND		0.50	0.40	ug/L	1
Dichlorodifluoromethane	75-71-8	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethane	75-34-3	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethene	75-35-4	8260D	ND		0.50	0.40	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260D	ND		0.50	0.40	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloropropane	78-87-5	8260D	ND		0.50	0.40	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260D	ND		0.50	0.40	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260D	ND		0.50	0.40	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		0.50	0.40	ug/L	1
2-Hexanone	591-78-6	8260D	ND		10	2.0	ug/L	1
Isopropylbenzene	98-82-8	8260D	ND		0.50	0.40	ug/L	1
Methyl acetate	79-20-9	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		0.50	0.40	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260D	ND		10	2.0	ug/L	1
Methylcyclohexane	108-87-2	8260D	ND		5.0	0.40	ug/L	1
Methylene chloride	75-09-2	8260D	ND		0.50	0.40	ug/L	1
Styrene	100-42-5	8260D	ND		0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260D	ND		0.50	0.40	ug/L	1
Tetrachloroethene	127-18-4	8260D	ND		0.50	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260D	ND		1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260D	ND		0.50	0.40	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260D	ND		0.50	0.40	ug/L	1

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

LOQ = Limit of Quantitation

H = Out of holding time

ND = Not detected at or above the DL

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

B = Detected in the method blank

W = Reported on wet weight basis

N = Recovery is out of criteria

E = Quantitation of compound exceeded the calibration range

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ \underline{>} \ DL$ 

Q = Surrogate failure

L = LCS/LCSD failure

S = MS/MSD failure

#### Volatile Organic Compounds by GC/MS

Client: AECOM Laboratory ID: XL28017-003 Description: MW-2 Matrix: Aqueous Date Sampled: 12/28/2022 1150 Project Name: Signify Date Received: 12/28/2022 Project Number: 60635197 Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 5030B 8260D 01/05/2023 0327 BBW 64150 1 CAS Analytical Parameter Number LOQ DL Units Method Result Q Run Trichloroethene 79-01-6 8260D ND 0.50 0.40 ug/L 1 Trichlorofluoromethane 8260D 75-69-4 ND 0.50 ug/L 1 0.40 Vinyl chloride 75-01-4 8260D ND 0.50 ug/L 1 0.40 Xylenes (total) 1330-20-7 8260D ND 1.0 ug/L 0.40 1 Run 1 Acceptance Surrogate % Recovery Q Limits

70-130

70-130

70-130

107

108

114

LOQ = Limit of QuantitationB = Detected in the method blankE = Quantitation of compound exceeded the calibration rangeDL = Detection LimitQ = Surrogate failureND = Not detected at or above the DLN = Recovery is out of criteriaP = The RPD between two GC columns exceeds 40%J = Estimated result < LOQ and  $\geq$  DLL = LCS/LCSD failureH = Out of holding timeW = Reported on wet weight basisS = MS/MSD failure

Bromofluorobenzene

Toluene-d8

1,2-Dichloroethane-d4

#### **Dissolved Gases**

Client: AECOM Laboratory ID: XL28017-003

Description: MW-2 Matrix: Aqueous

Date Sampled:12/28/2022 1150 Project Name: Signify
Date Received: 12/28/2022 Project Number: 60635197

Run Prep Method Analytical Method Dilution Analysis Date Analyst Prep Date Batch 1 RSK - 175 1 12/29/2022 1354 JWG 63821

Parameter	CAS Number	Analytical Method	Result (	Q LOQ	DL	Units	Run
Ethane	74-84-0	RSK - 175	ND	10	2.5	ug/L	1
Ethene	74-85-1	RSK - 175	ND	10	2.5	ug/L	1
Methane	74-82-8	RSK - 175	ND	10	2.5	ug/L	1

$$\begin{split} &LOQ = Limit \ of \ Quantitation \\ &ND = Not \ detected \ at \ or \ above \ the \ DL \\ &H = Out \ of \ holding \ time \end{split}$$

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## **ICP-AES** Metals

Client: AECOM Laboratory ID: XL28017-003 ription: MW-2 Matrix: Aqueous

Description: MW-2
Date Sampled:12/28/2022 1150
Project Name: Signify

 Date Received: 12/28/2022
 Project Number: 60635197

 Run Prep Method
 Analytical Method Dilution Analysis Date Analyst Prep Date Batch 01/09/2023 0330 JMH 01/07/2023 0942 64324

CAS Analytical Parameter Number LOQ DL Units Run Method Result Q Dissolved Iron 7439-89-6 6010D ND 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $\label{eq:power_power} E = \mbox{Quantitation of compound exceeded the calibration range} \\ P = \mbox{The RPD between two GC columns exceeds } 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

## **ICP-AES** Metals

Client: AECOM Laboratory ID: XL28017-003

Description: MW-2 Matrix: Aqueous

Date Sampled:12/28/2022 1150 Project Name: Signify
Date Received: 12/28/2022 Project Number: 60635197

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch

 1
 3005A
 6010D
 1
 01/03/2023 2312
 JMH
 01/03/2023 1009 63799

CAS Analytical Parameter Number Result LOQ DL Units Run Method Q 7439-89-6 Iron 6010D ND 0.10 0.040 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

 $E = Quantitation \ of compound \ exceeded \ the \ calibration \ range$   $P = The \ RPD \ between \ two \ GC \ columns \ exceeds \ 40\%$ 

DL = Detection Limit J = Estimated result < LOQ and  $\geq DL$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

QC Summary

## Inorganic non-metals - MB

Sample ID: XQ63892-001

Batch: 63892 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrate - N	ND		1	0.020	0.010	mg/L	12/30/2022 1110

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ63892-002

Batch: 63892

Matrix: Aqueous

	Dateii.	03072
Analytical	Method:	353.2

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Nitrate - N	0.40	0.44		1	110	90-110	12/30/2022 1111

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MS

Sample ID: XL28017-003MS

Batch: 63892 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date	
Nitrate - N	0.074	0.40	0.50		1	107	90-110	12/30/2022 1115	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: XL28017-003MD

Batch: 63892

Matrix: Aqueous

	Dateii.	03072
Analytical	Method:	353.2

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil % Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Nitrate - N	0.074	0.40	0.50		1 108	0.60	90-110	20	12/30/2022 1116

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: XQ63917-001 Batch: 63917

Analytical Method: 353.2

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Nitrite - N	ND		1	0.020	0.010	mg/L	12/30/2022 1110

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: XQ63917-002

Batch: 63917 Analytical Method: 353.2 Matrix: Aqueous

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Nitrite - N	0.40	0.36		1	91	90-110	12/30/2022 1111

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated \ result < LOQ \ and \ge DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MS

Sample ID: XL28017-003MS

Batch: 63917 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Nitrite - N	ND	0.40	0.35	N	1	88	90-110	12/30/2022 1115

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MSD

Sample ID: XL28017-003MD

Batch: 63917 Analytical Method: 353.2 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD		% RPD Limit	Analysis Date
Nitrite - N	ND	0.40	0.35	N	1	88	0.63	90-110	20	12/30/2022 1116

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - MB

Sample ID: YQ64041-001 Batch: 64041

Analytical Method: SM 2540C-2015

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
TDS	ND		1	25	25	mg/L	01/02/2023 0924

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## Inorganic non-metals - LCS

Sample ID: YQ64041-002

Batch: 64041

Analytical Method: SM 2540C-2015

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
TDS	50	51		1	102	90-110	01/02/2023 0924

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: YQ64171-001 Batch: 64171

Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Chloride	ND		1	1.0	0.25	mg/L	01/04/2023 1211

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - LCS

Sample ID: YQ64171-002

Batch: 64171

Matrix: Aqueous

Analytica	l Method: 300.0		
		Spike	

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Chloride	20	20		1	102	90-110	01/04/2023 1249

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MS

Sample ID: XL28017-001MS

Batch: 64171 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Chloride	3.2	10	13		1	99	90-110	01/04/2023 1752

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Inorganic non-metals - MSD

Sample ID: XL28017-001MD

Batch: 64171 Analytical Method: 300.0 Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil % Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Chloride	3.2	10	13		1 99	0.36	90-110	20	01/04/2023 1811

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

# Inorganic non-metals - MB

Sample ID: YQ64177-001 Batch: 64177

Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Sulfate	ND		1	1.0	0.25	mg/L	01/04/2023 1211

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: YQ64177-002

Batch: 64177 Analytical Method: 300.0 Matrix: Aqueous

	Spike						
	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Sulfate	20	20		1	99	90-110	01/04/2023 1249

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Inorganic non-metals - LCS

Sample ID: YQ64598-002 Batch: 64598

Analytical Method: SM 2320B-2011

Matrix: Aqueous

	Spike Amount	Result			%Rec	
Parameter	(mg CaCO3/L)	(mg CaCO3/L) Q	Dil	% Rec	Limit	Analysis Date
Alkalinity @ pH 4.5 su	100	100	1	100	90-110	01/10/2023 1857

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: YQ64150-001 Batch: 64150 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	01/04/2023 2321
Benzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Bromodichloromethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Bromoform	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	01/04/2023 2321
2-Butanone (MEK)	ND		1	10	2.0	ug/L	01/04/2023 2321
Carbon disulfide	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Chlorobenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Chloroethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Chloroform	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Cyclohexane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Dibromochloromethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Ethylbenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
2-Hexanone	ND		1	10	2.0	ug/L	01/04/2023 2321
Isopropylbenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Methyl acetate	ND		1	1.0	0.40	ug/L	01/04/2023 2321
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	01/04/2023 2321
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	01/04/2023 2321
Methylcyclohexane	ND		1	5.0	0.40	ug/L	01/04/2023 2321
Methylene chloride	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Styrene	ND		1	0.50	0.41	ug/L	01/04/2023 2321
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Tetrachloroethene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
Toluene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	01/04/2023 2321
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	01/04/2023 2321
.,.,= 1110110100110110	110		•	0.00	5. 10	~9/ L	0 1/0 1/2020 2021

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: YQ64150-001 Batch: 64150

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND	1	0.50	0.40	ug/L	01/04/2023 2321
Trichlorofluoromethane	ND	1	0.50	0.40	ug/L	01/04/2023 2321
Vinyl chloride	ND	1	0.50	0.40	ug/L	01/04/2023 2321
Xylenes (total)	ND	1	1.0	0.40	ug/L	01/04/2023 2321
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	107	70-130				
1,2-Dichloroethane-d4	108	70-130				
Toluene-d8	112	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: YQ64150-002 Batch: 64150 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

	Spike						
Donomotor	Amount	Result	0	5.11	0/ Dag	%Rec	Analysis Data
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acetone	100	110		1	110	60-140	01/04/2023 2212
Benzene	50	47		1	93	70-130	01/04/2023 2212
Bromodichloromethane	50	46		1	92	70-130	01/04/2023 2212
Bromoform	50	43		1	85	70-130	01/04/2023 2212
Bromomethane (Methyl bromide)	50	59		1	118	70-130	01/04/2023 2212
2-Butanone (MEK)	100	120		1	119	70-130	01/04/2023 2212
Carbon disulfide	50	46		1	91	70-130	01/04/2023 2212
Carbon tetrachloride	50	47		1	94	70-130	01/04/2023 2212
Chlorobenzene	50	47		1	94	70-130	01/04/2023 2212
Chloroethane	50	49		1	99	70-130	01/04/2023 2212
Chloroform	50	45		1	90	70-130	01/04/2023 2212
Chloromethane (Methyl chloride)	50	51		1	102	60-140	01/04/2023 2212
Cyclohexane	50	40		1	79	70-130	01/04/2023 2212
1,2-Dibromo-3-chloropropane (DBCP)	50	41		1	82	70-130	01/04/2023 2212
Dibromochloromethane	50	46		1	92	70-130	01/04/2023 2212
1,2-Dibromoethane (EDB)	50	47		1	93	70-130	01/04/2023 2212
1,2-Dichlorobenzene	50	46		1	93	70-130	01/04/2023 2212
1,3-Dichlorobenzene	50	47		1	94	70-130	01/04/2023 2212
1,4-Dichlorobenzene	50	46		1	91	70-130	01/04/2023 2212
Dichlorodifluoromethane	50	52		1	104	60-140	01/04/2023 2212
1,1-Dichloroethane	50	45		1	91	70-130	01/04/2023 2212
1,2-Dichloroethane	50	50		1	99	70-130	01/04/2023 2212
1,1-Dichloroethene	50	47		1	94	70-130	01/04/2023 2212
cis-1,2-Dichloroethene	50	49		1	97	70-130	01/04/2023 2212
trans-1,2-Dichloroethene	50	48		1	97	70-130	01/04/2023 2212
1,2-Dichloropropane	50	48		1	95	70-130	01/04/2023 2212
cis-1,3-Dichloropropene	50	46		1	92	70-130	01/04/2023 2212
trans-1,3-Dichloropropene	50	44		1	88	70-130	01/04/2023 2212
Ethylbenzene	50	47		1	95	70-130	01/04/2023 2212
2-Hexanone	100	110		1	115	70-130	01/04/2023 2212
Isopropylbenzene	50	46		1	93	70-130	01/04/2023 2212
Methyl acetate	50	48		1	95	70-130	01/04/2023 2212
Methyl tertiary butyl ether (MTBE)	50	45		1	90	70-130	01/04/2023 2212
4-Methyl-2-pentanone	100	90		1	90	70-130	01/04/2023 2212
Methylcyclohexane	50	47		1	93	70-130	01/04/2023 2212
Methylene chloride	50	48		1	96	70-130	01/04/2023 2212
Styrene	50	46		1	93	70-130	01/04/2023 2212
1,1,2,2-Tetrachloroethane	50	45		1	89	70-130	01/04/2023 2212
Tetrachloroethene	50	48		1	95	70-130	01/04/2023 2212
Toluene	50	47		1	94	70-130	01/04/2023 2212
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	46		1	92	70-130	01/04/2023 2212
1,2,4-Trichlorobenzene	50	46		1	93	70-130	01/04/2023 2212
1,1,1-Trichloroethane	50	45		1	90	70-130	01/04/2023 2212
1,1,2-Trichloroethane	50	47		1	94	70-130	01/04/2023 2212
1,1,2 Themoreculation	50	77			/-T	70 130	0110712020 2212

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: YQ64150-002 Batch: 64150

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	47	1	95	70-130	01/04/2023 2212
Trichlorofluoromethane	50	55	1	110	70-130	01/04/2023 2212
Vinyl chloride	50	56	1	113	70-130	01/04/2023 2212
Xylenes (total)	100	91	1	91	70-130	01/04/2023 2212
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	97	70-130				
1,2-Dichloroethane-d4	96	70-130				
Toluene-d8	100	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - MB

Sample ID: XQ63821-001 Batch: 63821

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Ethane	ND		1	10	2.5	ug/L	12/29/2022 1338
Ethene	ND		1	10	2.5	ug/L	12/29/2022 1338
Methane	ND		1	10	2.5	ug/L	12/29/2022 1338

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCS

Sample ID: XQ63821-002 Batch: 63821

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Ethane	550	550		1	100	70-130	12/29/2022 1247
Ethene	520	510		1	98	70-130	12/29/2022 1247
Methane	300	300		1	102	70-130	12/29/2022 1247

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Dissolved Gases - LCSD

Sample ID: XQ63821-003 Batch: 63821

Analytical Method: RSK - 175

Matrix: Aqueous

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Ethane	550	580		1	104	4.1	70-130	30	12/29/2022 1300
Ethene	520	530		1	103	4.4	70-130	30	12/29/2022 1300
Methane	300	310		1	104	1.5	70-130	30	12/29/2022 1300

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### ICP-AES Metals - MB

Sample ID: XQ63799-001 Batch: 63799

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 01/03/2023 1009

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Iron	ND		1	0.10	0.040	mg/L	01/03/2023 2305

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

#### ICP-AES Metals - LCS

Sample ID: XQ63799-002 Batch: 63799 Matrix: Aqueous Prep Method: 3005A

Prep Date: 01/03/2023 1009

Analytical Method: 6010D

	Spike	5 "				0/ Da a	
Parameter	Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Iron	20	17	•	1	85	80-120	01/03/2023 2309

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## ICP-AES Metals - MB

Sample ID: YQ64324-001 Batch: 64324

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 01/07/2023 0942

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Dissolved Iron	ND		1	0.10	0.040	mg/L	01/09/2023 0322

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## ICP-AES Metals - LCS

Sample ID: YQ64324-002 Batch: 64324

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 01/07/2023 0942

	Spike Amount	Result			0.5	%Rec	
Parameter	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Dissolved Iron	20	22		1	109	80-120	01/09/2023 0326

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

## ICP-AES Metals - MS

Sample ID: XL28017-003MS

Batch: 64324

Matrix: Aqueous Prep Method: 3005A

Prep Date: 01/07/2023 0942

Analytical Method: 6010D

	Sample	Spike						
	Amount	Amount	Result				%Rec	
Parameter	(mg/L)	(mg/L)	(mg/L)	Q	Dil	% Rec	Limit	Analysis Date
Dissolved Iron	ND	20	22		1	109	75-125	01/09/2023 0334

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

### ICP-AES Metals - MSD

Sample ID: XL28017-003MD

Batch: 64324

Matrix: Aqueous Prep Method: 3005A

Prep Date: 01/07/2023 0942

Analytical Method: 6010D

	Sample	Spike								
	Amount	Amount	Result				%Rec	% RPD		
Parameter	(mg/L)	(mg/L)	(mg/L)	Q	Dil % Rec	% RPD	Limit	Limit	Analysis Date	
Dissolved Iron	ND	20	22		1 109	0.092	75-125	20	01/09/2023 0338	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

 $J = Estimated result < LOQ and <math>\geq DL$ 

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody and Miscellaneous Documents

Document Number: MED03N2-01

DISTRIBUTION: WHITE & YELLOW-Batum to laboratory with Sample(s); PINK-FlahkIDSart Copy

#### Remarks / Cooler LD. Number 140606 XL.280·17 e. Oceano No. g GC Repulrements (Specify) Yemp Blank <u></u> J. See TATE Pinte. SCETT, RESS PACON, CAM ç 122 02187147 12478739 Х × CHOORIDE Oge 2 Date Dak Dak X У $\times$ Analysis (Atlacti Nst / more syapeys needed) <u> 70 F</u> $\times$ Receipt Temp. Li Unknown C Poison Telephone No. / E-may JOTA × Ree Pass C Skin Irritant 33W メ 106 Vantage Point Drive - West Columbia, SC 29172 Telephone No. 803-791-9700 Fax No. 803-791-9111 Received on top (Circle) (Yes) No <u>vec's</u> PACE ANALYTICAL SERVICES, LLC 4 Laboratory received by Vindualization × × Possible Hazard Identification (2 Non-Hazard Li Flammatte PAGE FROM er sees No of Containers by Praservative Type HOPN www.pacelabs.com Received by 2. Received by 3. Received by ЮH \$ 3 1.4 cowe びまかり 85.55 FOSSH MARIN 17 ŝ ☐ Betom to Clean ( Desposed by Lea Mathix PHOS snoarity Time Time 200 Report to Contact <u>P</u> $\frac{\wp}{\lambda}$ Sampler's Signatur 22-32-21 Anograpio Anograp ٩ Note: Aif semples are retained for four weeks from receipt Printed Name Semple Dispostal Colection Tons (Millary) 25.50 10,40 1150 Sate Date Dake Oato unless other arrangements are made. Turn Around Time Required (Prior lab approval required for expedited 1811.) 72-22-27 Cattecton Dale(s) 25 28 C P.O. Ma. PET RESERVEH DIS (Containers for each sangle may be combined on one that,) Face Analytical\* というできて Straple ID / Description 4-6155700 Standard U Bush (Specify ACCOM ColowBIA 1500-085W 1×1-31 1. Relinquished by 2. Relinquished by 4. Reinquisned by 3. Relinquished by WE-Project Name Address

DC#\_Title: ENV-FRM-WCOL-0286 v02\_Samples Receipt Checklist (SRC)

Effective Date: 8/2/2022

## Sample Receipt Checklist (SRC)

Means of receipt:   Pace   Client   UPS   FedFx   Other:     Yes   YNo	A POOL	partition of the content (of the )
Yes   No   1. Were custody seals present on the cooler?   Yes   No   V NA  2. If custody seals were present, were they infact and unbroken?   PI Strip ID 2: 1999	lient: AECOM	Cooler Inspected by/date: KNR / 12/28/2022 Lot #: XL28017
Ves	deans of receipt:	Pace ✓ Client UPS FedEx Other:
Yes   No   No   A   2. If custody seals were present, were they intact and nnbroken?	Yes ✓ No	Were custody seals present on the cooler?
Original temperature upon receipt / Derived (Corrected) temperature upon receipt / Solid Snap-Cup ID: NA	Yes No	
Original temperature upon receipt / Derived (Corrected) temperature upon receipt    S	H Strip ID: 22-194	
Method: Temperature Blank   Against Bottles   R Gun   Dr   S   R Gun Correction Factor:   O   OC   Method of coolant:   V   Wet Ice     Ice Packs   Dry Ice   None   None	Driginal temperatu	re upon receint / Derived (Corrected) temperature programme acceint / Schild Span Con ID: NA
Method: Temperature Blank Against Bottles IR Gun ID; S IR Gun Correction Factor: O °C Method of coolant: Wet Ice   Ice Packs Dry Ice None   No	.8 /1.8 °C N	A /NA oc NA /NA oc NA /NA oc
Method of coolant:		
Yes	dethod of coolant	Wet Ice   Ice Books   Day Inc.   Name
Yes	- I - I	3 Wers all coders received at on below 6 0000 VE
Yes No	✓ Yes No	NA DM area Notified by whome (count) (fine to fine (c) al
y Yes No	Ves No	/ NA 4 Is the communication provided problems of a structural to the form
y Yes No 6. Were sample IDs listed on the COC and all sample containers? y Yes No 7. Was collection date & time listed on the COC and all sample containers? y Yes No 8. Did all container label information (ID, date, time) agree with the COC? y Yes No 9. Were tests to be performed listed on the COC? y Yes No 10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? y Yes No 11. Was adequate sample volume available? y Yes No 12. Were all samples received within ½ the holding time or 48 hours, whichever comes first/y Yes No 13. Were all samples containers accounted for? (No missing/excess) y Yes No NA diameter) in any of the VOA vals? y Yes No NA 15. Were all DRO/metals/nutrient samples received at a pH of < 2? y Yes No NA 16. Were all ORO/metals/nutrient samples received at a pH of < 2? y Yes No NA 18. Were all pplicable NHy/TKN/cyanide/phenol/625,1/608.3 (< 0.5mg/L) samples free of residual chlorine? y Yes No NA 18. Was the quote number listed on the container label? If yes, Quote # ample Preservation (Must be completed for any sample(s) incorrectly preserved and were adjusted according in sample receiving with mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # □ □ in finer than one preservative is needed, please note in the comments below.  were received with TRC > 0.5 mg/L (if #19 is no) and were dijusted accordingly in sample receiving with Sample received with Dubbles > 6 mm in diameter.	2.7.5	5 West appearance for the spacking sup attached to this form?
y Yes No		5. Were proper custody procedures (reiniquished/received) followed?
Yes		
y Yes		7. Was collection date & time listed on the COC and all sample containers?
No		8. Did all container label information (ID, date, time) agree with the COC?
Yes	Yes No	9. Were tests to be performed listed on the COC?
Yes	71van 1735	10. Did all samples arrive in the proper containers for each test and/or in good condition
Yes No	1 ce     100	(unbroken, lids on, etc.)?
Yes No 12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?  Yes No 13. Were all samples containers accounted for? (No missing/excess)  Yes No NA 14. Were VOA, 8015C and RSK-175 samples free of bubbles > "pea-size" (½" or 6mm in diameter) in any of the VOA vials?  Yes No NA 15. Were all DRO/metals/mutrient samples received at a pH of < 2?  Yes No NA 16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9  Yes No NA 17. Were all applicable NH₂/TKN/cyanide/phenol/625, 1/608.3 (< 0.5mg/L) samples free of residual chlorine?  Yes No NA 18. Was the quote number listed on the container label? If yes, Quote #  ample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)  ample(s) were received incorrectly preserved and were adjusted according in sample receiving with mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # □  If more than one preservative is needed, please note in the comments below.  ample(s) were received with bubbles > 6 mm in diameter.  ample(s) were received with bubbles > 6 mm in diameter.  ample(s) were received with TRC > 0.5 mg/L (If #19 is no) and were dijusted accordingly in sample receiving with sodium thiosulfate (Na₂S₂O₃) with Unique ID: NA	Zives [ ]No	
Yes		
Yes		
diameter) in any of the VOA vials?  Yes No NA 15. Were all DRO/metals/mutrient samples received at a pH of < 2?  Yes No NA 16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9  Yes No NA 17. Were all applicable NHy/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?  Yes No NA 18. Was the quote number listed on the container label? If yes, Quote #  ample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)  ample(s)	Yes No	
Yes	7]Yes □No [	NA 14. Were VOA, 8015C and RSK-175 samples free of bubbles > "pea-size" (%"or 6mm in
Yes No		diameter) in any of the VOA vials?
Yes No No NA		INA 15. Were all DRO/metals/mutrient samples received at a pH of < 2?
residual chlorine?  Yes No	TES NO	✓ INA 16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes No No NA 18. Was the quote number listed on the container label? If yes, Quote #  ample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)  ample(s)	Yes No	NA residual chloring?
ample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)  ample(s)	I	18 Was the quote number listed on the container lebels to
ample(s)	_Ycs VNo [	NA No and quote number risted on the container laber? It yes, Quote #
ample(s)	mple Preserveti	
isample receiving withmL of circle one: H2SO4, HNO3, HCl, NaOH using SR #mime of preservation If more than one preservative is needed, please note in the comments below.  ample(s)were received with bubbles >6 mm in diameter.  ample(s)were received with TRC > 0.5 mg/L (If #19 is no) and were diusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA		an (Missi de completed for any sample(s) incorrectly preserved or with headspace.)
ime of preservation If more than one preservative is needed, please note in the comments below.  ample(s) were received with bubbles >6 mm in diameter.  ample(s) were received with TRC > 0.5 mg/L (If #19 is no ) and were dijusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA		were received incorrectly preserved and were adjusted according
ample(s) were received with bubbles >6 mm in diameter. amples(s) NA were received with TRC > 0.5 mg/L (If #19 is $no$ ) and were djusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA	sample receiving	with mL of circle one: H2SO4, HNO3, HCL NaOH using SR #
ample(s) were received with bubbles >6 mm in diameter. amples(s) NA were received with TRC > 0.5 mg/L (If #19 is $no$ ) and were djusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA	me of preservatio	n If more than one preservative is needed, please note in the comments below.
amples(s) NA were received with TRC > 0.5 mg/L (If #19 is no) and were djusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: $\frac{NA}{N}$		
djusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA	mple(s)	were received with bubbles >6 mm in diameter.
djusted accordingly in sample receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA	minles(s) NA	
	insted accordingly	were received with TRC > 0.5 mg/L (If #19 is no) and were
oniments:		, an sample receiving with soquan unostitate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Unique ID: NA
	numents:	
rax ID: 56360 Page Analytical Services, 11 C		

## **Attachment H**

**Data Validation Reports** 

Site Name: Shakespeare Laboratory Batch Number: WH20094 Date Collected: August 19-20, 2021

#### DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project analytical Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific analytical DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

- 1) Field Sampling Check is a process to ensure that all samples were collected, and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.
- 2) Data Verification is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.
- 3) Data Review is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.
- 4) **Data Evaluation** is a process to determine if the data meet project-specific analytical DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.
- 5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

Date Collected: August 19-20, 2021

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific analytical DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

#### **Data Assessment Procedures**

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the analytical DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, January 2017). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846*), *Update V* (USEPA, July 2014) are also evaluated during the validation process. This validation process has been adapted to meet the analytical DQO requirements for generation of definitive critical data.

#### **Data Validation Results**

The analytical data (see associated COCs) were collected from August 19-20, 2021 for Shakespeare. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/":

#### **Volatile Organic Compounds by Method 8260D**

Results of the validation process indicate the data analyzed for this method are acceptable for their intended use and no data flags are required.

#### Data Summary and Usability

No QC excursions were encountered during the validation of this data set. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

#### References

United States Environmental Protection Agency (USEPA), February 2014. *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846), Update V* (USEPA, July 2014).

United States Environmental Protection Agency (USEPA), January 2017. *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*. Publication #EPA-540-R-2017-002.

#### DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project analytical Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific analytical DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

- 1) Field Sampling Check is a process to ensure that all samples were collected, and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.
- 2) Data Verification is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.
- 3) Data Review is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.
- 4) **Data Evaluation** is a process to determine if the data meet project-specific analytical DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.
- 5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

Date Collected: October 29, 2021

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific analytical DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

#### **Data Assessment Procedures**

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the analytical DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, January 2017). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846*), *Update V* (USEPA, July 2014) are also evaluated during the validation process. This validation process has been adapted to meet the analytical DQO requirements for generation of definitive critical data.

#### **Data Validation Results**

The analytical data (see associated COCs) were collected on October 29, 2021 for Shakespeare. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/":

#### **Volatile Organic Compounds by Method 8260D**

Results of VOCs in samples MW-10 and ISERD-OBSW-10 were qualified "//h" due the holding time being exceeded by less than two times.

#### Data Summary and Usability

The QC excursions encountered during the validation of this data set did not result in the rejection of anay data. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

#### References

United States Environmental Protection Agency (USEPA), February 2014. *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846), Update V* (USEPA, July 2014).

Site Name: Shakespeare Laboratory Batch Number: WH29086 Date Collected: October 29, 2021

United States Environmental Protection Agency (USEPA), January 2017. *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*. Publication #EPA-540-R-2017-002.

Date Collected: February 21, 2022 - March 8, 2022

#### DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project analytical Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific analytical DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

- 1) Field Sampling Check is a process to ensure that all samples were collected, and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.
- 2) Data Verification is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.
- 3) Data Review is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.
- 4) **Data Evaluation** is a process to determine if the data meet project-specific analytical DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.
- 5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

Date Collected: February 21, 2022 - March 8, 2022

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific analytical DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

#### **Data Assessment Procedures**

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the analytical DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, January 2017). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846*), *Update V* (USEPA, July 2014) are also evaluated during the validation process. This validation process has been adapted to meet the analytical DQO requirements for generation of definitive critical data.

#### **Data Validation Results**

The analytical data (see associated COCs) were collected from February 21, 2022 – March 8, 2022 for Shakespeare. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/":

#### **Volatile Organic Compounds by Method 8260D**

In package XB22075, detections of acetone in any sample (excluding sample TB-02) were qualified "/B/T" due to the presence of the analyte in the associated trip blank sample.

In package XB24099, detections of acetone and styrene in any sample (excluding sample FB-01) were qualified "/B/F" due to the presence of the analyte in the associated field blank sample.

In package XC08059, detections of acetone associated with batch 34828 were flagged "/J/C" due to recovery above the established limit (168% > 50-150%). These qualifiers indicate the results are overestimations and should be considered biased high.

In package XC08061, detections of acetone in any sample (excluding sample TB-10) were qualified "/B/T" due to the presence of the analyte in the associated trip blank sample.

**Laboratory Batch Number:** Various – February – March 2022

**Date Collected:** February 21, 2022 - March 8, 2022

In package XC08061, detections of acetone associated with batch 34980 were flagged "/J/C" due to recovery above the established limit (156% > 50-150%). These qualifiers indicate the results are overestimations and should be considered biased high.

#### Data Summary and Usability

The QC excursions encountered during the validation of this data set did not result in the rejection of any data. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

#### References

United States Environmental Protection Agency (USEPA), February 2014. *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846*), *Update V* (USEPA, July 2014).

United States Environmental Protection Agency (USEPA), January 2017. *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*. Publication #EPA-540-R-2017-002.

Site Name: Signify Laboratory Batch Number: XG20043

Date Collected: July 19-20, 2022

#### DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project analytical Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific analytical DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

- 1) Field Sampling Check is a process to ensure that all samples were collected, and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.
- 2) Data Verification is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.
- 3) Data Review is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.
- 4) **Data Evaluation** is a process to determine if the data meet project-specific analytical DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.
- 5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

4-DAR-jul2022 Page 1 of 3

Site Name: Signify Laboratory Batch Number: XG20043

Date Collected: July 19-20, 2022

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific analytical DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

#### **Data Assessment Procedures**

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the analytical DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, January 2017). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846*), *Update V* (USEPA, July 2014) are also evaluated during the validation process. This validation process has been adapted to meet the analytical DQO requirements for generation of definitive critical data.

#### **Data Validation Results**

The analytical data (see associated COCs) were collected on July 19-20, 2022, for Signify. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/":

#### **Volatile Organic Compounds by Method 8260D**

Detections of acetone associated with batch 48752 were qualified "/J/C" due to recovery in the associated laboratory control sample above the established limit of 50 - 150% (166%). These qualifiers indicate the results are over-estimations and should be considered biased high.

Results of styrene in samples TMW-31 and it's field duplicate, Dup-01, were qualified "/J/A" due to the relative percent difference between the two samples exceeding the established criteria of 35% (40%). These qualifiers indicate imprecision with field sampling techniques, laboratory methodology, or instrumentation and the results should be considered estimated.

#### Data Summary and Usability

The QC excursions encountered during the validation of this data set did not result in the rejection of any data. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

4-DAR-jul2022 Page 2 of 3

Site Name: Signify Laboratory Batch Number: XG20043 Date Collected: July 19-20, 2022

#### References

United States Environmental Protection Agency (USEPA), February 2014. *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846), Update V* (USEPA, July 2014).

United States Environmental Protection Agency (USEPA), January 2017. *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*. Publication #EPA-540-R-2017-002.

4-DAR-jul2022 Page 3 of 3

Date Collected: December 19 and 28, 2022

#### DATA ASSESSMENT REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project analytical Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific analytical DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

- 1) Field Sampling Check is a process to ensure that all samples were collected, and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.
- 2) Data Verification is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.
- 3) Data Review is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.
- 4) **Data Evaluation** is a process to determine if the data meet project-specific analytical DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.
- 5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and

5-DAR Dec 2022 Page 1 of 3

Date Collected: December 19 and 28, 2022

compliance with the requirements of each analytical method. Two major components of data validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific analytical DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

#### **Data Assessment Procedures**

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the analytical DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, November 2020). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846), Update V* (USEPA, July 2014) are also evaluated during the validation process. This validation process has been adapted to meet the analytical DQO requirements for generation of definitive critical data.

#### **Data Validation Results**

The analytical data (see associated COCs) were collected on December 19 and 28, 2022 for Signify. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/":

#### **Volatile Organic Compounds by Method 8260D**

In package XL19029, results of acetone, 2-butanone, 2-hexanone, 4-methyl-2-pentanone, and 1,1,2-trichloro-1,2,2-trifluoroethane were qualified "/J/E" due to the relative percent difference between the laboratory control sample and laboratory control sample duplicate exceeded the established criteria of 25% (39, 32, 30,33, and 30%, respectively). These qualifiers indicate imprecision with laboratory methodology, instrumentation, or matrix interference.

In package XL19029, results from Run 2 in samples MW-10I and ERD-OBSW-1I were qualified "//h" due to a holding time exceedance of less than two times (15 days and 16 days, respectively > 14 day holding time).

#### Data Summary and Usability

The QC excursions encountered during the validation of this data set did not result in the rejection of any data. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

5-DAR Dec 2022 Page 2 of 3

Site Name: Signify

**Laboratory Batch Number:** Various – December 2022

**Date Collected:** December 19 and 28, 2022

#### References

United States Environmental Protection Agency (USEPA), February 2014. *Test Methods for Evaluation Solid Waste: Physical/Chemical Methods Compendium (SW-846), Update V* (USEPA, July 2014).

United States Environmental Protection Agency (USEPA), November 2020. *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*. Publication #EPA-540-R-20-005.

5-DAR Dec 2022 Page 3 of 3

Pilot Study Report - Shakespeare Composite Structure	es
Newberry, S	

## Attachment I

Lab Data and Bill of Lading/Material Manifest for Pilot Study Remedial Action Derived Waste



# **Report of Analysis**

#### **AECOM**

101 Research Drive Columbia, SC 29203 Attention: Scott Ross

Project Name: Shakespeare - Signify

Project Number: 60635197 Lot Number: WH26123 Date Completed: 09/13/2021

Harrah K Sucas

09/14/2021 10:43 AM
Approved and released by:
Project Manager I: **Hannah K. Lucas** 





The electronic signature above is the equivalent of a handwritten signature.

This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

# Case Narrative AECOM Lot Number: WH26123

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Where applicable, all soil sample results (including LOQ and DL if requested) are corrected for dry weight unless flagged with a "W" qualifier.

If you have any questions regarding this report please contact the Pace Project Manager listed on the cover page.

#### **Semivolatiles**

The method blank associated with batch 14073 had caprolactam detected at a concentration that was below ½ the LOQ. All samples associated with this method blank that have detections for caprolactam have been flagged with a "B" qualifier.

# Sample Summary AECOM

Lot Number: WH26123

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	Soil IDW	Solid	08/26/2021 1100	08/26/2021
002	Liquid IDW	Aqueous	08/26/2021 1120	08/26/2021

(2 samples)

# Detection Summary AECOM

Lot Number: WH26123

Sample	e Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	Soil IDW	Solid	Pyridine	8270E	0.010	J	mg/L	6
001	Soil IDW	Solid	Barium	6010D	0.52		mg/L	7
001	Soil IDW	Solid	Chromium	6010D	0.020	J	mg/L	7
002	Liquid IDW	Aqueous	Bromodichloromethane	8260D	1.0		ug/L	8
002	Liquid IDW	Aqueous	Carbon disulfide	8260D	2.7		ug/L	8
002	Liquid IDW	Aqueous	Chloroform	8260D	8.1		ug/L	8
002	Liquid IDW	Aqueous	Dibromochloromethane	8260D	0.41	J	ug/L	8
002	Liquid IDW	Aqueous	Methylene chloride	8260D	0.41	J	ug/L	8
002	Liquid IDW	Aqueous	Trichloroethene	8260D	100		ug/L	9
002	Liquid IDW	Aqueous	Aluminum	6010D	0.12	J	mg/L	12
002	Liquid IDW	Aqueous	Barium	6010D	0.044		mg/L	12
002	Liquid IDW	Aqueous	Calcium	6010D	5.9		mg/L	12
002	Liquid IDW	Aqueous	Iron	6010D	0.45		mg/L	12
002	Liquid IDW	Aqueous	Magnesium	6010D	1.0	J	mg/L	12
002	Liquid IDW	Aqueous	Manganese	6010D	0.18		mg/L	12
002	Liquid IDW	Aqueous	Potassium	6010D	3.4	J	mg/L	12
002	Liquid IDW	Aqueous	Sodium	6010D	16		mg/L	12
002	Liquid IDW	Aqueous	Zinc	6010D	0.012	J	mg/L	12

(18 detections)

## **TCLP Volatiles**

Client: AECOM

Description: Soil IDW

Laboratory ID: WH26123-001

Matrix: Solid

Date Sampled: 08/26/2021 1100

Date Received: 08/26/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch
 Leachate Date

 1
 1311/5030B
 8260D
 10
 09/10/2021 0244
 JDF
 14928
 09/07/2021 1804

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Benzene	71-43-2	8260D	ND	0.050	0.0040	mg/L	1
2-Butanone (MEK)	78-93-3	8260D	ND	0.10	0.020	mg/L	1
Carbon tetrachloride	56-23-5	8260D	ND	0.050	0.0040	mg/L	1
Chlorobenzene	108-90-7	8260D	ND	0.050	0.0040	mg/L	1
Chloroform	67-66-3	8260D	ND	0.050	0.0040	mg/L	1
1,2-Dichloroethane	107-06-2	8260D	ND	0.050	0.0040	mg/L	1
1,1-Dichloroethene	75-35-4	8260D	ND	0.050	0.0040	mg/L	1
Tetrachloroethene	127-18-4	8260D	ND	0.050	0.0040	mg/L	1
Trichloroethene	79-01-6	8260D	ND	0.050	0.0040	mg/L	1
Vinyl chloride	75-01-4	8260D	ND	0.010	0.0040	mg/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
Bromofluorobenzene		94	70-130
1,2-Dichloroethane-d4		96	70-130
Toluene-d8		97	70-130

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit
J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## **TCLP Semivolatiles**

Client: AECOM

Description: Soil IDW

OM Laboratory ID: WH26123-001
IDW Matrix: Solid

Date Sampled:08/26/2021 1100
Date Received:08/26/2021

 Run
 Prep Method
 Analytical Method
 Dilution
 Analysis Date
 Analyst
 Prep Date
 Batch
 Leachate Date

 1
 1311/3520C
 8270E
 1
 09/10/2021 1935
 SCD
 09/08/2021 1830
 14793
 09/02/2021 0041

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
1,4-Dichlorobenzene	106-46-7	8270E	ND	0.040	0.0050	mg/L	1
2,4-Dinitrotoluene	121-14-2	8270E	ND	0.080	0.0050	mg/L	1
Hexachlorobenzene	118-74-1	8270E	ND	0.040	0.0050	mg/L	1
Hexachlorobutadiene	87-68-3	8270E	ND	0.040	0.0050	mg/L	1
Hexachloroethane	67-72-1	8270E	ND	0.040	0.010	mg/L	1
2-Methylphenol	95-48-7	8270E	ND	0.040	0.010	mg/L	1
3+4-Methylphenol	106-44-5	8270E	ND	0.040	0.015	mg/L	1
Nitrobenzene	98-95-3	8270E	ND	0.040	0.015	mg/L	1
Pentachlorophenol	87-86-5	8270E	ND	0.20	0.020	mg/L	1
Pyridine	110-86-1	8270E	0.010 J	0.040	0.0050	mg/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND	0.040	0.0050	mg/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND	0.040	0.0050	mg/L	1

Surrogate	Run 1 Q % Recovery	Acceptance Limits
2-Fluorobiphenyl	75	37-129
2-Fluorophenol	46	24-127
Nitrobenzene-d5	75	38-127
Phenol-d5	69	28-128
Terphenyl-d14	87	10-148
2,4,6-Tribromophenol	82	41-144

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## **TCLP Metals**

Client: AECOM

Description: Soil IDW

Laboratory ID: WH26123-001

Matrix: Solid

Date Sampled: 08/26/2021 1100
Date Received: 08/26/2021

Run Prep Method **Analytical Method Dilution** Analysis Date Analyst **Leachate Date Prep Date** Batch 1 1311/3010A 6010D 09/03/2021 1054 JMH 09/03/2021 0121 14330 09/02/2021 0041 1 7470A 09/02/2021 0041 1 1311/7470A 1 09/03/2021 1833 CMS2 09/03/2021 1427 14392

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Arsenic	7440-38-2	6010D	ND	0.15	0.025	mg/L	1
Barium	7440-39-3	6010D	0.52	0.25	0.031	mg/L	1
Cadmium	7440-43-9	6010D	ND	0.050	0.0060	mg/L	1
Chromium	7440-47-3	6010D	0.020 J	0.10	0.013	mg/L	1
Lead	7439-92-1	6010D	ND	0.10	0.047	mg/L	1
Mercury	7439-97-6	7470A	ND	0.0020	0.00091	mg/L	1
Selenium	7782-49-2	6010D	ND	0.20	0.085	mg/L	1
Silver	7440-22-4	6010D	ND	0.10	0.021	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit  $\label{eq:JLQ} J = \text{Estimated result} < \text{LOQ and} \ge \text{DL}$ 

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

## Volatile Organic Compounds by GC/MS

Client: AECOM

Description: Liquid IDW

Laboratory ID: WH26123-002

LOQ

0.50

10

Matrix: Aqueous

DL

4.0

0.40

Units

ug/L

ug/L

Run

1

1

Date Sampled: 08/26/2021 1120 Date Received: 08/26/2021

5030B

Run Prep Method

1

**Parameter** 

Acetone

Benzene

Analytical Method Dilution Analysis Date Analyst **Prep Date** Batch 8260D 09/03/2021 1744 ECB 15210

Analytical

Method

8260D

8260D

Result Q

ND

ND

CAS

Number

67-64-1

71-43-2

Bromodichloromethane		75-27-4	8260D	1.0		0.50	0.40	ug/L	1
Bromoform		75-25-2	8260D	ND		0.50	0.40	ug/L	1
Bromomethane (Methyl brom	ide)	74-83-9	8260D	ND		0.50	0.40	ug/L	1
2-Butanone (MEK)		78-93-3	8260D	ND		10	2.0	ug/L	1
Carbon disulfide		75-15-0	8260D	2.7		0.50	0.40	ug/L	1
Carbon tetrachloride		56-23-5	8260D	ND		0.50	0.40	ug/L	1
Chlorobenzene		108-90-7	8260D	ND		0.50	0.40	ug/L	1
Chloroethane		75-00-3	8260D	ND		0.50	0.40	ug/L	1
Chloroform		67-66-3	8260D	8.1		0.50	0.40	ug/L	1
Chloromethane (Methyl chlor	ide)	74-87-3	8260D	ND		0.50	0.40	ug/L	1
Cyclohexane		110-82-7	8260D	ND		0.50	0.40	ug/L	1
1,2-Dibromo-3-chloropropane	e (DBCP)	96-12-8	8260D	ND		0.50	0.40	ug/L	1
Dibromochloromethane		124-48-1	8260D	0.41	J	0.50	0.40	ug/L	1
1,2-Dibromoethane (EDB)		106-93-4	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichlorobenzene		95-50-1	8260D	ND		0.50	0.40	ug/L	1
1,3-Dichlorobenzene		541-73-1	8260D	ND		0.50	0.40	ug/L	1
1,4-Dichlorobenzene		106-46-7	8260D	ND		0.50	0.40	ug/L	1
Dichlorodifluoromethane		75-71-8	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethane		75-34-3	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloroethane		107-06-2	8260D	ND		0.50	0.40	ug/L	1
1,1-Dichloroethene		75-35-4	8260D	ND		0.50	0.40	ug/L	1
cis-1,2-Dichloroethene		156-59-2	8260D	ND		0.50	0.40	ug/L	1
trans-1,2-Dichloroethene		156-60-5	8260D	ND		0.50	0.40	ug/L	1
1,2-Dichloropropane		78-87-5	8260D	ND		0.50	0.40	ug/L	1
cis-1,3-Dichloropropene		10061-01-5	8260D	ND		0.50	0.40	ug/L	1
trans-1,3-Dichloropropene		10061-02-6	8260D	ND		0.50	0.40	ug/L	1
Ethylbenzene		100-41-4	8260D	ND		0.50	0.40	ug/L	1
2-Hexanone		591-78-6	8260D	ND		10	2.0	ug/L	1
Isopropylbenzene		98-82-8	8260D	ND		0.50	0.40	ug/L	1
Methyl acetate		79-20-9	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (M	TBE)	1634-04-4	8260D	ND		0.50	0.40	ug/L	1
4-Methyl-2-pentanone		108-10-1	8260D	ND		10	2.0	ug/L	1
Methylcyclohexane		108-87-2	8260D	ND		5.0	0.40	ug/L	1
Methylene chloride		75-09-2	8260D	0.41	J	0.50	0.40	ug/L	1
Styrene		100-42-5	8260D	ND		0.50	0.41	ug/L	1
1,1,2,2-Tetrachloroethane		79-34-5	8260D	ND		0.50	0.40	ug/L	1
Tetrachloroethene		127-18-4	8260D	ND		0.50	0.40	ug/L	1
Toluene		108-88-3	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane		76-13-1	8260D	ND		1.0	0.42	ug/L	1
1,2,4-Trichlorobenzene		120-82-1	8260D	ND		0.50	0.40	ug/L	1
1,1,1-Trichloroethane		71-55-6	8260D	ND		0.50	0.40	ug/L	1
1,1,2-Trichloroethane		79-00-5	8260D	ND		0.50	0.40	ug/L	1
LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time	B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis	E = Quantitation of cor P = The RPD between	•		•	DL = Detection Li J = Estimated res	mit ult < LOQ and <u>&gt;</u> DL	Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure	

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

## **Volatile Organic Compounds by GC/MS**

Client: AECOM

Laboratory ID: WH26123-002

Description: Liquid IDW

Date Sampled: 08/26/2021 1120

Matrix: Aqueous

Date Received: 08/26/2021

Run Prep Method **Analytical Method Dilution Analysis Date Analyst Prep Date** Batch 1 5030B 8260D 15210

09/03/2021 1744 ECB

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Trichloroethene	79-01-6	8260D	100	0.50	0.40	ug/L	1
Trichlorofluoromethane	75-69-4	8260D	ND	0.50	0.40	ug/L	1
Vinyl chloride	75-01-4	8260D	ND	0.50	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND	1.0	0.40	ug/L	1

Surrogate	Run 1 Q % Recove	
Bromofluorobenzene	89	70-130
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	98	70-130

LOQ = Limit of Quantitation ND = Not detected at or above the DL H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

## Semivolatile Organic Compounds by GC/MS

Client: AECOM

Description: Liquid IDW

Laboratory ID: WH26123-002 Matrix: Aqueous

S = MS/MSD failure

Date Sampled: 08/26/2021 1120

Date Received: 08/26/2021

Run Prep Method Analytical Method Dilution Analysis Date Analyst 3520C 8270E 09/05/2021 2103 STM

**Prep Date** Batch 09/01/2021 1328 14073

LOQ	DL	Units	Run
0.80	0.20	ug/L	1
0.80	0.20	ug/L	1
4.0	0.50	ug/L	1
0.80	0.20	ug/L	1
4.0	0.50	ug/L	1
8.0	0.50	ug/L	1
0.80	0.20	ug/L	1
0.80	0.20	ug/L	1
0.80	0.20	ug/L	1
0.80	0.20	ug/L	1
0.80	0.20	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
8.0	1.0	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
8.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
0.80	0.30	ug/L	1
0.80	0.20	ug/L	1
4.0	0.20	ug/L	1
4.0	1.8	ug/L ug/L	1
8.0			1
4.0	1.0	ug/L	1
4.0	0.50 0.50	ug/L ug/L	1
4.0	1.0	ug/L	1
4.0	0.50	ug/L	1
20		ug/L	1
20	1.0	ug/L ug/L	1
	1.0		
8.0	0.50	ug/L	1
8.0	0.50	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
0.80	0.20	ug/L	1
0.80	0.20	ug/L	1
4.0	0.50	ug/L	1
4.0	0.50	ug/L	1
20	2.0	ug/L	1
	Detection	Detection Limit	

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

H = Out of holding time

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

W = Reported on wet weight basis

## Semivolatile Organic Compounds by GC/MS

Client: AECOM

Laboratory ID: WH26123-002

Description: Liquid IDW Matrix: Aqueous

Date Sampled: 08/26/2021 1120 Date Received: 08/26/2021

Run	Prep Method	Analytical Method	Dilution	Analysis Date Analyst	Prep Date Batch	
1	3520C	8270E	1	09/05/2021 2103 STM	09/01/2021 1328 14073	i

Parameter	CAS Number	Analytical Method	Result Q	LOQ	DL	Units	Run
Hexachloroethane	67-72-1	8270E	ND	4.0	1.0	ug/L	1
Indeno(1,2,3-c,d)pyrene	193-39-5	8270E	ND	0.80	0.20	ug/L	1
Isophorone	78-59-1	8270E	ND	4.0	0.50	ug/L	1
2-Methylnaphthalene	91-57-6	8270E	ND	0.80	0.20	ug/L	1
2-Methylphenol	95-48-7	8270E	ND	4.0	1.0	ug/L	1
3+4-Methylphenol	106-44-5	8270E	ND	4.0	1.5	ug/L	1
Naphthalene	91-20-3	8270E	ND	0.80	0.20	ug/L	1
2-Nitroaniline	88-74-4	8270E	ND	8.0	0.50	ug/L	1
3-Nitroaniline	99-09-2	8270E	ND	8.0	1.0	ug/L	1
4-Nitroaniline	100-01-6	8270E	ND	8.0	1.5	ug/L	1
Nitrobenzene	98-95-3	8270E	ND	4.0	1.5	ug/L	1
2-Nitrophenol	88-75-5	8270E	ND	4.0	1.0	ug/L	1
4-Nitrophenol	100-02-7	8270E	ND	20	2.0	ug/L	1
N-Nitrosodi-n-propylamine	621-64-7	8270E	ND	4.0	0.50	ug/L	1
N-Nitrosodiphenylamine (Diphenylamine)	86-30-6	8270E	ND	4.0	0.50	ug/L	1
Pentachlorophenol	87-86-5	8270E	ND	20	2.0	ug/L	1
Phenanthrene	85-01-8	8270E	ND	0.80	0.20	ug/L	1
Phenol	108-95-2	8270E	ND	4.0	0.50	ug/L	1
Pyrene	129-00-0	8270E	ND	0.80	0.20	ug/L	1
2,4,5-Trichlorophenol	95-95-4	8270E	ND	4.0	0.50	ug/L	1
2,4,6-Trichlorophenol	88-06-2	8270E	ND	4.0	0.50	ug/L	1

Surrogate         Q         % Recovery         Limits           2-Fluorobiphenyl         86         37-129           2-Fluorophenol         55         24-127           Nitrobenzene-d5         73         38-127           Phenol-d5         79         28-128           Terphenyl-d14         100         10-148
2-Fluorophenol       55       24-127         Nitrobenzene-d5       73       38-127         Phenol-d5       79       28-128
Nitrobenzene-d5       73       38-127         Phenol-d5       79       28-128
Phenol-d5 79 28-128
Terphenyl-d14 100 10-148
10.5.1.0
2,4,6-Tribromophenol 63 35-144

LOQ = Limit of Quantitation  $\ensuremath{\mathsf{ND}}$  = Not detected at or above the  $\ensuremath{\mathsf{DL}}$ H = Out of holding time

B = Detected in the method blank N = Recovery is out of criteria W = Reported on wet weight basis DL = Detection Limit J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

### **ICP-AES Metals**

Client: AECOM

Description: Liquid IDW

Laboratory ID: WH26123-002

Matrix: Aqueous

Date Sampled:08/26/2021 1120 Date Received:08/26/2021

Run Prep Method **Analytical Method Dilution** Analysis Date Analyst **Prep Date** Batch 1 3005A 6010D 09/02/2021 2000 JMH 09/02/2021 0627 14155 1 2 3005A 6010D 1 09/02/2021 0627 14155 09/03/2021 1211 JMH

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Aluminum	7429-90-5	6010D	0.12		0.40	0.10	mg/L	1
Antimony	7440-36-0	6010D	ND		0.020	0.0070	mg/L	1
Arsenic	7440-38-2	6010D	ND		0.015	0.0025	mg/L	1
Barium	7440-39-3	6010D	0.044		0.025	0.0031	mg/L	2
Beryllium	7440-41-7	6010D	ND		0.0050	0.00060	mg/L	1
Boron	7440-42-8	6010D	ND		0.050	0.020	mg/L	2
Cadmium	7440-43-9	6010D	ND		0.0050	0.00060	mg/L	1
Calcium	7440-70-2	6010D	5.9		5.0	0.63	mg/L	1
Chromium	7440-47-3	6010D	ND		0.010	0.0013	mg/L	1
Cobalt	7440-48-4	6010D	ND		0.025	0.0031	mg/L	1
Copper	7440-50-8	6010D	ND		0.010	0.0020	mg/L	1
Iron	7439-89-6	6010D	0.45		0.10	0.040	mg/L	1
Lead	7439-92-1	6010D	ND		0.010	0.0047	mg/L	1
Magnesium	7439-95-4	6010D	1.0	J	5.0	0.63	mg/L	1
Manganese	7439-96-5	6010D	0.18		0.015	0.0019	mg/L	1
Molybdenum	7439-98-7	6010D	ND		0.040	0.0050	mg/L	1
Nickel	7440-02-0	6010D	ND		0.040	0.0050	mg/L	2
Potassium	7440-09-7	6010D	3.4	J	5.0	0.63	mg/L	1
Selenium	7782-49-2	6010D	ND		0.020	0.0085	mg/L	1
Silver	7440-22-4	6010D	ND		0.010	0.0021	mg/L	1
Sodium	7440-23-5	6010D	16		5.0	0.63	mg/L	1
Thallium	7440-28-0	6010D	ND		0.050	0.0063	mg/L	1
Tin	7440-31-5	6010D	ND		0.050	0.0063	mg/L	1
Titanium	7440-32-6	6010D	ND		0.050	0.0063	mg/L	1
Vanadium	7440-62-2	6010D	ND		0.050	0.0063	mg/L	1
Zinc	7440-66-6	6010D	0.012	J	0.020	0.0025	mg/L	1

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

H = Out of holding time

B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis

E = Quantitation of compound exceeded the calibration range P = The RPD between two GC columns exceeds 40%

DL = Detection Limit
J = Estimated result < LOQ and  $\geq$  DL

Q = Surrogate failure L = LCS/LCSD failure S = MS/MSD failure **QC Summary** 

#### **TCLP Volatiles - MB**

Sample ID: WQ14928-001

**Batch:** 14928

Matrix: Solid
Prep Method: 1311/5030B

Analytical Method: 8260D Leachate Date: 09/07/2021 1804

Parameter	Result	Q [	il LOQ	DL	Units	Analysis Date
Benzene	ND		0.050	0.0040	mg/L	09/10/2021 0058
2-Butanone (MEK)	ND		0.10	0.020	mg/L	09/10/2021 0058
Carbon tetrachloride	ND		0.050	0.0040	mg/L	09/10/2021 0058
Chlorobenzene	ND		0.050	0.0040	mg/L	09/10/2021 0058
Chloroform	ND		0.050	0.0040	mg/L	09/10/2021 0058
1,2-Dichloroethane	ND		0.050	0.0040	mg/L	09/10/2021 0058
1,1-Dichloroethene	ND		0.050	0.0040	mg/L	09/10/2021 0058
Tetrachloroethene	ND		0.050	0.0040	mg/L	09/10/2021 0058
Trichloroethene	ND		0.050	0.0040	mg/L	09/10/2021 0058
Vinyl chloride	ND		0.010	0.0040	mg/L	09/10/2021 0058
Surrogate	Q % Rec	Accepta Limit				
Bromofluorobenzene	95	70-13	0			
1,2-Dichloroethane-d4	95	70-13	0			
Toluene-d8	95	70-13	0			

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Volatiles - LCS**

Sample ID: WQ14928-002

**Batch:** 14928

Matrix: Solid
Prep Method: 1311/5030B

Analytical Method: 8260D Leachate Date: 09/07/2021 1804

Parameter	Spike Amount (mg/L)	Result (mg/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Benzene	0.50	0.48	10	96	70-130	09/09/2021 2229
2-Butanone (MEK)	1.0	0.86	10	86	70-130	09/09/2021 2229
Carbon tetrachloride	0.50	0.52	10	104	70-130	09/09/2021 2229
Chlorobenzene	0.50	0.47	10	95	70-130	09/09/2021 2229
Chloroform	0.50	0.47	10	95	70-130	09/09/2021 2229
1,2-Dichloroethane	0.50	0.46	10	93	70-130	09/09/2021 2229
1,1-Dichloroethene	0.50	0.51	10	102	70-130	09/09/2021 2229
Tetrachloroethene	0.50	0.50	10	101	70-130	09/09/2021 2229
Trichloroethene	0.50	0.50	10	99	70-130	09/09/2021 2229
Vinyl chloride	0.50	0.46	10	93	70-130	09/09/2021 2229
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	90	70-130				
1,2-Dichloroethane-d4	86	70-130				
Toluene-d8	90	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15210-001 Batch: 15210

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acetone	ND		1	10	4.0	ug/L	09/03/2021 1201
Benzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Bromodichloromethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Bromoform	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Bromomethane (Methyl bromide)	ND		1	0.50	0.40	ug/L	09/03/2021 1201
2-Butanone (MEK)	ND		1	10	2.0	ug/L	09/03/2021 1201
Carbon disulfide	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Carbon tetrachloride	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Chlorobenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Chloroethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Chloroform	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Chloromethane (Methyl chloride)	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Cyclohexane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Dibromochloromethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,2-Dibromoethane (EDB)	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,2-Dichlorobenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,3-Dichlorobenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,4-Dichlorobenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Dichlorodifluoromethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,1-Dichloroethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,2-Dichloroethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,1-Dichloroethene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
cis-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
trans-1,2-Dichloroethene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,2-Dichloropropane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
cis-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
trans-1,3-Dichloropropene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Ethylbenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
2-Hexanone	ND		1	10	2.0	ug/L	09/03/2021 1201
Isopropylbenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Methyl acetate	ND		1	1.0	0.40	ug/L	09/03/2021 1201
Methyl tertiary butyl ether (MTBE)	ND		1	0.50	0.40	ug/L	09/03/2021 1201
4-Methyl-2-pentanone	ND		1	10	2.0	ug/L	09/03/2021 1201
Methylcyclohexane	ND		1	5.0	0.40	ug/L	09/03/2021 1201
Methylene chloride	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Styrene	ND		1	0.50	0.41	ug/L	09/03/2021 1201
1,1,2,2-Tetrachloroethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Tetrachloroethene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Toluene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.42	ug/L	09/03/2021 1201
1,2,4-Trichlorobenzene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,1,1-Trichloroethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
1,1,2-Trichloroethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
, ,			•			3. –	

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ15210-001

Batch: 15210 Analytical Method: 8260D Matrix: Aqueous Prep Method: 5030B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Trichloroethene	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Trichlorofluoromethane	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Vinyl chloride	ND		1	0.50	0.40	ug/L	09/03/2021 1201
Xylenes (total)	ND		1	1.0	0.40	ug/L	09/03/2021 1201
Surrogate	Q % Rec		eptance .imit				
Bromofluorobenzene	92	7	0-130				
1,2-Dichloroethane-d4	102	7	0-130				
Toluene-d8	98	7	0-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15210-002 Batch: 15210

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Name		Spike						
Acetone 100 130 1 132 60-140 09/03/2021 1055 Benzene 50 47 1 94 70-130 09/03/2021 1055 Bromodichloromethane 50 46 1 93 70-130 09/03/2021 1055 Bromodrom 6 100 110 1 10 1 108 70-130 09/03/2021 1055 Carbon disulfide 50 47 1 94 70-130 09/03/2021 1055 Carbon disulfide 50 47 1 94 70-130 09/03/2021 1055 Carbon disulfide 50 47 1 94 70-130 09/03/2021 1055 Carbon disulfide 50 47 1 94 70-130 09/03/2021 1055 Carbon disulfide 50 47 1 94 70-130 09/03/2021 1055 Chlorobenzene 50 45 1 99 70-130 09/03/2021 1055 Chlorobenzene 50 46 1 91 70-130 09/03/2021 1055 Chlorofrom 50 46 1 91 70-130 09/03/2021 1055 Chlorofrom 50 46 1 99 70-130 09/03/2021 1055 Cyclohexane 50 48 1 99 60-140 09/03/2021 1055 Cyclohexane 50 48 1 99 70-130 09/03/2021 1055 Cyclohexane 50 48 1 99 70-130 09/03/2021 1055 Cyclohexane 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromo-3-chloropropane (DBCP) 50 46 1 92 70-130 09/03/2021 1055 Dibromochioromethane 50 48 1 96 70-130 09/03/2021 1055 Dibromochioromethane 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 50 46 1 92 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 46 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 47 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 49 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 49 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 48 1 99 70-130 09/03/2021 1055 L/2-Dibromochane 60 50 49 1 99 70-130 09/03/2021 1055	_						%Rec	
Benzene	Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Bromodichloromethane         50         46         1         93         70-130         09/03/2021 1055           Bromofermane (Methyl bromide)         50         47         1         94         70-130         09/03/2021 1055           2-Bulanone (MEK)         100         110         1         108         70-130         09/03/2021 1055           Carbon disulfide         50         47         1         93         70-130         09/03/2021 1055           Carbon tetrachloride         50         47         1         94         70-130         09/03/2021 1055           Chiorobemzene         50         45         1         90         70-130         09/03/2021 1055           Chioroferm         50         46         1         91         70-130         09/03/2021 1055           Chloroferm         50         46         1         92         70-130         09/03/2021 1055           Chloroferm         60         48         1         96         70-130         09/03/2021 1055           Cyclohexane         50         48         1         96         70-130         09/03/2021 1055           Ly-Dichlorofermane         50         48         1         96         70-130	Acetone	100	130		1	132	60-140	09/03/2021 1055
Bromoferm   50	Benzene	50	47		1	94	70-130	09/03/2021 1055
Brommethane (Methyl bromide)	Bromodichloromethane	50	46		1	93	70-130	09/03/2021 1055
Pathanne (MEK)	Bromoform	50	46		1	93	70-130	09/03/2021 1055
Carbon disulfide         50         47         1         93         70-130         09/03/2021 1055           Carbon letrachloride         50         47         1         94         70-130         09/03/2021 1055           Chlorobertane         50         45         1         90         70-130         09/03/2021 1055           Chloromethane         50         46         1         91         70-130         09/03/2021 1055           Chloromethane (Methyl chloride)         50         46         1         92         60-140         09/03/2021 1055           Chloromethane (Methyl chloride)         50         48         1         96         70-130         09/03/2021 1055           Cyclohexane         50         48         1         96         70-130         09/03/2021 1055           L2-Dibromoethane         50         48         1         96         70-130         09/03/2021 1055           1,2-Dichloroberzene         50         48         1         96         70-130         09/03/2021 1055           1,2-Dichloroberzene         50         48         1         92         70-130         09/03/2021 1055           1,3-Dichloroberzene         50         46         1         92	Bromomethane (Methyl bromide)	50	47		1	94	70-130	09/03/2021 1055
Carbon tetrachloride         50         47         1         94         70-130         09/03/2021 1055           Chlorobenzene         50         45         1         90         70-130         09/03/2021 1055           Chloroethane         50         46         1         92         70-130         09/03/2021 1055           Chloromethane (Methyl chloride)         50         46         1         92         70-130         09/03/2021 1055           Cyclohexane         50         48         1         96         70-130         09/03/2021 1055           1,2-Dibromo-3-chloropropane (DBCP)         50         46         1         92         70-130         09/03/2021 1055           1,2-Dibromo-3-chloropropane (DBCP)         50         46         1         92         70-130         09/03/2021 1055           1,2-Dibromoethane (EDB)         50         46         1         92         70-130         09/03/2021 1055           1,2-Dichlorobenzene         50         47         1         93         70-130         09/03/2021 1055           1,2-Dichlorobenzene         50         47         1         93         70-130         09/03/2021 1055           1,4-Dichlorobenzene         50         49	2-Butanone (MEK)	100	110		1	108	70-130	09/03/2021 1055
Chlorobenzene	Carbon disulfide	50	47		1	93	70-130	09/03/2021 1055
Chloroethane	Carbon tetrachloride	50	47		1	94	70-130	09/03/2021 1055
Chloroform	Chlorobenzene	50	45		1	90	70-130	09/03/2021 1055
Chloromethane (Methyl chloride)   50   50   1   99   60-140   09/03/2021 1055	Chloroethane	50	46		1	91	70-130	09/03/2021 1055
Cyclohexane   50   48   1   96   70-130   09/03/2021 1055   1,2-Dibromo-3-chloropropane (DBCP)   50   46   1   92   70-130   09/03/2021 1055   1,2-Dibromo-chloromethane   50   48   1   96   70-130   09/03/2021 1055   1,2-Dibromochloromethane (EDB)   50   46   1   92   70-130   09/03/2021 1055   1,2-Dichlorobenzene   50   47   1   93   70-130   09/03/2021 1055   1,3-Dichlorobenzene   50   47   1   93   70-130   09/03/2021 1055   1,3-Dichlorobenzene   50   43   1   86   70-130   09/03/2021 1055   1,4-Dichlorobenzene   50   49   1   98   60-140   09/03/2021 1055   1,1-Dichloroethane   50   46   1   93   70-130   09/03/2021 1055   1,1-Dichloroethane   50   46   1   93   70-130   09/03/2021 1055   1,1-Dichloroethane   50   46   1   93   70-130   09/03/2021 1055   1,1-Dichloroethane   50   45   1   99   70-130   09/03/2021 1055   1,1-Dichloroethane   50   48   1   97   70-130   09/03/2021 1055   1,2-Dichloroethane   50   48   1   97   70-130   09/03/2021 1055   1,2-Dichloroethene   50   48   1   97   70-130   09/03/2021 1055   1,2-Dichloropropane   50   49   1   99   70-130   09/03/2021 1055   1,3-Dichloropropane   50   50   50   1   100   70-130   09/03/2021 1055   1,3-Dichloropropane   50   50   50   1   109   70-130   09/03/2021 1055   1,3-Dichloropropane   50   48   1   97   70-130   09/03/2021 1055   1,4-Exanone   100   85   1   85   70-130   09/03/2021 1055   1,4-Exanone   50   48   1   97   70-130   09/03/2021 1055   1,4-Extrachloroethane   50   47   1   95   70-130   09/03/2021 1055   1,1-Z-Tetrachloroethane   50   47   1   95   70-130   09/03/2021 1055   1,1-Z-Tetrachloroethane   50   48   1   96   70-130   09/03/2021 1055   1,1-Z-Tichloro-1,2,Z-Trifluoroethane   50   48	Chloroform	50	46		1	92	70-130	09/03/2021 1055
Cyclohexane         50         48         1         96         70-130         09/03/2021 1055           1,2-Dibromo-3-chloropropane (DBCP)         50         46         1         92         70-130         09/03/2021 1055           1,2-Dibromochane (EDB)         50         46         1         92         70-130         09/03/2021 1055           1,2-Dichlorobenzene         50         46         1         92         70-130         09/03/2021 1055           1,2-Dichlorobenzene         50         47         1         93         70-130         09/03/2021 1055           1,4-Dichlorobenzene         50         48         1         92         70-130         09/03/2021 1055           1,4-Dichlorobenzene         50         48         1         92         70-130         09/03/2021 1055           1,4-Dichlorobenzene         50         43         1         86         70-130         09/03/2021 1055           1,1-Dichlorobenzene         50         48         1         93         70-130         09/03/2021 1055           1,1-Dichlorobenzene         50         45         1         93         70-130         09/03/2021 1055           1,1-Dichlorobenzene         50         48         1         <	Chloromethane (Methyl chloride)	50	50		1	99	60-140	09/03/2021 1055
Dibromochloromethane   50		50	48		1	96	70-130	09/03/2021 1055
Dibromochloromethane   50	•	50	46		1	92	70-130	09/03/2021 1055
1,2-Dibromoethane (EDB)       50       46       1       92       70-130       09/03/2021 1055         1,2-Dichlorobenzene       50       47       1       93       70-130       09/03/2021 1055         1,3-Dichlorobenzene       50       46       1       92       70-130       09/03/2021 1055         1,4-Dichlorobenzene       50       43       1       86       70-130       09/03/2021 1055         Dichlorodifluoromethane       50       49       1       98       60-140       09/03/2021 1055         1,1-Dichloroethane       50       45       1       90       70-130       09/03/2021 1055         1,2-Dichloroethane       50       45       1       90       70-130       09/03/2021 1055         1,2-Dichloroethene       50       50       1       99       70-130       09/03/2021 1055         1,2-Dichloroethene       50       48       1       97       70-130       09/03/2021 1055         1,2-Dichloroptopene       50       48       1       97       70-130       09/03/2021 1055         1,2-Dichloroptopene       50       49       1       89       70-130       09/03/2021 1055         1,3-Dichloroptopene       50	,				1			
1,2-Dichlorobenzene         50         47         1         93         70-130         09/03/2021 1055           1,3-Dichlorobenzene         50         46         1         92         70-130         09/03/2021 1055           1,4-Dichlorobenzene         50         43         1         86         70-130         09/03/2021 1055           Dichlorodifluoromethane         50         49         1         98         60-140         09/03/2021 1055           1,1-Dichloroethane         50         46         1         93         70-130         09/03/2021 1055           1,2-Dichloroethane         50         45         1         90         70-130         09/03/2021 1055           1,1-Dichloroethene         50         45         1         90         70-130         09/03/2021 1055           1,2-Dichloroethene         50         48         1         97					1			
1,3-Dichlorobenzene         50         46         1         92         70-130         09/03/2021 1055           1,4-Dichlorobenzene         50         43         1         86         70-130         09/03/2021 1055           Dichlorodifluoromethane         50         49         1         98         60-140         09/03/2021 1055           1,1-Dichloroethane         50         46         1         93         70-130         09/03/2021 1055           1,2-Dichloroethane         50         45         1         90         70-130         09/03/2021 1055           1,1-Dichloroethane         50         45         1         90         70-130         09/03/2021 1055           1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           1,3-Dichloropropene         50         49         1         99		50	47		1	93	70-130	09/03/2021 1055
1,4-Dichlorobenzene	1.3-Dichlorobenzene		46		1			
Dichlorodifluoromethane   50   49   1   98   60-140   09/03/2021 1055     1,1-Dichloroethane   50   46   1   93   70-130   09/03/2021 1055     1,2-Dichloroethane   50   45   1   90   70-130   09/03/2021 1055     1,1-Dichloroethane   50   45   1   99   70-130   09/03/2021 1055     1,1-Dichloroethene   50   50   1   99   70-130   09/03/2021 1055     1,2-Dichloroethene   50   48   1   97   70-130   09/03/2021 1055     1,2-Dichloropthane   50   48   1   97   70-130   09/03/2021 1055     1,2-Dichloropropane   50   44   1   89   70-130   09/03/2021 1055     1,3-Dichloropropane   50   44   1   99   70-130   09/03/2021 1055     1,3-Dichloropropane   50   49   1   99   70-130   09/03/2021 1055     1	*							
1,1-Dichloroethane         50         46         1         93         70-130         09/03/2021 1055           1,2-Dichloroethane         50         45         1         90         70-130         09/03/2021 1055           1,1-Dichloroethene         50         50         1         99         70-130         09/03/2021 1055           cis-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           trans-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropane         50         44         1         89         70-130         09/03/2021 1055           trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Ethylbenzene         50         55         1         100         70-130         09/03/2021 1055           Ethylbenzene         50         42         1         85         70	•				-			
1,2-Dichloroethane         50         45         1         90         70-130         09/03/2021 1055           1,1-Dichloroethene         50         50         1         99         70-130         09/03/2021 1055           cis-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           trans-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           cis-1,3-Dichloropropane         50         44         1         89         70-130         09/03/2021 1055           cis-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Ethylbenzene         50         55         1         100         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85					-			
1,1-Dichloroethene         50         50         1         99         70-130         09/03/2021 1055           cis-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           trans-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropane         50         44         1         89         70-130         09/03/2021 1055           trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Isopropylbenzene         50         55         1         109         70-130         09/03/2021 1055           Isopropylbenzene         50         42         1         85         70-130         09/03/2021 1055           Methyl acetate         50         48         1         97	· ·				-			
cis-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           trans-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropane         50         44         1         89         70-130         09/03/2021 1055           cis-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           Letwanone         100         85         1         85         70-130         09/03/2021 1055           Isopropylbenzene         50         42         1         85         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl-2-pentanone         100         95         1         95	*				-			
trans-1,2-Dichloroethene         50         48         1         97         70-130         09/03/2021 1055           1,2-Dichloropropane         50         44         1         89         70-130         09/03/2021 1055           cis-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           2-Hexanone         100         85         1         85         70-130         09/03/2021 1055           Isopropylbenzene         50         55         1         109         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methyl-2-pentanone         50         49         1         97	•				-			
1,2-Dichloropropane         50         44         1         89         70-130         09/03/2021 1055           cis-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           2-Hexanone         100         85         1         85         70-130         09/03/2021 1055           Isopropylbenzene         50         55         1         109         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           4-Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methylcyclohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         95<								
cis-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           2-Hexanone         100         85         1         85         70-130         09/03/2021 1055           Isopropylbenzene         50         55         1         109         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           4-Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methylecylohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         97         70-130         09/03/2021 1055           5tyrene         50         47         1         85								
trans-1,3-Dichloropropene         50         49         1         99         70-130         09/03/2021 1055           Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           2-Hexanone         100         85         1         85         70-130         09/03/2021 1055           Isopropylbenzene         50         55         1         109         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           4-Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methylecyclohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         97         70-130         09/03/2021 1055           Styrene         50         47         1         95         70-130         09/03/2021 1055           Tetrachloroethane         50         48         1         96	• •							
Ethylbenzene         50         50         1         100         70-130         09/03/2021 1055           2-Hexanone         100         85         1         85         70-130         09/03/2021 1055           Isopropylbenzene         50         55         1         109         70-130         09/03/2021 1055           Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           4-Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methylcyclohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         97         70-130         09/03/2021 1055           Styrene         50         47         1         95         70-130         09/03/2021 1055           1,1,2,2-Tetrachloroethane         50         48         1         96         70-130         09/03/2021 1055           Toluene         50         49         1         99         70-130	• •							
2-Hexanone       100       85       1       85       70-130       09/03/2021 1055         Isopropylbenzene       50       55       1       109       70-130       09/03/2021 1055         Methyl acetate       50       42       1       85       70-130       09/03/2021 1055         Methyl tertiary butyl ether (MTBE)       50       48       1       97       70-130       09/03/2021 1055         4-Methyl-2-pentanone       100       95       1       95       70-130       09/03/2021 1055         Methylcyclohexane       50       52       1       104       70-130       09/03/2021 1055         Methylene chloride       50       49       1       97       70-130       09/03/2021 1055         Styrene       50       47       1       95       70-130       09/03/2021 1055         1,1,2,2-Tetrachloroethane       50       42       1       85       70-130       09/03/2021 1055         Tetrachloroethene       50       48       1       96       70-130       09/03/2021 1055         1,1,2-Trichloro-1,2,2-Trifluoroethane       50       48       1       96       70-130       09/03/2021 1055         1,2,4-Trichloroethane       50								
Sopropylbenzene   50   55   1   109   70-130   09/03/2021 1055     Methyl acetate   50   42   1   85   70-130   09/03/2021 1055     Methyl tertiary butyl ether (MTBE)   50   48   1   97   70-130   09/03/2021 1055     4-Methyl-2-pentanone   100   95   1   95   70-130   09/03/2021 1055     Methylcyclohexane   50   52   1   104   70-130   09/03/2021 1055     Methylene chloride   50   49   1   97   70-130   09/03/2021 1055     Styrene   50   47   1   95   70-130   09/03/2021 1055     1,1,2,2-Tetrachloroethane   50   42   1   85   70-130   09/03/2021 1055     Tetrachloroethene   50   48   1   96   70-130   09/03/2021 1055     1,1,2-Trichloro-1,2,2-Trifluoroethane   50   47   1   93   70-130   09/03/2021 1055     1,2,4-Trichlorobenzene   50   48   1   96   70-130   09/03/2021 1055     1,2,4-Trichlorobenzene   50   48   1   96   70-130   09/03/2021 1055     1,1,1-Trichloroethane   50   48   1   96   70-130   09/03/2021 1055	•							
Methyl acetate         50         42         1         85         70-130         09/03/2021 1055           Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           4-Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methylcyclohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         97         70-130         09/03/2021 1055           Styrene         50         47         1         95         70-130         09/03/2021 1055           1,1,2,2-Tetrachloroethane         50         42         1         85         70-130         09/03/2021 1055           Tetrachloroethene         50         48         1         96         70-130         09/03/2021 1055           1,1,2-Trichloro-1,2,2-Trifluoroethane         50         47         1         93         70-130         09/03/2021 1055           1,2,4-Trichlorobenzene         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1								
Methyl tertiary butyl ether (MTBE)         50         48         1         97         70-130         09/03/2021 1055           4-Methyl-2-pentanone         100         95         1         95         70-130         09/03/2021 1055           Methylcyclohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         97         70-130         09/03/2021 1055           Styrene         50         47         1         95         70-130         09/03/2021 1055           1,1,2,2-Tetrachloroethane         50         42         1         85         70-130         09/03/2021 1055           Toluene         50         48         1         96         70-130         09/03/2021 1055           1,1,2-Trichloro-1,2,2-Trifluoroethane         50         47         1         93         70-130         09/03/2021 1055           1,2,4-Trichlorobenzene         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1         96         70-130         09/03/2021 1055								
4-Methyl-2-pentanone       100       95       1       95       70-130       09/03/2021 1055         Methylcyclohexane       50       52       1       104       70-130       09/03/2021 1055         Methylene chloride       50       49       1       97       70-130       09/03/2021 1055         Styrene       50       47       1       95       70-130       09/03/2021 1055         1,1,2,2-Tetrachloroethane       50       42       1       85       70-130       09/03/2021 1055         Tetrachloroethene       50       48       1       96       70-130       09/03/2021 1055         1,1,2-Trichloro-1,2,2-Trifluoroethane       50       47       1       93       70-130       09/03/2021 1055         1,2,4-Trichlorobenzene       50       48       1       96       70-130       09/03/2021 1055         1,1,1-Trichloroethane       50       48       1       96       70-130       09/03/2021 1055	•							
Methylcyclohexane         50         52         1         104         70-130         09/03/2021 1055           Methylene chloride         50         49         1         97         70-130         09/03/2021 1055           Styrene         50         47         1         95         70-130         09/03/2021 1055           1,1,2,2-Tetrachloroethane         50         42         1         85         70-130         09/03/2021 1055           Tetrachloroethane         50         48         1         96         70-130         09/03/2021 1055           1,1,2-Trichloro-1,2,2-Trifluoroethane         50         47         1         93         70-130         09/03/2021 1055           1,2,4-Trichlorobenzene         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1         96         70-130         09/03/2021 1055								
Methylene chloride       50       49       1       97       70-130       09/03/2021 1055         Styrene       50       47       1       95       70-130       09/03/2021 1055         1,1,2,2-Tetrachloroethane       50       42       1       85       70-130       09/03/2021 1055         Tetrachloroethane       50       48       1       96       70-130       09/03/2021 1055         Toluene       50       49       1       99       70-130       09/03/2021 1055         1,1,2-Trichloro-1,2,2-Trifluoroethane       50       47       1       93       70-130       09/03/2021 1055         1,2,4-Trichlorobenzene       50       48       1       96       70-130       09/03/2021 1055         1,1,1-Trichloroethane       50       48       1       96       70-130       09/03/2021 1055					1			
Styrene         50         47         1         95         70-130         09/03/2021 1055           1,1,2,2-Tetrachloroethane         50         42         1         85         70-130         09/03/2021 1055           Tetrachloroethene         50         48         1         96         70-130         09/03/2021 1055           Toluene         50         49         1         99         70-130         09/03/2021 1055           1,1,2-Trichloro-1,2,2-Trifluoroethane         50         47         1         93         70-130         09/03/2021 1055           1,2,4-Trichlorobenzene         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1         96         70-130         09/03/2021 1055	, ,				1			
1,1,2,2-Tetrachloroethane       50       42       1       85       70-130       09/03/2021 1055         Tetrachloroethene       50       48       1       96       70-130       09/03/2021 1055         Toluene       50       49       1       99       70-130       09/03/2021 1055         1,1,2-Trichloro-1,2,2-Trifluoroethane       50       47       1       93       70-130       09/03/2021 1055         1,2,4-Trichlorobenzene       50       48       1       96       70-130       09/03/2021 1055         1,1,1-Trichloroethane       50       48       1       96       70-130       09/03/2021 1055	•							
Tetrachloroethene         50         48         1         96         70-130         09/03/2021 1055           Toluene         50         49         1         99         70-130         09/03/2021 1055           1,1,2-Trichloro-1,2,2-Trifluoroethane         50         47         1         93         70-130         09/03/2021 1055           1,2,4-Trichlorobenzene         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1         96         70-130         09/03/2021 1055	•							
Toluene         50         49         1         99         70-130         09/03/2021 1055           1,1,2-Trichloro-1,2,2-Trifluoroethane         50         47         1         93         70-130         09/03/2021 1055           1,2,4-Trichlorobenzene         50         48         1         96         70-130         09/03/2021 1055           1,1,1-Trichloroethane         50         48         1         96         70-130         09/03/2021 1055								
1,1,2-Trichloro-1,2,2-Trifluoroethane     50     47     1     93     70-130     09/03/2021 1055       1,2,4-Trichlorobenzene     50     48     1     96     70-130     09/03/2021 1055       1,1,1-Trichloroethane     50     48     1     96     70-130     09/03/2021 1055								
1,2,4-Trichlorobenzene     50     48     1     96     70-130     09/03/2021 1055       1,1,1-Trichloroethane     50     48     1     96     70-130     09/03/2021 1055								
1,1,1-Trichloroethane 50 48 1 96 70-130 09/03/2021 1055								
1,1,2-Trichloroethane 50 45 1 90 70-130 09/03/2021 1055								
	1,1,2-Trichloroethane	50	45		1	90	70-130	09/03/2021 1055

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ15210-002 Batch: 15210

Analytical Method: 8260D

Matrix: Aqueous Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L) Q	Dil	% Rec	%Rec Limit	Analysis Date
Trichloroethene	50	49	1	97	70-130	09/03/2021 1055
Trichlorofluoromethane	50	52	1	104	70-130	09/03/2021 1055
Vinyl chloride	50	47	1	94	70-130	09/03/2021 1055
Xylenes (total)	100	100	1	103	70-130	09/03/2021 1055
Surrogate	Q % Rec	Acceptance Limit				
Bromofluorobenzene	96	70-130				
1,2-Dichloroethane-d4	91	70-130				
Toluene-d8	93	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Semivolatile Organic Compounds by GC/MS - MB

**Sample ID:** WQ14073-001 **Batch:** 14073

Matrix: Aqueous Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 09/01/2021 1328

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Acenaphthene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Acenaphthylene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Acetophenone	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Anthracene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Atrazine	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Benzaldehyde	ND		1	8.0	0.50	ug/L	09/05/2021 2014
Benzo(a)anthracene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Benzo(a)pyrene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Benzo(b)fluoranthene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Benzo(g,h,i)perylene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Benzo(k)fluoranthene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
1,1'-Biphenyl	ND		1	4.0	0.50	ug/L	09/05/2021 2014
4-Bromophenyl phenyl ether	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Butyl benzyl phthalate	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Caprolactam	2.3	J	1	8.0	1.0	ug/L	09/05/2021 2014
Carbazole	ND		1	4.0	0.50	ug/L	09/05/2021 2014
bis (2-Chloro-1-methylethyl) ether	ND		1	4.0	0.50	ug/L	09/05/2021 2014
4-Chloro-3-methyl phenol	ND		1	4.0	0.50	ug/L	09/05/2021 2014
4-Chloroaniline	ND		1	8.0	0.50	ug/L	09/05/2021 2014
bis(2-Chloroethoxy)methane	ND		1	4.0	0.50	ug/L	09/05/2021 2014
bis(2-Chloroethyl)ether	ND		1	4.0	0.50	ug/L	09/05/2021 2014
2-Chloronaphthalene	ND		1	4.0	0.50	ug/L	09/05/2021 2014
2-Chlorophenol	ND		1	4.0	0.50	ug/L	09/05/2021 2014
4-Chlorophenyl phenyl ether	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Chrysene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Dibenzo(a,h)anthracene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Dibenzofuran	ND		1	4.0	0.50	ug/L	09/05/2021 2014
3,3'-Dichlorobenzidine	ND		1	4.0	1.8	ug/L	09/05/2021 2014
2,4-Dichlorophenol	ND		1	8.0	1.0	ug/L	09/05/2021 2014
Diethylphthalate	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Dimethyl phthalate	ND		1	4.0	0.50	ug/L	09/05/2021 2014
2,4-Dimethylphenol	ND		1	4.0	1.0	ug/L	09/05/2021 2014
Di-n-butyl phthalate	ND		1	4.0	0.50	ug/L	09/05/2021 2014
4,6-Dinitro-2-methylphenol	ND		1	20	1.0	ug/L	09/05/2021 2014
2,4-Dinitrophenol	ND		1	20	1.0	ug/L	09/05/2021 2014
2.4-Dinitrotoluene	ND		1	8.0	0.50	ug/L	09/05/2021 2014
2,6-Dinitrotoluene	ND		1	8.0	0.50	ug/L	09/05/2021 2014
Di-n-octylphthalate	ND		1	4.0	0.50	ug/L	09/05/2021 2014
bis(2-Ethylhexyl)phthalate	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Fluoranthene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Fluorene	ND		1	0.80	0.20	ug/L	09/05/2021 2014
Hexachlorobenzene	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Hexachlorobutadiene	ND		1	4.0	0.50	ug/L	09/05/2021 2014
Hexachlorocyclopentadiene	ND		1	20	2.0	ug/L	09/05/2021 2014
			•	20		~ 5 <sup>,</sup> <b>-</b>	33,33,20212011

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### Semivolatile Organic Compounds by GC/MS - MB

Sample ID: WQ14073-001 Batch: 14073 Matrix: Aqueous Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 09/01/2021 1328

Parameter	Result	Q Dil	LOQ	DL	Units	Analysis Date
Hexachloroethane	ND	1	4.0	1.0	ug/L	09/05/2021 2014
Indeno(1,2,3-c,d)pyrene	ND	1	0.80	0.20	ug/L	09/05/2021 2014
Isophorone	ND	1	4.0	0.50	ug/L	09/05/2021 2014
2-Methylnaphthalene	ND	1	0.80	0.20	ug/L	09/05/2021 2014
2-Methylphenol	ND	1	4.0	1.0	ug/L	09/05/2021 2014
3+4-Methylphenol	ND	1	4.0	1.5	ug/L	09/05/2021 2014
Naphthalene	ND	1	0.80	0.20	ug/L	09/05/2021 2014
2-Nitroaniline	ND	1	8.0	0.50	ug/L	09/05/2021 2014
3-Nitroaniline	ND	1	8.0	1.0	ug/L	09/05/2021 2014
4-Nitroaniline	ND	1	8.0	1.5	ug/L	09/05/2021 2014
Nitrobenzene	ND	1	4.0	1.5	ug/L	09/05/2021 2014
2-Nitrophenol	ND	1	4.0	1.0	ug/L	09/05/2021 2014
4-Nitrophenol	ND	1	20	2.0	ug/L	09/05/2021 2014
N-Nitrosodi-n-propylamine	ND	1	4.0	0.50	ug/L	09/05/2021 2014
N-Nitrosodiphenylamine (Dipheny	ylamine) ND	1	4.0	0.50	ug/L	09/05/2021 2014
Pentachlorophenol	ND	1	20	2.0	ug/L	09/05/2021 2014
Phenanthrene	ND	1	0.80	0.20	ug/L	09/05/2021 2014
Phenol	ND	1	4.0	0.50	ug/L	09/05/2021 2014
Pyrene	ND	1	0.80	0.20	ug/L	09/05/2021 2014
2,4,5-Trichlorophenol	ND	1	4.0	0.50	ug/L	09/05/2021 2014
2,4,6-Trichlorophenol	ND	1	4.0	0.50	ug/L	09/05/2021 2014
Surrogate	Q % Red	Acceptance Limit				
2-Fluorobiphenyl	90	37-129				
2-Fluorophenol	60	24-127				
Nitrobenzene-d5	75	38-127				
Phenol-d5	77	28-128				
Terphenyl-d14	100	10-148				
2,4,6-Tribromophenol	63	35-144				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Semivolatile Organic Compounds by GC/MS - LCS

**Sample ID:** WQ14073-002 **Batch:** 14073

Matrix: Aqueous Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 09/01/2021 1328

	Spike						
_	Amount	Result	_			%Rec	
Parameter	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acenaphthene	40	34		1	84	30-122	09/05/2021 2038
Acenaphthylene	40	37		1	93	30-130	09/05/2021 2038
Acetophenone	40	40		1	101	30-130	09/05/2021 2038
Anthracene	40	35		1	87	30-123	09/05/2021 2038
Atrazine	40	30		1	74	30-130	09/05/2021 2038
Benzaldehyde	40	21		1	52	20-115	09/05/2021 2038
Benzo(a)anthracene	40	34		1	85	40-125	09/05/2021 2038
Benzo(a)pyrene	40	35		1	87	40-128	09/05/2021 2038
Benzo(b)fluoranthene	40	37		1	93	30-130	09/05/2021 2038
Benzo(g,h,i)perylene	40	36		1	89	30-130	09/05/2021 2038
Benzo(k)fluoranthene	40	38		1	96	30-130	09/05/2021 2038
1,1'-Biphenyl	40	36		1	90	30-130	09/05/2021 2038
4-Bromophenyl phenyl ether	40	35		1	86	30-124	09/05/2021 2038
Butyl benzyl phthalate	40	37		1	92	30-130	09/05/2021 2038
Caprolactam	40	32		1	79	30-130	09/05/2021 2038
Carbazole	40	35		1	87	30-130	09/05/2021 2038
bis (2-Chloro-1-methylethyl) ether	40	39		1	97	30-130	09/05/2021 2038
4-Chloro-3-methyl phenol	40	39		1	97	30-123	09/05/2021 2038
4-Chloroaniline	40	34		1	86	12-157	09/05/2021 2038
bis(2-Chloroethoxy)methane	40	35		1	87	30-130	09/05/2021 2038
bis(2-Chloroethyl)ether	40	38		1	94	30-130	09/05/2021 2038
2-Chloronaphthalene	40	36		1	89	30-130	09/05/2021 2038
2-Chlorophenol	40	39		1	98	30-130	09/05/2021 2038
4-Chlorophenyl phenyl ether	40	34		1	86	30-130	09/05/2021 2038
Chrysene	40	36		1	90	30-130	09/05/2021 2038
Dibenzo(a,h)anthracene	40	36		1	90	30-130	09/05/2021 2038
Dibenzofuran	40	33		1	83	30-118	09/05/2021 2038
3,3'-Dichlorobenzidine	40	21		1	52	10-126	09/05/2021 2038
2,4-Dichlorophenol	40	34		1	84	30-121	09/05/2021 2038
·	40	36		1	90	40-125	
Diethylphthalate				-			09/05/2021 2038
Dimethyl phthalate	40	36		1	91	40-127 20-125	09/05/2021 2038
2,4-Dimethylphenol	40	31		1	78		09/05/2021 2038
Di-n-butyl phthalate	40	35		1	87	40-127	09/05/2021 2038
4,6-Dinitro-2-methylphenol	40	33		1	83	30-130	09/05/2021 2038
2,4-Dinitrophenol	80	57		1	71	11-126	09/05/2021 2038
2,4-Dinitrotoluene	40	35		1	88	30-130	09/05/2021 2038
2,6-Dinitrotoluene	40	35		1	88	30-130	09/05/2021 2038
Di-n-octylphthalate	40	37		1	92	30-130	09/05/2021 2038
bis(2-Ethylhexyl)phthalate	40	38		1	96	30-130	09/05/2021 2038
Fluoranthene	40	34		1	85	40-128	09/05/2021 2038
Fluorene	40	33		1	83	30-124	09/05/2021 2038
Hexachlorobenzene	40	35		1	89	30-125	09/05/2021 2038
Hexachlorobutadiene	40	33		1	82	24-110	09/05/2021 2038
Hexachlorocyclopentadiene	200	99		1	49	22-122	09/05/2021 2038

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)

106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

<sup>\* =</sup> RSD is out of criteria

## Semivolatile Organic Compounds by GC/MS - LCS

Sample ID: WQ14073-002 Batch: 14073 Matrix: Aqueous Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 09/01/2021 1328

Parameter	Spike Amount (ug/L)		esult ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Hexachloroethane	40	3	6		1	91	30-130	09/05/2021 2038
Indeno(1,2,3-c,d)pyrene	40	3	4		1	86	30-130	09/05/2021 2038
Isophorone	40	3	2		1	81	30-130	09/05/2021 2038
2-Methylnaphthalene	40	3	6		1	89	40-132	09/05/2021 2038
2-Methylphenol	40	4	1		1	102	30-130	09/05/2021 2038
3+4-Methylphenol	40	4	1		1	102	30-130	09/05/2021 2038
Naphthalene	40	3	6		1	90	30-130	09/05/2021 2038
2-Nitroaniline	40	3	0		1	75	30-130	09/05/2021 2038
3-Nitroaniline	40	2	2		1	54	30-130	09/05/2021 2038
4-Nitroaniline	40	2	5		1	64	30-135	09/05/2021 2038
Nitrobenzene	40	3	5		1	87	30-130	09/05/2021 2038
2-Nitrophenol	40	3	7		1	91	30-130	09/05/2021 2038
4-Nitrophenol	80	6	7		1	84	30-130	09/05/2021 2038
N-Nitrosodi-n-propylamine	40	3	9		1	97	30-130	09/05/2021 2038
N-Nitrosodiphenylamine (Diphenylamine)	40	3	6		1	90	30-123	09/05/2021 2038
Pentachlorophenol	80	5	7		1	71	30-130	09/05/2021 2038
Phenanthrene	40	3	3		1	84	40-123	09/05/2021 2038
Phenol	40	3	9		1	97	30-130	09/05/2021 2038
Pyrene	40	3	7		1	92	40-126	09/05/2021 2038
2,4,5-Trichlorophenol	40	3	7		1	92	30-123	09/05/2021 2038
2,4,6-Trichlorophenol	40	3	7		1	93	30-130	09/05/2021 2038
Surrogate	Q %	Rec	Accepta Limit	nce				
2-Fluorobiphenyl		92	37-12	9				
2-Fluorophenol		93	24-12	7				
Nitrobenzene-d5		82	38-12	7				
Phenol-d5		103	28-12	8				
Terphenyl-d14		95	10-14	8				
2,4,6-Tribromophenol		79	35-14	4				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Semivolatile Organic Compounds by GC/MS - MS

Sample ID: WH26123-002MS

Batch: 14073 Analytical Method: 8270E Matrix: Aqueous Prep Method: 3520C

Prep Date: 09/01/2021 1328

	Sample Amount	Spike Amount	Result				%Rec	
Parameter	(ug/L)	(ug/L)	(ug/L)	Q	Dil	% Rec	Limit	Analysis Date
Acenaphthene	ND	80	66		1	83	30-122	09/05/2021 2128
Acenaphthylene	ND	80	71		1	89	30-130	09/05/2021 2128
Acetophenone	ND	80	76		1	96	30-130	09/05/2021 2128
Anthracene	ND	80	69		1	86	30-123	09/05/2021 2128
Atrazine	ND	80	59		1	74	30-130	09/05/2021 2128
Benzaldehyde	ND	80	40		1	50	20-115	09/05/2021 2128
Benzo(a)anthracene	ND	80	67		1	84	40-125	09/05/2021 2128
Benzo(a)pyrene	ND	80	66		1	82	40-128	09/05/2021 2128
Benzo(b)fluoranthene	ND	80	72		1	90	30-130	09/05/2021 2128
Benzo(g,h,i)perylene	ND	80	70		1	87	30-130	09/05/2021 2128
Benzo(k)fluoranthene	ND	80	73		1	91	30-130	09/05/2021 2128
1,1'-Biphenyl	ND	80	71		1	89	30-130	09/05/2021 2128
4-Bromophenyl phenyl ether	ND	80	69		1	86	30-124	09/05/2021 2128
Butyl benzyl phthalate	ND	80	73		1	91	30-130	09/05/2021 2128
Caprolactam	ND	80	59		1	74	30-130	09/05/2021 2128
Carbazole	ND	80	68		1	85	30-130	09/05/2021 2128
bis (2-Chloro-1-methylethyl) ether	ND	80	77		1	97	30-130	09/05/2021 2128
4-Chloro-3-methyl phenol	ND	80	74		1	92	30-123	09/05/2021 2128
4-Chloroaniline	ND	80	65		1	81	10-130	09/05/2021 2128
bis(2-Chloroethoxy)methane	ND	80	67		1	84	30-130	09/05/2021 2128
bis(2-Chloroethyl)ether	ND	80	74		1	92	30-130	09/05/2021 2128
2-Chloronaphthalene	ND	80	72		1	89	30-130	09/05/2021 2128
2-Chlorophenol	ND	80	74		1	93	30-130	09/05/2021 2128
4-Chlorophenyl phenyl ether	ND	80	67		1	84	30-121	09/05/2021 2128
Chrysene	ND	80	71		1	88	30-130	09/05/2021 2128
Dibenzo(a,h)anthracene	ND	80	69		1	87	30-130	09/05/2021 2128
Dibenzofuran	ND	80	65		1	81	30-118	09/05/2021 2128
3,3'-Dichlorobenzidine	ND	80	41		1	51	10-126	09/05/2021 2128
2,4-Dichlorophenol	ND	80	64		1	81	30-121	09/05/2021 2128
Diethylphthalate	ND	80	70		1	88	40-125	09/05/2021 2128
Dimethyl phthalate	ND	80	70		1	88	40-127	09/05/2021 2128
2,4-Dimethylphenol	ND	80	72		1	89	20-125	09/05/2021 2128
Di-n-butyl phthalate	ND	80	69		1	86	40-127	09/05/2021 2128
4,6-Dinitro-2-methylphenol	ND	80	67		1	84	30-130	09/05/2021 2128
2,4-Dinitrophenol	ND	160	110		1	71	30-130	09/05/2021 2128
2,4-Dinitrotoluene	ND	80	70		1	88	30-130	09/05/2021 2128
2,6-Dinitrotoluene	ND	80	69		1	87	30-130	09/05/2021 2128
Di-n-octylphthalate	ND	80	70		1	88	30-130	09/05/2021 2128
bis(2-Ethylhexyl)phthalate	ND	80	74		1	92	70-131	09/05/2021 2128
Fluoranthene	ND	80	67		1	83	40-128	09/05/2021 2128
Fluorene	ND	80	65		1	82	30-124	09/05/2021 2128
Hexachlorobenzene	ND	80	69		1	87	30-12-	09/05/2021 2128
Hexachlorobutadiene	ND	80	64		1	80	24-110	09/05/2021 2128
Hexachlorocyclopentadiene	ND	400	210		1	53	22-122	09/05/2021 2128
i ioxadiliolodydiopelitadielie	שוו	400	210		'	55	ZZ-1ZZ	03/03/2021 2120

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

+ = RPD is out of criteria

<sup>\* =</sup> RSD is out of criteria

## Semivolatile Organic Compounds by GC/MS - MS

Sample ID: WH26123-002MS

Batch: 14073 Analytical Method: 8270E Matrix: Aqueous Prep Method: 3520C

Prep Date: 09/01/2021 1328

	Samp Amor (ug/l	unt	Spike Amou (ug/L	ınt Result	Q	Dil	% Rec	%Rec Limit	Analysis Date
Hexachloroethane	ND		80	69		1	87	30-130	09/05/2021 2128
Indeno(1,2,3-c,d)pyrene	ND		80	67		1	83	30-130	09/05/2021 2128
Isophorone	ND		80	64		1	80	30-130	09/05/2021 2128
2-Methylnaphthalene	ND		80	69		1	87	40-132	09/05/2021 2128
2-Methylphenol	ND		80	79		1	98	30-130	09/05/2021 2128
3+4-Methylphenol	ND		80	80		1	99	30-130	09/05/2021 2128
Naphthalene	ND		80	69		1	86	30-130	09/05/2021 2128
2-Nitroaniline	ND		80	59		1	73	30-130	09/05/2021 2128
3-Nitroaniline	ND		80	43		1	54	30-130	09/05/2021 2128
4-Nitroaniline	ND		80	53		1	66	30-135	09/05/2021 2128
Nitrobenzene	ND		80	68		1	85	30-130	09/05/2021 2128
2-Nitrophenol	ND		80	71		1	88	30-130	09/05/2021 2128
4-Nitrophenol	ND		160	130		1	83	30-130	09/05/2021 2128
N-Nitrosodi-n-propylamine	ND		80	77		1	96	30-130	09/05/2021 2128
N-Nitrosodiphenylamine (Diphenylamine)	ND		80	70		1	88	30-123	09/05/2021 2128
Pentachlorophenol	ND		160	110		1	71	30-130	09/05/2021 2128
Phenanthrene	ND		80	66		1	83	40-123	09/05/2021 2128
Phenol	ND		80	75		1	94	30-130	09/05/2021 2128
Pyrene	ND		80	72		1	90	40-126	09/05/2021 2128
2,4,5-Trichlorophenol	ND		80	65		1	81	30-123	09/05/2021 2128
2,4,6-Trichlorophenol	ND		80	73		1	92	30-130	09/05/2021 2128
Surrogate	Q	% Rec		Acceptance Limit					
2-Fluorobiphenyl		91		37-129					
2-Fluorophenol		89		24-127					
Nitrobenzene-d5		80		38-127					
Phenol-d5		98		28-128					
Terphenyl-d14		93		10-148					
2,4,6-Tribromophenol		78		35-144					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

## Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: WH26123-002MD

Batch: 14073

Matrix: Aqueous Prep Method: 3520C

Prep Date: 09/01/2021 1328 Analytical Method: 8270E

	Sample	Spike	Daguit					%Rec	0/ DDD	
Parameter	Amount (ug/L)	Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	Limit	% RPD Limit	Analysis Date
Acenaphthene	ND	80	68		1	85	2.1	30-122	40	09/05/2021 2152
Acenaphthylene	ND	80	74		1	92	3.2	30-130	40	09/05/2021 2152
Acetophenone	ND	80	76		1	96	0.057	30-130	40	09/05/2021 2152
Anthracene	ND	80	70		1	88	2.1	30-123	40	09/05/2021 2152
Atrazine	ND	80	60		1	75	2.4	30-130	40	09/05/2021 2152
Benzaldehyde	ND	80	39		1	48	3.2	20-115	40	09/05/2021 2152
Benzo(a)anthracene	ND	80	68		1	86	2.1	40-125	40	09/05/2021 2152
Benzo(a)pyrene	ND	80	70		1	88	6.7	40-128	40	09/05/2021 2152
Benzo(b)fluoranthene	ND	80	75		1	94	4.5	30-130	40	09/05/2021 2152
Benzo(g,h,i)perylene	ND	80	72		1	90	3.2	30-130	40	09/05/2021 2152
Benzo(k)fluoranthene	ND	80	76		1	95	4.4	30-130	40	09/05/2021 2152
1,1'-Biphenyl	ND	80	71		1	89	0.0052	30-130	40	09/05/2021 2152
4-Bromophenyl phenyl ether	ND	80	71		1	89	3.3	30-124	40	09/05/2021 2152
Butyl benzyl phthalate	ND	80	74		1	92	0.81	30-130	40	09/05/2021 2152
Caprolactam	ND	80	61		1	76	2.7	30-130	40	09/05/2021 2152
Carbazole	ND	80	70		1	87	2.5	30-130	40	09/05/2021 2152
bis (2-Chloro-1-methylethyl) ether	ND	80	84		1	105	8.2	30-130	40	09/05/2021 2152
4-Chloro-3-methyl phenol	ND	80	74		1	92	0.24	30-123	40	09/05/2021 2152
4-Chloroaniline	ND	80	65		1	81	0.39	10-130	40	09/05/2021 2152
bis(2-Chloroethoxy)methane	ND	80	71		1	88	4.9	30-130	40	09/05/2021 2152
bis(2-Chloroethyl)ether	ND	80	82		1	103	11	30-130	40	09/05/2021 2152
2-Chloronaphthalene	ND	80	70		1	87	2.5	30-130	40	09/05/2021 2152
2-Chlorophenol	ND	80	75		1	94	0.93	30-130	40	09/05/2021 2152
4-Chlorophenyl phenyl ether	ND	80	67		1	84	0.66	30-121	40	09/05/2021 2152
Chrysene	ND	80	72		1	90	1.8	30-130	40	09/05/2021 2152
Dibenzo(a,h)anthracene	ND	80	72		1	90	3.6	30-130	40	09/05/2021 2152
Dibenzofuran	ND	80	65		1	81	0.70	30-118	40	09/05/2021 2152
3,3'-Dichlorobenzidine	ND	80	42		1	53	4.4	10-126	40	09/05/2021 2152
2,4-Dichlorophenol	ND	80	67		1	84	3.9	30-121	40	09/05/2021 2152
Diethylphthalate	ND	80	73		1	92	4.2	40-125	40	09/05/2021 2152
Dimethyl phthalate	ND	80	71		1	89	0.94	40-127	40	09/05/2021 2152
2,4-Dimethylphenol	ND	80	76		1	95	6.1	20-125	40	09/05/2021 2152
Di-n-butyl phthalate	ND	80	69		1	87	1.1	40-127	40	09/05/2021 2152
4,6-Dinitro-2-methylphenol	ND	80	70		1	87	4.0	30-130	40	09/05/2021 2152
2,4-Dinitrophenol	ND	160	120		1	73	2.7	30-130	40	09/05/2021 2152
2,4-Dinitrotoluene	ND	80	71		1	89	1.6	30-130	40	09/05/2021 2152
2,6-Dinitrotoluene	ND	80	70		1	87	0.51	30-130	40	09/05/2021 2152
Di-n-octylphthalate	ND	80	72		1	91	3.3	30-130	40	09/05/2021 2152
bis(2-Ethylhexyl)phthalate	ND	80	75		1	94	2.2	70-131	40	09/05/2021 2152
Fluoranthene	ND	80	69		1	87	4.3	40-128	40	09/05/2021 2152
Fluorene	ND	80	66		1	82	0.72	30-124	40	09/05/2021 2152
Hexachlorobenzene	ND	80	74		1	92	5.7	30-125	40	09/05/2021 2152
Hexachlorobutadiene	ND	80	67		1	83	4.5	24-110	40	09/05/2021 2152
Hexachlorocyclopentadiene	ND	400	230		1	57	8.0	22-122	40	09/05/2021 2152
. is a difference of the control of	140	400	200		'	01	0.0	LL 122	40	5510012021 2102

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and  $\geq$  DL

P = The RPD between two GC columns exceeds 40%

<sup>\* =</sup> RSD is out of criteria

<sup>+ =</sup> RPD is out of criteria

## Semivolatile Organic Compounds by GC/MS - MSD

Sample ID: WH26123-002MD Batch: 14073

Matrix: Aqueous Prep Method: 3520C

Analytical Method: 8270E

Prep Date: 09/01/2021 1328

December	Samp	ınt A	Spike moun		•		0/ 5	0/ 000	%Rec	% RPD	Assolution Date
Parameter	(ug/L		ug/L)	(ug/L)	Q	Dil	% Rec	% RPD	Limit	Limit	Analysis Date
Hexachloroethane	ND		30	69		1	87	0.34	30-130	40	09/05/2021 2152
Indeno(1,2,3-c,d)pyrene	ND		30	70		1	88	5.5	30-130	40	09/05/2021 2152
Isophorone	ND		30	68		1	85	6.8	30-130	40	09/05/2021 2152
2-Methylnaphthalene	ND		30	71		1	89	2.3	40-132	40	09/05/2021 2152
2-Methylphenol	ND		30	82		1	103	4.4	30-130	40	09/05/2021 2152
3+4-Methylphenol	ND	8	30	79		1	99	0.56	30-130	40	09/05/2021 2152
Naphthalene	ND		30	71		1	89	3.4	30-130	40	09/05/2021 2152
2-Nitroaniline	ND		30	61		1	76	3.4	30-130	40	09/05/2021 2152
3-Nitroaniline	ND		30	43		1	53	0.43	30-130	40	09/05/2021 2152
4-Nitroaniline	ND		30	52		1	65	2.3	30-135	40	09/05/2021 2152
Nitrobenzene	ND	8	30	74		1	92	8.9	30-130	40	09/05/2021 2152
2-Nitrophenol	ND	8	30	73		1	91	2.8	30-130	40	09/05/2021 2152
4-Nitrophenol	ND	1	60	140		1	87	5.1	30-130	40	09/05/2021 2152
N-Nitrosodi-n-propylamine	ND	8	30	84		1	104	8.7	30-130	40	09/05/2021 2152
N-Nitrosodiphenylamine (Diphenylamine)	ND	8	30	71		1	89	1.8	30-123	40	09/05/2021 2152
Pentachlorophenol	ND	1	60	120		1	74	3.4	30-130	40	09/05/2021 2152
Phenanthrene	ND	8	30	67		1	83	0.64	40-123	40	09/05/2021 2152
Phenol	ND	8	30	79		1	99	5.1	30-130	40	09/05/2021 2152
Pyrene	ND	8	30	74		1	92	2.3	40-126	40	09/05/2021 2152
2,4,5-Trichlorophenol	ND	8	30	67		1	83	3.0	30-123	40	09/05/2021 2152
2,4,6-Trichlorophenol	ND	8	30	73		1	91	0.14	30-130	40	09/05/2021 2152
Surrogate	Q	% Rec	A	cceptance Limit							
2-Fluorobiphenyl		92		37-129						<u> </u>	
2-Fluorophenol		88		24-127							
Nitrobenzene-d5		86		38-127							
Phenol-d5		104		28-128							
Terphenyl-d14		94		10-148							
2,4,6-Tribromophenol		83		35-144							

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Semivolatiles - MB**

Sample ID: WQ14793-001

Batch: 14793 Analytical Method: 8270E Matrix: Solid
Prep Method: 1311/3520C

Prep Date: 09/08/2021 1830 Leachate Date: 09/02/2021 0041

Result	Q	Dil	LOQ	DL	Units	Analysis Date
ND		1	0.040	0.0050	mg/L	09/10/2021 1703
ND		1	0.080	0.0050	mg/L	09/10/2021 1703
ND		1	0.040	0.0050	mg/L	09/10/2021 1703
ND		1	0.040	0.0050	mg/L	09/10/2021 1703
ND		1	0.040	0.010	mg/L	09/10/2021 1703
ND		1	0.040	0.010	mg/L	09/10/2021 1703
ND		1	0.040	0.015	mg/L	09/10/2021 1703
ND		1	0.040	0.015	mg/L	09/10/2021 1703
ND		1	0.20	0.020	mg/L	09/10/2021 1703
ND		1	0.040	0.0050	mg/L	09/10/2021 1703
ND		1	0.040	0.0050	mg/L	09/10/2021 1703
ND		1	0.040	0.0050	mg/L	09/10/2021 1703
Q % Rec						
76	3	7-129				
47	2	4-127				
81	3	8-127				
71	2	:8-128				
67	1	0-148				
78	4	1-144				
	ND N	ND N	ND 1	ND 1 0.040 ND 1 0.080 ND 1 0.040 Acceptance Limit  76 37-129 47 24-127 81 38-127 71 28-128 67 10-148	ND 1 0.040 0.0050 ND 1 0.040 0.010 ND 1 0.040 0.010 ND 1 0.040 0.015 ND 1 0.040 0.015 ND 1 0.040 0.015 ND 1 0.040 0.050 ND 1 0.040 0.050 ND 1 0.040 0.050 ND 1 0.040 0.0050  Acceptance Limit  76 37-129 47 24-127 81 38-127 71 28-128 67 10-148	ND 1 0.040 0.0050 mg/L ND 1 0.080 0.0050 mg/L ND 1 0.040 0.010 mg/L ND 1 0.040 0.010 mg/L ND 1 0.040 0.015 mg/L ND 1 0.040 0.050 mg/L ND 1 0.040 0.050 mg/L ND 1 0.040 0.0050 mg/L

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Semivolatiles - LCS**

Sample ID: WQ14793-002

Batch: 14793 Analytical Method: 8270E

Matrix: Solid Prep Method: 1311/3520C

Prep Date: 09/08/2021 1830 Leachate Date: 09/02/2021 0041

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q Dil	% Rec	%Rec Limit	Analysis Date
1,4-Dichlorobenzene	0.40	0.28	1	70	30-130	09/10/2021 1728
2,4-Dinitrotoluene	0.40	0.28	1	69	30-130	09/10/2021 1728
Hexachlorobenzene	0.40	0.31	1	78	30-130	09/10/2021 1728
Hexachlorobutadiene	0.40	0.24	1	61	30-130	09/10/2021 1728
Hexachloroethane	0.40	0.30	1	75	30-130	09/10/2021 1728
2-Methylphenol	0.40	0.36	1	91	30-130	09/10/2021 1728
3+4-Methylphenol	0.80	0.86	1	108	30-130	09/10/2021 1728
Nitrobenzene	0.40	0.33	1	81	30-130	09/10/2021 1728
Pentachlorophenol	0.40	0.33	1	82	30-130	09/10/2021 1728
Pyridine	0.40	0.45	1	112	30-130	09/10/2021 1728
2,4,5-Trichlorophenol	0.40	0.30	1	76	30-130	09/10/2021 1728
2,4,6-Trichlorophenol	0.40	0.28	1	71	30-130	09/10/2021 1728
Surrogate	Q % Rec	Acceptance Limit				
2-Fluorobiphenyl	75	37-129				
2-Fluorophenol	43	24-127				
Nitrobenzene-d5	83	38-127				
Phenol-d5	77	28-128				
Terphenyl-d14	83	10-148				
2,4,6-Tribromophenol	74	41-144				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

P = The RPD between two GC columns exceeds 40%

J = Estimated result < LOQ and  $\geq$  DL

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **ICP-AES Metals - MB**

Sample ID: WQ14155-001

Batch: 14155 Analytical Method: 6010D Matrix: Aqueous Prep Method: 3005A

Prep Date: 09/02/2021 0627

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Aluminum	ND		1	0.40	0.10	mg/L	09/02/2021 1508
Antimony	ND		1	0.020	0.0070	mg/L	09/02/2021 1508
Arsenic	ND		1	0.015	0.0025	mg/L	09/02/2021 1508
Barium	ND		1	0.025	0.0031	mg/L	09/03/2021 1204
Beryllium	ND		1	0.0050	0.00060	mg/L	09/02/2021 1508
Boron	ND		1	0.050	0.020	mg/L	09/02/2021 1508
Cadmium	ND		1	0.0050	0.00060	mg/L	09/02/2021 1508
Calcium	ND		1	5.0	0.63	mg/L	09/02/2021 1508
Chromium	ND		1	0.010	0.0013	mg/L	09/02/2021 1508
Cobalt	ND		1	0.025	0.0031	mg/L	09/02/2021 1508
Copper	ND		1	0.010	0.0020	mg/L	09/02/2021 1508
Iron	ND		1	0.10	0.040	mg/L	09/02/2021 1508
Lead	ND		1	0.010	0.0047	mg/L	09/02/2021 1508
Magnesium	ND		1	5.0	0.63	mg/L	09/02/2021 1508
Manganese	ND		1	0.015	0.0019	mg/L	09/02/2021 1508
Molybdenum	ND		1	0.040	0.0050	mg/L	09/02/2021 1508
Nickel	ND		1	0.040	0.0050	mg/L	09/02/2021 1508
Potassium	ND		1	5.0	0.63	mg/L	09/02/2021 1508
Selenium	ND		1	0.020	0.0085	mg/L	09/02/2021 1508
Silver	ND		1	0.010	0.0021	mg/L	09/02/2021 1508
Sodium	ND		1	5.0	0.63	mg/L	09/02/2021 1508
Thallium	ND		1	0.050	0.0063	mg/L	09/02/2021 1508
Tin	ND		1	0.050	0.0063	mg/L	09/02/2021 1508
Titanium	ND		1	0.050	0.0063	mg/L	09/02/2021 1508
Vanadium	ND		1	0.050	0.0063	mg/L	09/02/2021 1508
Zinc	ND		1	0.020	0.0025	mg/L	09/02/2021 1508

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **ICP-AES Metals - LCS**

Sample ID: WQ14155-002 Batch: 14155

Analytical Method: 6010D

Matrix: Aqueous Prep Method: 3005A

Prep Date: 09/02/2021 0627

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Aluminum	20	20		1	101	80-120	09/02/2021 1512
Antimony	0.40	0.35		1	88	80-120	09/02/2021 1512
Arsenic	0.40	0.39		1	97	80-120	09/02/2021 1512
Barium	2.0	2.0		1	98	80-120	09/03/2021 1208
Beryllium	2.0	2.0		1	99	80-120	09/02/2021 1512
Boron	0.40	0.35		1	88	80-120	09/02/2021 1512
Cadmium	0.40	0.36		1	90	80-120	09/02/2021 1512
Calcium	40	42		1	105	80-120	09/02/2021 1512
Chromium	2.0	2.0		1	100	80-120	09/02/2021 1512
Cobalt	2.0	1.9		1	95	80-120	09/02/2021 1512
Copper	2.0	2.0		1	98	80-120	09/02/2021 1512
Iron	20	21		1	105	80-120	09/02/2021 1512
Lead	0.40	0.37		1	93	80-120	09/02/2021 1512
Magnesium	40	41		1	102	80-120	09/02/2021 1512
Manganese	2.0	2.1		1	104	80-120	09/02/2021 1512
Molybdenum	2.0	1.8		1	92	80-120	09/02/2021 1512
Nickel	2.0	1.9		1	96	80-120	09/02/2021 1512
Potassium	40	41		1	101	80-120	09/02/2021 1512
Selenium	0.40	0.37		1	93	80-120	09/02/2021 1512
Silver	0.40	0.40		1	101	80-120	09/02/2021 1512
Sodium	40	41		1	102	80-120	09/02/2021 1512
Thallium	0.80	0.81		1	102	80-120	09/02/2021 1512
Tin	0.40	0.38		1	95	80-120	09/02/2021 1512
Titanium	0.40	0.40		1	99	80-120	09/02/2021 1512
Vanadium	2.0	2.0		1	100	80-120	09/02/2021 1512
Zinc	2.0	1.9		1	94	80-120	09/02/2021 1512

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Metals - MB**

Sample ID: WQ14330-001

**Batch:** 14330

Analytical Method: 6010D

Matrix: Solid
Prep Method: 1311/3010A

Prep Date: 09/03/2021 0121 Leachate Date: 09/02/2021 0041

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Arsenic	ND		1	0.15	0.025	mg/L	09/03/2021 1043
Barium	ND		1	0.25	0.031	mg/L	09/03/2021 1043
Cadmium	ND		1	0.050	0.0060	mg/L	09/03/2021 1043
Chromium	ND		1	0.10	0.013	mg/L	09/03/2021 1043
Lead	ND		1	0.10	0.047	mg/L	09/03/2021 1043
Selenium	ND		1	0.20	0.085	mg/L	09/03/2021 1043
Silver	ND		1	0.10	0.021	mg/L	09/03/2021 1043

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Metals - LCS**

Sample ID: WQ14330-002

**Batch:** 14330 **Analytical Method:** 6010D

Matrix: Solid
Prep Method: 1311/3010A

Prep Date: 09/03/2021 0121 Leachate Date: 09/02/2021 0041

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Arsenic	50	48		1	95	80-120	09/03/2021 1047
Barium	100	100		1	105	80-120	09/03/2021 1047
Cadmium	10	9.2		1	92	80-120	09/03/2021 1047
Chromium	50	46		1	92	80-120	09/03/2021 1047
Lead	50	45		1	90	80-120	09/03/2021 1047
Selenium	10	9.4		1	94	80-120	09/03/2021 1047
Silver	10	9.8		1	98	80-120	09/03/2021 1047

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Metals - MS**

Sample ID: WH26123-001MS

**Batch:** 14330 **Analytical Method:** 6010D

Matrix: Solid
Prep Method: 1311/3010A

rep metriod. 1511/3010A

Prep Date: 09/03/2021 0121 Leachate Date: 09/02/2021 0041

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Arsenic	ND	50	49		1	98	75-125	09/03/2021 1058
Barium	0.52	100	110		1	111	75-125	09/03/2021 1058
Cadmium	ND	10	9.3		1	93	75-125	09/03/2021 1058
Chromium	0.020	50	50		1	100	75-125	09/03/2021 1058
Lead	ND	50	47		1	93	75-125	09/03/2021 1058
Selenium	ND	10	9.7		1	97	75-125	09/03/2021 1058
Silver	ND	10	10		1	103	75-125	09/03/2021 1058

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Metals - MSD**

Sample ID: WH26123-001MD

**Batch:** 14330

Matrix: Solid
Prep Method: 1311/3010A

Prep Date: 09/03/2021 0121 Leachate Date: 09/02/2021 0041

Analytical Method: 6010D

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
Arsenic	ND	50	50	1	99	1.0	75-125	20	09/03/2021 1120
Barium	0.52	100	100	1	103	7.9	75-125	20	09/03/2021 1120
Cadmium	ND	10	9.4	1	94	1.0	75-125	20	09/03/2021 1120
Chromium	0.020	50	48	1	95	4.5	75-125	20	09/03/2021 1120
Lead	ND	50	48	1	95	2.1	75-125	20	09/03/2021 1120
Selenium	ND	10	9.8	1	98	0.68	75-125	20	09/03/2021 1120
Silver	ND	10	9.8	1	98	5.3	75-125	20	09/03/2021 1120

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Metals - MB**

Sample ID: WQ14392-001

**Batch:** 14392

**Analytical Method:** 7470A

Matrix: Solid
Prep Method: 1311/7470A

Prep Date: 09/03/2021 1427 Leachate Date: 09/02/2021 0041

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Mercury	ND		1	0.0020	0.00091	mg/L	09/03/2021 1827

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

\* = RSD is out of criteria

+ = RPD is out of criteria

#### **TCLP Metals - LCS**

Sample ID: WQ14392-002

Batch: 14392

Matrix: Solid

**Prep Method:** 1311/7470A

Analytical Method: 7470A

Prep Date: 09/03/2021 1427 Leachate Date: 09/02/2021 0041

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
Mercury	0.020	0.018		1	92	80-120	09/03/2021 1830

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

P = The RPD between two GC columns exceeds 40%

DL = Detection Limit

J = Estimated result < LOQ and  $\geq$  DL

\* = RSD is out of criteria

+ = RPD is out of criteria

N = Recovery is out of criteria

# Chain of Custody and Miscellaneous Documents

Pace Analytical	PACE / 106 Vantage Telephone N	ANALYTIC Point Drive to. 803-791-¢ www.pa	PACE ANALYTICAL SERVICES, LLC 106 Variage Point Drive - Wost Columbia, SC 29172 Telephone No. 803-791-9100 Fax No. 803-791-9111 www.pacelabs.com	LLC 2 28172 91-9111		_	Number	124583
Citent A Property of the Control of	Report to Contact	3		Talephone No. / Email (503) 201-5662	/E-mail -56.6.22	Setton Son	14 00 35 C.	Quote No.
Abdress 2	Sampler's Signature	1. 13		Ane)/sis (Attach Rail move space is needed)	is awar i isa d	esce is needed	100	) 10 / Bled
State Ztp Cook	20 3 Painted Manne	[0] [2]			<,			
Project Name Sho has Part	Sich	25 Co. 25	\$\$	315	147			WH26123
Project No.		Matrix	No of Containers by Preservative Type			201	74	HK.
Contention Semple 10 / Description Contention Contentio	Confection Three Confection (Confection Three Confection Three Confection Three Confection Confecti	ANS SANS	HOWN HOSEH		יאבנו.		2/21	Remarks / Cooler LD.
5-1 INW 3/2/2	1, 1100 C	×		k k	×			
	1120 CX		×			k K	یک	
1								
	/							
		1	0				-	100
			-					
		-			$\not$	_/		
							1	
Tayn Around Time Acquired (Prior Iao approval required for expedited IAI)	Sample Dispose.	Scokeo say hy tail	Possible Hazard Keruffication A Nog <sup>2</sup> Hazard D Remmahle		: Skin fritant 🗆 Polson	⊑ Unknown	QC Requirements (Spootily)	de (Spoully)
C. Salmera rear reporting	$D_{-}$		4: Received by				Sarie	Time
2. Hempowerhead by	Date	Time	2, Received by				Dete	Тите
3. Ashvanishmi by	Clate	Tone	3, Received by		i		Date	Yine
4. Hekinguished by	Date	Time	4. Laburatory received by	10 10	18th	2	Propi	Time 1338
Note: All samples are retained for four weeks from receipt unless other arrangements are made.	our weeks from receipt is are made.		LAB USE ONLY Received on its (Cittle)	Need No to	lop Pack R	Receipt Temp	4.2°	Tonip Blank (27 C. N
N	STATE OF THE PARTY			2			553	Document Number, M5003W2-01

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Samplu(s); PINK-FieldICkiert Copy

# PACE ANALYTICAL SERVICES, LLC



#### Samples Receipt Checklist (SRC) (ME0018C-15)

Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020 Page 1 of 1

## Sample Receipt Checklist (SRC)

Client: AECOM	Cooler Inspected by/date: JSM / 08/26/2021 Lot #: WH26123
Means of receipt:  P	Pace Client UPS FedEx Other:
Yes V No	Were custody seals present on the cooler?
Yes No NA	A 2. If custody snals were present, were they intact and unbroken?
pH Strip ID: 21-852	Chlorine Strip ID: NA Tested by: JSM
4.3 /4.3 °C NA /	on receipt / Derived (Corrected) temperature upon receipt
	Blank Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 9 °C
	Wet Ice I lee Packs Dry Ice None
☐ Yes ☐ No ☑NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified?
	TWI was Normed by: phone / cmail / face-to-face (circle one).
Ves No ✓NA ✓ Yes No	4. Is the commercial courier's packing slip attached to this form?
Y Yes No	Were proper custody procedures (relinquished/received) followed?     Were sample IDs listed on the COC?
✓ Yes No	7. Were sample IDs listed on all sample containers?
✓ Yes No	Was collection date & time listed on the COC?
✓ Yes Ne	Was collection date & time listed on all sample containers?
✓ Yes No	10. Did all container label information (ID, date, time) agree with the COC?
Yes No	11. Were tests to be performed listed on the COC?
☑ Yes ☐ No	12. Did all samples arrive in the proper containers for each test and/or in good condition
	(unbroken, lids on, ctc.)?
✓ Yes □ No	13. Was adequate sample volume available?
Yes No	14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes V No	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
Yes No NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA viais?
✓ Yes No NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
Yes No VNA	119 Mayo all attractions to MIL 277/31/
	20 Were elient versual description of the second se
Yes: No NA	correctly transcribed from the COC into the comment section in LIMS?
☐ Yes ✓ No	21. Was the quote number listed on the container label? If yes, Quote # 25222
Sample Preservation (N	Must be completed for any sample(s) incorrectly preserved or with headspace.)
Sample(s) NA	were received incorrectly preserved and were adjusted accordingly
in sample receiving with 1	mL of circle one: H2SO4, HNO3, HCI, NaOH using SR # NA
Time of preservation NA	If more than one preservative is needed, please note in the comments below.
Sample(s) NA	were received with bubbles >6 mm in diameter.
Samples(s) NA	were received with TRC > 0.5 mg/L (If #19 is no ) and were
adjusted accordingly in sar	mple receiving with sodium thiosulfate (Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ) with Shealy ID:
SR barcode labels applied	by: JSM Date: 08/26/2021
Comments:	



A&D Job	No:         Generator ID Number         Page 1 of 2301-0053         Emergency Response Phone 200-255-3924-M180007951									Tracking Number 41776				
	's Name and 937-241- 's Phone		1	ignify No: 9845 US I	th America Co lwy 73 SC 29108	Generator	's site address	(if differer	nt from maili		ss)			
Trans	sporter 1	X2	Comp	oany Name	A&D	Environme	ntal Service	es, Inc.	1800461	US EPA	ID No: NCD9862:	2221		
. Trans	sporter 1	2		pany Name						US EPA	ID No:	Water Branch	1-311-1-1-2000	
Design A&D Envi 2718 Uwh	ronmental arrie Road NC 27263 750	= calling		Designate	mental Services, Inc ive IC 27215	411	nated Facility (Pleas	e insert faci	lity information	below)		x 1 x 1 x 1 x 1		
НМ	Hazardo	us Mate	erials Shi	pping Name a	nd Description (if appli	cable)	No.	Туре	QTY	Wt/Vol	Profile Numb	er		
	Non	-Reg	ulated	Material	IDW-Liquids)	eud-lipo	8	DM	3100	10 Ta	NC2022-02	77		
	Non	-Reg	ulated	Vaterial (	IDW-Solids)		2	DM	600	10 m	NC2022-02	EO		
								a - er e ;	i de la composición della comp	Traje Traje	ukik Pudikk Ukik Pudikk Ukius sudikk			
Х	NA4002 F	Negal for		oleum Produc	ts for Recycle	E08# 400	No.	Туре	QTY	Wt/Vol	Profile Numbe	r .		
X	NA1993, E NA 1993, I			,5 or 6), 3, III	774.727	EGR# 128 EGR# 128					Carrier Control			
Х	UN1203, 0					EGR# 128	44-14-1 - 44				The state of the s	1.2		
	USED OIL (Not a USDOT Hazardous Material)  Petroleum Contact Water (Not a USDOT Hazardous Material)									The state of the s	111111111111111111111111111111111111111	and the court	Ne sazen	
1888	retroledin	Contac	i vvater (iv		versal Waste Lamps, B	atteries. Ballas	s, and Electroni	ics for Re	cvcle	in miles	Carried at the proper	to facto	1	
НМ	No. Type Est. Wt. Count Shipping Name and Description (if applicable) Comm										nmon Name	Discre	pancy	
X		100	EVE.	仿真 :	RQ, UN3506, Mercury contained in manufactured articles, 8 (6.1) ERG# 172						cury Devices			
X	and the second		1 37		RQ, UN3432, Polychlorinated biphenyls, solid, 9, II EGR# 171						ppt PCB Lamp Ballasts	Marian.		
X			70		UN2800, Batteries, wet non-spillable, 8 EGR# 154						ead Acid Batteries Acid Batteries			
X			1765		UN2794, Batteries, wet, filled with acid, 8 EGR# 154 UN2795, Batteries, wet, filled with alkali, 8 EGR# 154						liCad Batteries	CEL T		
X			Service b		UN3090, Lithium metal batteries, 9 EGR# 138					Lithium	Metal Batteries	Manual Control	Thursday all	
Х		UN3480, Lithium ion batteries, 9 EGR# 147							GR# 147		m Ion Batteries			
		-			Batteries, dry, sealed n.o.s. Batteries, dry, sealed n.o.s.						line Batteries	3.5%		
		Batteries, dry, sealed n.o.s.  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)							Tage to the copy		imps (4-Ft. and Under)	THE STATE OF	-	
-									Contract Con		lamps (Over 4-Ft.)	31717		
										Circula	Circular/U-tube lamps			
										Con	AA'			
											elded Lamps MV/UV Lamps	THE STATE OF THE S		
			-								descent Lamps	1) 1		
		Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Non-PCB Light Ballasts for Recycle (Not DOT-Regulated)  Electronic Equipment for Recycle (Not DOT-Regulated)  Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled, and are in properly									ght Ballasts/Capacitors			
001	0.45								Abul 7/s		e-Waste	2000		
applicable	e regulations of	the Depa	rtment of Tr	ansportation: I furth	er certify that none of the mate	erials described ab	ove are hazardous w	aste as defir	ned by EPA 40C	FR Part 261	or any applicable stat			
	ecifically identifi Offeror's Printe			als contain less than	1,000 ppm total halogens an		antifiable levels (2pp	om) of PCBs	as defined by E	PA 40 CFR F		Dov	Year	
Shipper Sr C	I LANGE	eur Type	/ -	Bruck -	F SIGNIFY	Signature	1/21	-	12-7	Trans.	Month	Day	23	
Transporter	1 Printed/Typ	id Non		BEHALL 8	+ HONIL!		of secon	- Cur	7-9-5		in the same of the	10		
Transporter	1 Printed/Typ	eu Nan	T	Mari		Signature	2		Herman Marie II		Month	Day	Year	
111	· cogn	4	+x	Iruc 4	2		1				10	10	2	
Transporter	2 Printed/Typ	oe(d Nam	ie		<	Signature					Month	Day	Year	
Discrepancy	y Indication / A	Addition	al Informa	tion:	Hard and the		hagh 10	5 (6 5)	d proces				9	
Designated	Facility Certif	ication:	l hereby a	cknowledge rece	ipt of the materials cover	ed by this manife	st except for any	discrepand	y indicated al	bove.				
Printed/Type	ed Name		8		en in the second section	Signature	1.400 187	1.0466			Month	Day	Year	



# (b) A&D Environmental Services Bill of Lading / Material Manifest

Non-Regulated Material (IDW-Solids)  O I DM 200 P NC2022-02		2301-03			tor ID Number		Page 1 of	800-255-392	4-M 1800	107951			819	
Designated Facility Design	9	937-241		5i	gnify Norl 9845 US H	wy/73/15 and	lorp.		(if differer	it from maili	ng addres	38)		
Designated Facility  ABAD Environmental Services, Inc.  184 Overaries  Burlington, NC 27215  Burlington, NC 27215  DRAG 27221  DRAG 27222  NCR009138623  PMI Hazardous Materials Shipping Name and Description (if applicable)  No. Type  OF DM JOO P NC2022-02  DM JOO P NC2022-02  DA NA 1959, Facility Signature  Petroleum Products for Recycle  X NA 1959, Facility Signature  Petroleum Products for Recycle  X NA 1959, Facility Signature  Duniversity Material  USEO OF Life at SDOOT Hazardous Material)  Petroleum Contact Water (Not a USDOT Hazardous Material)  Petroleum Contact Water (Not a USDOT Hazardous Material)  Duniversity Water (Not a USDOT Hazardous Material)  Valve Signature  University Water (Not a USDOT Hazardous Material)  RG, UNS302, Pelycanormated Depenyla, solid, 9, II ECR4 172  Macoury Devices  X UNIVERS, Batteries, wer, filled with lacid, 8 ECR4 154  UNIVERS, Batteries, wer, filled with lacid, 8 ECR4 154  UNIVERS, Batteries, wer, filled with lacid, 8 ECR4 154  UNIVERS, Batteries, wer, filled with lacid, 9 ECR4 173  Batteries, dy, sealed in o. 8.  Batteries, dy, sealed in o. 8.  Batteries, dy, sealed in o. 8.  Batteries, dy, sealed on o. 8.  Batteries, dy, sealed on o. 8.  Batteries, dy, sealed on or 80 ECR4 154  University Water Lamps, Rot DOT-Regulated per 49 CF4 173 184 (e)  Fireward International Control C	Trans	sporter 1	<b>2</b>	Comp	any Name	A&I	D Environm	ental Service	s, Inc.	wardin + 2	US EPA	ID No: NCD9862322	221	
DE Environmental Services, Inc.  3148 Lear Drive  3149 Lear Lear Drive  3149 Lear Lear Lear Lear Lear Lear Lear Lear	Trans	sporter 1	2	Comp	any Name					int acit	US EPA	ID No:	J	
Non-Regulated Material (IDW-Solids)  Non-Regulat	D Envir 18 Uwha chdale, I 5-434-77	ronmental arrie Road NC 27263 750		s, Inc.	A&D Environ 3149 Lear Dri Burlington, N 336-229-0058	mental Services, I ve C 27215		ignated Facility (Pleas	e insert faci	lity information i	pelow)			
Petroleum Products for Recycle  No. Type QTY WWVol Profile Numbi  R. NA1993, Diesel fuel, S., III EGR# 128  X. NA1993, Diesel fuel, S., III EGR# 128  X. UN1203, Gasoline, 3, III EGR# 128  V. UN1204, Gasoline, 3, III EGR# 128  V. UN1204, Gasoline, 3, III EGR# 128  V. UN1204, Gasoline, 3, III EGR# 128  V. UN1205, Gasoline, 3, III EGR# 128  V. VIN1205, Gasoline, 3, III EGR#	НМ	Hazardo	us Mate	rials Ship	ping Name an	d Description (if ap	plicable)	No.	Туре	QTY	Wt/Vol.	Profile Number	1	
Petroleum Products for Recycle  X NA1993, Diesel fuel, 3, III EGR# 128  X NA1993, Diesel fuel, 3, III EGR# 128  USED OIL (Not a USDOT Hazardous Material) Petroleum Contact Water (Not a USDOT Hazardous Material)  Universal Waset Lamps, Batteries, Ballasts, and Electronics for Recycle  HM No. Type Est. Wt. Count Shipping Name and Description (if applicable) RO, UN\$506, Mercury contained in manufactured articles, 8 (6.1) ERG# 172 Mercury Devices RO, UN\$402, Polychiorinated biphenyls, solid, 9, II EGR# 173 Note Common Name RO, UN\$402, Polychiorinated biphenyls, solid, 9, II EGR# 174 Note Common Name RO, UN\$402, Polychiorinated Diphenyls, solid, 9, II EGR# 174 Note Common Name RO, UN\$402, Polychiorinated Diphenyls, solid, 9, II EGR# 174 Note Common Name RO, UN\$403, Universal Waset Lamps, Note District Name RO, UN\$403, Universal Waset Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Note Common Name RO, UN\$403, Universal Waset Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Note Compact Lamps Universal Waset Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Note Compact Lamps Universal Waset Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Note Seather Seather Seather Seather Note Oot-Regulated per 40 CFR 173.164 (e) Note Seather S		Nor	ı-Regu	ilated	Material (I	DW-Solids)		01	DM	200	Р	NC2022-0280		
No. Type QTY W/Vol Profile Numb  X NA1993, Dieselfuel, 3, III EGR# 128  X UN1203, Gasoline, 3, III EGR# 128  X UN1203, Gasoline, 3, III EGR# 128  X UN1203, Gasoline, 3, III EGR# 128  WEED Olt. (Not a USDOT Hazardous Material)  Petroleum Contact Water (Not a USDOT Hazardous Material)  Petroleum Contact Water (Not a USDOT Hazardous Material)  Universal Waste Lamps, Batteries, Ballasts, and Electronics for Recycle  HM No. Type Est. Wt. Count Shipping Name and Description (if applicable)  RQ, UN3506, Mercury contained in manufactured articles, 9 (e.1) ERG# 172  Mercury Devices  X No. UN2006, Batteries, Unanded Universal Waster (Not a USDOT Hazardous Material)  IUN2794, Batteries, well non-spillable, 8 EGR# 154  VN2200, Batteries, well, filled with aid, 8 EGR# 154  VN2200, Batteries, well, filled with aid, 8 EGR# 154  VN2795, Batteries, Well, filled w		Klon	- Regi	lited	Empty C	Trums		02	Dm	100	7	N(2022-025)	2	
X NA 1993, Diesel fuel; 3, III EGR# 128 X UN1203, Gasoline, 3, III EGR# 128 USED OIL (Not a USDOT Hazardous Material) Petroleum Contact Water (Not a USDOT Hazardous Material) Universal Waste Lamps, Batteries, Ballasts, and Electronics for Recycle  HM No. Type Est. Wt. Count Shipping Name and Description (If applicable) RQ, UN3506, Mercury contained in manufactured articles, 8 (6,1) ERG# 172 Mercury Devices X RQ, UN3492, Polychlorinated biphenyls, solid, 9, II EGR# 174 TSGA Examp POB Lamp Ballasts X UN2800, Batteries, well non-spillable, 8 EGR# 154 UN2794, Batteries, well non-spillable, 8 EGR# 154 UN2795, Batteries, well, filled with acid, 8 EGR# 154 UN2795, Batteries, well, filled with akial, 9 EGR# 154 UN3090, Ultihum mol batteries, 9 EGR# 138 UN3090, Ultihum mol batteries, 9 EGR# 147 Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (Over 4-FL) Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Circular/Lube lamps (Over 4-FL) Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Circular/Lube lamps (Over 4-FL) Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Circular/Lube lamps (Over 4-FL) Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) HiDM/VIV Lamps Universal Wast		Section of the sectio	871 1471.					7. 177 TA 1511	and with to the					
USED OIL (Not a USDOT Hazardous Material)  Petroleum Contact Water (Not a USDOT Hazardous Material)  Universal Waste Lamps, Batteries, Ballasts, and Electronics for Recycle  HM No. Type Est. Wt. Count Shipping Name and Description (If applicable)  RQ., UN3509, Mercury contained in manufactured articles; 8 (6.1) ERG# 172 Mercury Devices  X   RQ., UN3439, Polychiorinated biphenyls, solid, 9, II EGR# 171 TSCA Exempt PCB Lamp Ballasts  X   UN2794, Batteries, wet non-spillable, 8 EGR# 154 Sealed Lead Acid Batteries  X   UN2795, Batteries, wet, filled with acid, 8 EGR# 154 Lead Acid Batteries  X   UN2795, Batteries, wet, filled with acid, 8 EGR# 154 Wet NICad Batteries  X   UN3990, Lithium metal batteries, 9 EGR# 139 Lithium fon Batteries  X   UN3990, Lithium on batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium ion batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium ion batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium fon batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium fon batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium fon batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium fon batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium fon batteries, 9 EGR# 147 Lithium fon Batteries  X   UN3990, Lithium fon batteries, 9 EGR# 173, 164 (e) Florescent lamps (CVP4 AFL)  Batteries, dry, sealed n.o.s.   Dry NiCad Batteries  Dry NiCad Batteries  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (CVP4 AFL)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (CVP4 AFL)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (CVP4 AFL)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (CVP4 AFL)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (CVP4 AFL)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173, 164 (e) Florescent lamps (CVP4 AFL)  Universal Waste Lamps (Not DO	X	NA 1993,	Fuel oil (I	i, 3, III No. 1,2,4,		s for Recycle	EGR# 128	No.	Type	QTY	Wt/Vol	Profile Number		
No. Type Est. Wt. Count Shipping Name and Description (if applicable)  RQ, UN\$506, Mercury contained in manufactured articles, 8 (6.1) ERG# 172 Mercury Devices  RQ, UN\$432, Polychlorinated biphenyls, solid, 9, II EGR# 171 TSCA Exempt PCB Lamp Ballats  X UN2800, Batteries, wet non-spiliable, 8 EGR# 164 Sealed Lead Add Batteries  X UN2794, Batteries, wet, filled with acid, 8 EGR# 154 Lead Add Batteries  X UN3909, Lithium metal batteries, 9 EGR# 154 Lead Add Batteries  X UN3909, Lithium metal batteries, 9 EGR# 138 Lithium Metal Batteries  X UN3480, Lithium no batteries, 9 EGR# 147 Lithium lon Batteries  X UN3480, Lithium hot batteries, 9 EGR# 147  Batteries, dry, sealed n.o.s.  Batteries, dry, sealed n.o.s.  Batteries, dry, sealed n.o.s.  Dry NiCad Batteries  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Florescent lamps (4-Ft and Under Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Circular/U-tube lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Circular/U-tube lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Shelded Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Shelded Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Shelded Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Shelded Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HIDMYLIV Lamps  Universal Waste Lamps (Not DOT-Regulated per 49 CFR	X	USED OIL	(Not a U	SDOT H	ot a USDOT Haza	ardous Material)	Control of the contro	, , , , , , , , , , , , , , , , , , , ,	報 Vinka		1017			
RQ, UN3506, Mercury contained in manufactured articles, 8 (6.1) ERG# 172 Mercury Devices X RQ, UN3432, Polychlorinated biphenyls, solid, 9, II EGR# 174 TSGA Exempt PCB Lamp Ballasts X UN2800, Batteries, wert non-spillable, 8 EGR# 154 Sealed Lead Acid Batteries X UN2794, Batteries, wert, filled with acid, 8 EGR# 154 Lead Acid Batteries X UN3909, Lithium metal batteries, 9 EGR# 154 Lead Acid Batteries X UN3909, Lithium metal batteries, 9 EGR# 138 Lithium Metal Batteries X UN3909, Lithium metal batteries, 9 EGR# 138 Lithium Metal Batteries X UN3909, Lithium in batteries, 9 EGR# 147 Lithium lot batteries, 9 EGR# 14	HM	No.	Type	Fet Wit						cycle		nmon Name	Discrepa	
Month  UN3480, Lithium Ion batteries, 9  EGR# 147  Lithium Ion Batteries  Batteries, dry, sealed n.o.s.  Alkaline Batteries  Batteries, dry, sealed n.o.s.  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Unive	X X X	To the second	icoli.	222 224	State Control of the	RQ, UN3506, Mercu RQ, UN3432, Polyc UN2800, Batteries, UN2794, Batteries,	ury contained in m hlorinated biphen wet non-spillable, wet, filled with aci	anufactured articles vis, solid, 9, II 8 d, 8	ed articles, 8 (6.1) ERG# 172 e), II EGR# 171 EGR# 154 EGR# 154			Mercury Devices TSCA Exempt PCB Lamp Ballasts Sealed Lead Acid Batteries Lead Acid Batteries		
Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e)  Universal Waste Lamps (Not DOT-Regulated)  Non-PCB Light Ballasts for Recycle (Not DOT-Regulated)  Electronic Equipment for Recycle (Not DOT-Re						UN3480, Lithium ior Batteries, dry, seale Batteries, dry, seale	n batteries, 9 d n.o.s. d n.o.s.			GR# 147	Lithiu Alka	m Ion Batteries line Batteries		
Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) HID/MV/UV Lamps Universal Waste Lamps (Not DOT-Regulated per 49 CFR 173.164 (e) Incandescent Lamps Non-PCB Light Ballasts for Recycle (Not DOT-Regulated) Non-PCB Light Ballasts/Capacitor Electronic Equipment for Recycle (Not DOT-Regulated) e-Waste Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transport according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are hazardous waste as defined by EPA 40CFR Part 261 or any applicable standard in the proper condition for transport according to the policies of the Department of Transportation. I further certify that none of the materials described above are hazardous waste as defined by EPA 40CFR Part 261 or any applicable standard proper's/Offeror's Printed/Typed Name  Signature  Month  Worth  Signature  Month  Signature  Month		TATE OF THE STATE				Universal Waste Lan Universal Waste Lan Universal Waste Lan	mps (Not DOT-Re mps (Not DOT-Re mps (Not DOT-Re	gulated per 49 CFR gulated per 49 CFR gulated per 49 CFR	173.164 (e 173.164 (e 173.164 (e	) — — — — — — — — — — — — — — — — — — —	Florescen Circul Cor	t lamps (Over 4-Ft.) ar/U-tube lamps mpact Lamps		
Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transport according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are hazardous waste as defined by EPA 40CFR Part 261 or any applicable stances specifically identified above the materials contain less than 1,000 ppm total halogens, and do not contain quantifiable levels (2ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761. Signature  Month  Signature  Month  Signature  Month  Signature  Month  Signature  Month						Universal Waste Lar Universal Waste Lar	mps (Not DOT-Re mps (Not DOT-Re	gulated per 49 CFR gulated per 49 CFR	173.164 (e 173.164 (e	(64	HID/i	MV/UV Lamps descent Lamps		
	applicable unless spe oper's/ Of sporter 1	regulations of actifically identifications of the printed of the p	the Depart fied above red/Typed ped Name	ment of Tra the materia Name	insportation. I furthe	aterials are properly class r certify that none of the r	sified, described, pa materials described s and do not contain Signatur Signatur	ckaged, marked, and le above are hazardous w quantifiable levels (2pr e	beled, and a	ned by EPA 40C	FR Part 261	nsport according to the or any applicable state is Parts 279 and 761.  Month  Month	Day Day Day	
					ion:	25.25	J		rasprati	Teledico	No. of the last	I I I	Day	
ignated Facility Certification: I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy indicated above.	ignated F	Facility Certi	fication: I	hereby a	cknowledge recei	nt of the materials co	vered by this man	ifest excent for any	discrenanc	cy indicated at	oove		- Control	

#### **About AECOM**

AECOM (NYSE: ACM) is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries.

As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges.

From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM companies had revenue of approximately US\$19 billion during the 12 months ended June 30, 2015.

See how we deliver what others can only imagine at aecom.com and @AECOM.

Contact Scott Ross Sr. Project Manager T (803)254-4400 E scott.ross@aecom.com

**aecom.com** 60704227