51025

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May 18, 2016

Ms. Addie Walker
South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
State Remediation Section
2600 Bull Street
Columbia, South Carolina 29201

Re: Summary of Well Installation and Sampling Efforts
Former Shakespeare Composite Structures Site
Newberry County
Voluntary Cleanup Contract 14-6271-RP
Site ID # 51025

Dear Ms. Walker:

Between February 18 and April 18, 2016, AECOM Technical Services, Inc. (AECOM), performed well installation and sampling efforts as part of an ongoing investigation at the Shakespeare Composite Structures Site (the Site). In the August 2015 Site Investigation Work Plan (SIWP) Addendum, AECOM proposed the installation of an additional deep bedrock well on the former Shakespeare manufacturing facility property (the plant) along with intermediate wells on the properties to the north (Dickert Property) and the south (Shealy Property) of the plant. As a follow-up to recommendations in the SIWP Addendum, the SCDHEC requested installation of an additional bedrock well on the Shealy property as part of this investigative effort. The intent of this brief report is to summarize the results of the well installation and sampling efforts.

Well Installation

Four wells were installed during this portion of the investigation. The wells included one shallow well (MW-25), one intermediate well (MW24I) and one bedrock well (SDW-2) on the Shealy property, and one deep bedrock well (MW-9D) on the plant site. Each well was installed using rotosonic drilling techniques in accordance with the procedures referenced in Section 3.2.1 of the SIWP Addendum. Soil boring logs generated during well boring advancement and well construction logs documenting well construction details for each of these new wells are included in **Attachment A** of this letter report.

Shallow Wells

Shallow well MW-25 was installed downgradient from temporary well TMW-114. TMW-114 was installed and sampled in December 2015. As indicated in the March 8, 2016 Quarterly Progress Report, analytical

results for the confirmatory sample collected from TMW-114 indicated the presence of trichloroethylene (TCE) at 66 micrograms per liter (ug/L), which is above the primary drinking water standard (maximum contaminant level – MCL) of 5 ug/L. As a result, Philips opted to install an additional shallow well (MW-25) downgradient (southwest) of temporary well TMW-114 to attempt to achieve horizontal plume definition in this direction. MW-25 was installed to a depth of approximately 29 feet below land surface (BLS); the groundwater sample collected from this well had a reported TCE concentration of 0.9 ug/L, which is below the 5 ug/L MCL; therefore, delineation in this direction has been completed. The location of MW-25 is depicted on **Figure 1**.

Intermediate Wells

As indicated in the SIWP Addendum, at least one intermediate zone well was planned for the Shealy property. MW-24I was installed to the southeast of MW24 (shallow well) on February 17, 2016. Based on the depths of intermediate wells advanced in other portions of the Site, it was anticipated that the depth of this well would range between 40 and 65 feet BLS. However, MW-24I was installed to a depth of approximately 39 feet BLS. This well is constructed into the top of competent granitic bedrock, which was encountered at approximately 31 feet BLS at this location. The location of MW-24I is depicted on **Figure 2**.

Bedrock Wells

Two bedrock wells were installed at the Site during this portion of the investigation. SDW-2 was installed on the Shealy property, approximately 450 feet northeast of existing well SDW-1. MW-9D was installed on the plant, to the south of well cluster MW9/9I. **Figure 3** depicts the locations of the bedrock wells installed at the Site to date.

Each well was installed as Type III, double-cased well in accordance with SC Well Standards and Regulations R.61-71. This entailed advancement of a pilot-boring through overburden materials and saprolite to the top of competent bedrock. At SDW-2 competent metamorphosed granitic gneiss was encountered at approximately 43 feet BLS. A six-inch diameter polyvinyl chloride (PVC) surface casing was installed in the pilot boring and sealed in place using a cement grout. The well boing was then advanced into the underlying bedrock using a rotosonic coring device. The well boring was advanced to a total depth of approximately 89 feet, which is greater than 40 feet into the bedrock. Due to difficult coring conditions, recovery of reliable bedrock cores was limited in this boring, making it difficult to clearly identify fracture zones that may produce a sufficient quantity of groundwater for sampling. The well was installed to a total depth of 89 feet BLS.

Bedrock well MW-9D was installed south of the main axis of a high concentration groundwater plume area at the plant. The intent of this well was to assess if elevated CVOC concentrations had migrated into deeper bedrock near the area of highest concentrations in shallow groundwater. The pilot boring for MW-9D was advanced to a depth of 130 feet; which is far greater than originally anticipated due to greater thickness of the saprolite and weathered bedrock overlying competent granitic bedrock beneath this portion of the Site.

Soil boring logs and well construction diagrams for SDW-2 and MW-9D detail the lithology encountered at these locations and summarize the construction of these wells. Copies of each are included in **Attachment A**.

Well Development and Sampling

Following installation of the wells, AECOM personnel performed development and sampling in accordance with procedures described in the SIWP Addendum. Development included surging and over-

pumping using a submersible pump while measuring water quality parameters including pH, specific conductivity, temperature and turbidity. Wells MW24I and MW25 were developed the week of February 22, 2016. Wells SDW-2 and MW-9D were developed during the week of April 18, 2016. Development was performed until water quality parameters stabilized in accordance with procedures described in the SIWP Addendum. Development efforts were documented on well development forms generated for each well copies of which are included in **Attachment B**.

Once well development efforts were completed, AECOM personnel implemented groundwater sampling efforts. These efforts were performed in accordance with procedures described in Section 3.2.2 of the SIWP Addendum. Purging efforts were documented on groundwater sampling forms.

Monitoring wells MW24I and MW25 were sampled the week of February 22, 2016; and monitoring wells SDW-2 and MW-9D were sampled during the week of April 25, 2016. Copies of the groundwater sampling forms for each well are also included in **Attachment B**.

Sample Analysis and Results

AECOM contracted Shealy Environmental Services, Inc. (Shealy) to perform analysis on the samples collected from the four monitoring wells (MW24I, MW25, SDW-2, MW-9D) installed during this phase of work. The groundwater samples were analyzed for Target Compound List- Volatile Organic Compounds (TCL-VOCs) using EPA SW-846 Method 8260b. Copies of the analytical reports for these samples are included in **Attachment C**.

Analytical results for the samples collected during this phase of work are summarized on the attached **Table 1**. **Table 2** summarizes qualifiers assigned to data, if necessary, following validation of the laboratory analytical reports by AECOM. Included in **Table 1** are the results for samples collected from temporary wells installed on the Shealy property prior to this phase of work. This data was included to provide additional perspective regarding distribution of impact(s) to groundwater on the Shealy property. **Table 1** includes results for temporary shallow wells TMW111 and TMW114, permanent shallow wells MW23 and MW24, and bedrock well SDW-1. The locations of these wells are depicted on the attached figures.

As shown on **Table 1**, the primary contaminant of concern at the Site, TCE, was detected at elevated concentrations in two groundwater samples, shallow temporary well TMW-114 (66 micrograms per liter – ug/L) and bedrock well sample SDW-1 (16 ug/L), both of which were collected from the Shealy property. TCE was detected at concentrations below the MCL in MW23 (0.34 ug/L), MW-24I (1.8 ug/L), and MW25 (0.9 ug/L), each collected from the Shealy property. The Site related CVOCs were not detected in the sample collected from the new bedrock well installed on the Shealy property (SDW-2). TCE was detected at 3.1 ug/L in the sample from the deep bedrock well installed on the plant – MW-9D.

Other organic compounds (i.e. acetone, chloroform), not related to the site specific CVOCs were detected at low concentrations in several of the samples collected from these locations. Based on their low concentrations, it is suspected that these detections are related to laboratory artifact.

Contaminant Distribution

Review of the analytical results from the recent phase of investigation indicates that the horizontal extent of TCE in shallow groundwater has generally been defined in all directions at the Site. **Figure 1** is a TCE isoconcentration map depicting the most recent CVOC concentrations in TMW and/or permanent shallow wells.

Figure 2 shows the distribution of TCE in the intermediate zone. As shown on this figure, it appears that the extent of elevated TCE concentrations in the intermediate zone has also been defined to the east, and south. Data from the new intermediate well, MW24I, confirms that the extent of impact in this interval has also been defined to the west and southwest.

Data from previous sampling efforts has defined the extent of elevated TCE to the east (MW2D) and to the northwest (RDW-2). **Figure 3** depicts the distribution of TCE in bedrock wells. Based on concentrations detected in the sample from new well SDW-2, the extent of TCE in bedrock wells has also been defined to the west.

Analytical results for the most recent sampling event in SDW-1 indicates TCE is present above the MCL (5 ug/L) at 16 ug/L. This is slightly higher than the concentration detected during its initial sampling in December 2014 (8 ug/L).

Analytical results for the deep on-site bedrock well MW-9D, indicates TCE was not detected above its MCL. This appears to indicate the vertical extent of elevated TCE values in the deeper bedrock has been delineated beneath the plant.

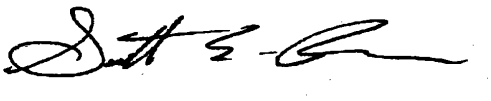
Conclusions

Results of the latest phase of investigative efforts have delineated the extent of elevated TCE impact in multiple depth zones to the west of the Site. The vertical extent of impact beneath the plant has also been delineated. Slightly elevated concentrations of TCE are still evident in bedrock to the southwest of the Site; however, AECOM and Philips do not recommend additional investigative efforts beyond SDW-1 at this time.

Due to difficulties accessing proposed drilling locations on the Dickert property (north of the plant); the intermediate well proposed for this property was not installed during this phase of work. Philips and AECOM are negotiating with the property owner to modify paths to allow future access for drilling and sampling efforts. SCDHEC will be notified of the approval for these developing plans and schedule for future drilling on this property.

Should you have any questions regarding the information included in this letter report, please contact me at (803) 254-4400 at your convenience.

Sincerely,



Scott E. Ross, P.G.
Senior Project Manager

cc: Ms. Dianne Murphy – Philips

TABLES

Table 1
Summary of Volatile Organic Compounds in Groundwater
Shakespeare Composite Structures Facility
Newberry, South Carolina

Sample ID		TMW-111	TMW-114	MW 9D	MW 9D - DUP	MW-23	MW-23	MW-24	MW24I	MW-25	SDW-1	SDW 2
Laboratory ID	USEPA	QL17089-001	QL17089-002	RD26033-001	RD26033-002	RA13091-003	RB24001-001	RA13091-002	RC03069-001	RB26034-001	RA13091-001	RD26033-003
Date Collected	MCL	12/14/15	12/15/15	04/25/16	04/25/16	01/13/16	2/23/2016	01/13/16	3/3/2016	2/26/2016	01/13/16	04/26/16
Volatile Organic Compounds by USEPA Method 8260B (µg/L)												
1,1,1-Trichloroethane	200	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloro-1,2,2-Trifluoroethane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene	7	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,2,4-Trichlorobenzene	70	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane (DBCP)	0.2	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,2-Dibromoethane (EDB)	0.05	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	600	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane	5	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane	5	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	75	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
2-Butanone (MEK)	NS	< 10	< 10	< 10	< 10	< 10	< 10 //y	< 10	< 10	< 10	< 10	**2.3 J//**
2-Hexanone	NS	< 10	< 10	< 10	< 10	< 10	< 10 //y	< 10	< 10	< 10	< 10	**0.59 J//**
4-Methyl-2-pentanone	NS	< 10	< 10	< 10	< 10	< 10	< 10 //y	< 10	< 10	< 10	< 10	**0.92 J//**
Acetone	NS	< 20	< 20	**2.4 J//**	**1.9 J//**	< 20	< 20 //y	< 20	< 20	< 20	< 20	**11 J//**
Benzene	5	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Bromodichloromethane	80 [1]	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Bromoform	80 [1]	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Bromomethane (Methyl bromide)	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Carbon disulfide	NS	< 5	< 5	< 5	< 5	**1.1 J//**	< 5 //y	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride	5	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Chlorobenzene	100	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Chloroethane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Chloroform	80 [1]	< 5	< 5	**2 J//**	**1.9 J//**	< 5	< 5 //y	< 5	**2.1 J//**	**4 J//**	< 5	**5.7**
Chloromethane (Methyl chloride)	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	**0.37 J//**
cis-1,2-Dichloroethene	70	< 5	**3.2 J//**	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	**0.96 J//**	< 5
cis-1,3-Dichloropropene	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Cyclohexane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	80 [1]	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Dichlorodifluoromethane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	700	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Isopropylbenzene	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Methyl acetate	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Methyl tertiary butyl ether (MTBE)	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Methylcyclohexane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Methylene chloride	5	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	**1.8 J//**
Styrene	100	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene	5	< 5	**0.4 J//**	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Toluene	1000	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	**27**
trans-1,2-Dichloroethene	100	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Trichloroethene	5	< 5	**66**	**3.1 J//**	**3.1 J//**	**0.95 J//**	**0.34 J//y**	< 5	**1.8 J//**	**0.9 J//**	**16**	< 5
Trichlorofluoromethane	NS	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5
Vinyl chloride	2	< 2	< 2	< 2	< 2	< 2	< 2 //y	< 2	< 2	< 2	< 2	< 2
Xylenes (total)	10000	< 5	< 5	< 5	< 5	< 5	< 5 //y	< 5	< 5	< 5	< 5	< 5

Notes:

[1] - 1998 Final Rule for Disinfectants and Disinfection By-Products: The total for trihalomethanes is 80 µg/L.

MCL - Maximum Contaminant Level (USEPA, April 2012)

NS - No Standard

USEPA - United States Environmental Protection Agency

Bold font and shading indicates the analyte was detected.

Bold outline indicates an exceedance of the USEPA MCL.

Table 2
Added Data Qualifiers
Shakespeare
Newberry, South Carolina

Modifier	Description
<	Indicates not detected at the reporting limit indicated.
"/"	Separates the laboratory 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 QC excursion.

Laboratory Data Qualifiers

Qualifier	Description
J	Estimated result less than the practical quantitation limit and greater than or equal to the method detection limit.

Result Data Qualifiers

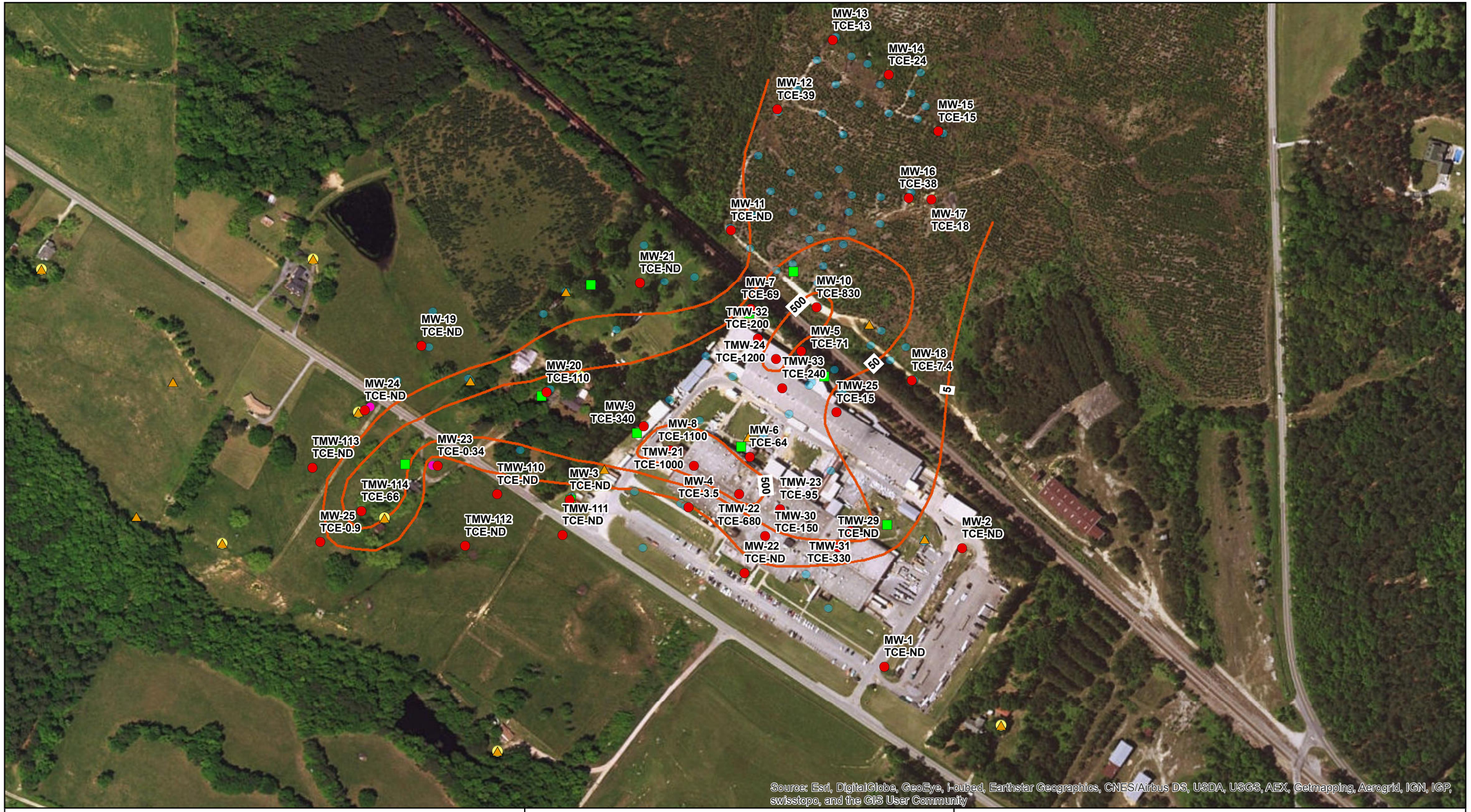
Qualifier	Description

No Result Data Qualifiers were added as a result of the validation process.

Analysis Data Qualifiers

Qualifier	Description
y	Cooler temperature greater than 4 degrees Celsius but less than 10 degrees Celsius.

FIGURES



Legend

- Shallow Well
- Intermediate Well
- Bedrock Well
- Water Supply Well
- Existing Shallow Zone Monitoring Well
- Abandoned Temporary Wells
- TCE Isoconcentration Contour (ug/L)

TCE-15: Trichloroethene concentration 15 ug/L.
ND: Non detected.
NS: Not sampled.

N
W E
S

0 300 600 900

Feet

G:\Projects\Active\60328308_Shakespeare\map\Shallow_TCE.mxd

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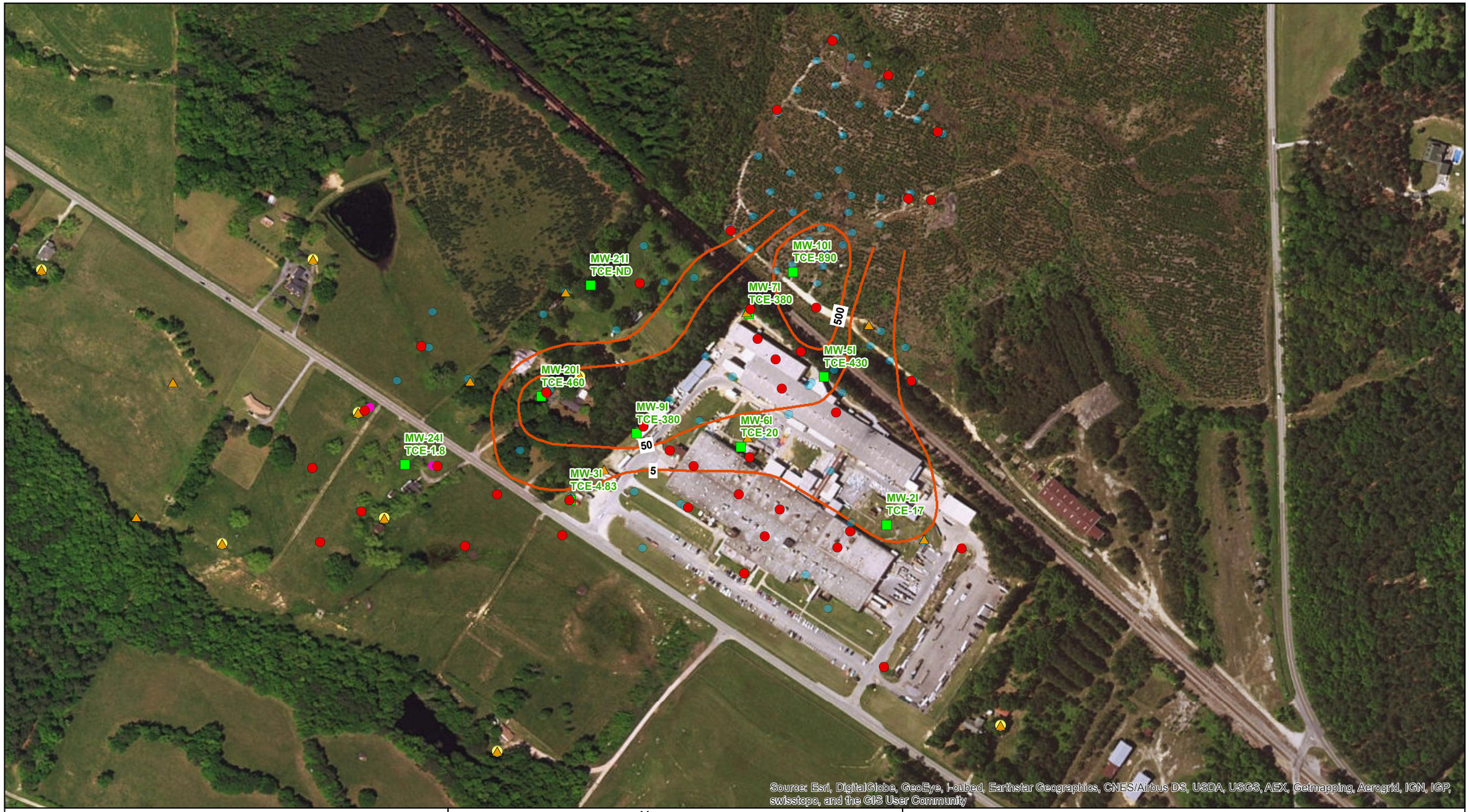
Figure 1: TCE Isoconcentration in Shallow Zone

Shakespeare Composition Structures
Newberry, South Carolina

Project No.: 60328308; Prepared by: JC; Date: 5/17/2016.



Legend

TCE-17: Trichloroethene concentration 17 ug/L.
ND: Non detected.

- Shallow Well
- Intermediate Well
- Bedrock Well
- Water Supply Well
- Existing Shallow Zone Monitoring Well
- Abandoned Temporary Wells
- TCE Isoconcentration Contour (ug/L)

N
W E
S

0 300 600 900

Feet

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Figure 2: TCE Isoconcentration in Intermediate Zone

Shakespeare Composition Structures
Newberry, South Carolina

Project No.: 60328308; Prepared by: JC; Date: 5/17/2016.

PW-3
TCE-ND

PW-4
TCE-0.9

RDW-2
TCE-ND

MW-7D
TCE-15

MW-18D
TCE-74

PW-Boazeman
Ringer
TCE-11

SDW-2
TCE-ND

RDW-1
TCE-180

PW-8
TCE: 11 at 70'
29 at 115'
150 at 155'
9.8 at 182'

MW-6D
TCE-250

MW-9D
TCE-3.1

MW-3D
TCE-30

SDW-1
TCE-16

PW-2
TCE: 79 at 84'
20 at 130'
16 at 140'

PW-5
TCE-15

MW-2D
TCE-ND

PW-7
TCE-ND

PW-1
TCE-ND

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

TCE-15: Trichloroethene concentration 15 ug/L.
ND: Non detected.

- Shallow Well
- Intermediate Well
- Bedrock Well
- Water Supply Well
- Existing Shallow Zone Monitoring Well
- Abandoned Temporary Wells
- TCE Isoconcentration contour (ug/L)

N
W E
S

0 300 600 900

Feet

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Figure 3: TCE Isoconcentration in Bedrock Wells

Shakespeare Composition Structures
Newberry, South Carolina

Project No.: 60328308; Prepared by: JC; Date: 5/17/2016.

ATTACHMENT A

SOIL BORING LOGS AND WELL CONSTRUCTION DIAGRAMS

Soil Boring Log

AECOM

BORING NO. MW24I
PAGE 1 OF 2

PROJECT: Shakespeare
CLIENT: Philips
CONTRACTOR: Cascade
EQUIPMENT: Rotosonic

PROJECT NO: 60328307
LOCATION:
ELEVATION:
NORTHING:
EASTING:
DATE START: 2/17/16
DATE FINISH: 2/19/2016
DRILLER:
OVERSIGHT: S. Ross

GROUNDWATER			DRILLING INFORMATION							
DATE	HRS	WATER	METHOD			CASING		TEMP / PERM		
			HOLE DIA.			CASING DIA.		CASING TYPE		
			DEPTH			CASING DEPTH		GROUT TYPE		
			SAMPLING			HAMMER WT		HAMMER FALL		

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS (SOIL CLASSIFICATION: USCS)
					Topsoil
					SILTY SAND (SM) Yellowish red, mostly fine sand, some silt, ~~trace~~ few to trace clay (quartz boulder between ~2-3')
					Lean Clay (CL) Brown to reddish brown, mostly clay, some silt, little fine sand, moist
5.0					~~SM~~ SILT (MH) Reddish yellow to pale brown, mostly silt, few to trace vf sand, trace clay
					similar to above except moist, ~~few~~ reddish brown, few clay
10.0					similar to above except reddish yellow, few to trace clay
					SILTY SAND (SM) Moist, med dense, pale brown to brownish yellow to pale yellow (mottled) mostly silt, some fine to vf sand, trace clay
15.0					similar to above
					similar to above except alternating layers of pale yellow to pale brown, few clay, trace vf mica
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	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 STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Soil Boring Log

BORING NO. MW24T

PAGE 2 OF 2

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					SILTY SAND (SM) ~~Pale~~ Moist to wet, med dense, mostly med sand, some silt, trace clay POORLY GRADED SAND (SP) ~~Pale~~ moist, med dense, pale brown to pale yellow, mostly med sand, few silt,
25.0					similar to above similar to above except trace med to cs gravel
30.0					SILT WITH SAND (MH) Dense, moist, ~~mostly~~ gray to brownish gray, mostly silt, little med sand, ~~trace~~
35.0					GRANITE Gray, hard, slight weathering, fine grained gtc, Feldspar, hornblende Fracture zone @ 34.5 Fracture zone @ 36.0 Fractures @ 37.5, 38, 39
40.0					TD = 39'
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Soil Boring Log

AECOM

BORING NO. MW25
PAGE 1 OF 1

PROJECT: Shakespeare - Newberry
CLIENT: Philips
CONTRACTOR: Cascade
EQUIPMENT: Mini-Sonic

PROJECT NO: 60583508
LOCATION:
ELEVATION:
NORTHING:
EASTING:
DATE START: 2/26/16
DATE FINISH: 2/26/16
DRILLER:
OVERSIGHT: S. Glass

GROUNDWATER			DRILLING INFORMATION							
DATE	HRS	WATER	METHOD			CASING		TEMP / PERM		
			HOLE DIA.			CASING DIA.		CASING TYPE		
			DEPTH			CASING DEPTH		GROUT TYPE		
			SAMPLING			HAMMER WT		HAMMER FALL		

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS (SOIL CLASSIFICATION: USCS)
					SILTY SAND (SM) Med dense, moist, mostly silt, some med to fine sand, trace clay
					similar to above except yellowish brown
					similar to above
5.0					similar to above
					SILTY SAND (SM) Med dense, moist, pale brown to ~~yellow~~, mostly silt, some fine sand, few clay ~~rock~~ fragments (relict granitic fabric)
10.0					SILTY SAND (SM) Med dense, moist ~~brown~~, mostly silt, some cs to med sand,
					similar to above
15.0					similar to above
					similar to above
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. MW-35

PAGE 2 OF 2

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					SILTY SAND (SM)
					Med dense, wet, ~~brown~~ light brown, mostly med to fine sand, some silt, trace clay, trace mica
25.0					similar to above
					Boring Terminated @ 28'
30.0					
					TD = 28
					Filter - 28-15'
35.0					Bentonite - 15-12
40.0					
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. MW9D
PAGE 1 OF 6

PROJECT: Shakespeare - Newberry
CLIENT: Philips
CONTRACTOR: Cascade
EQUIPMENT: Rotosonic

PROJECT NO: 60328308
LOCATION:
ELEVATION:
NORTHING:
EASTING:
DATE START: 4/13/2016
DATE FINISH: 4/14/2016
DRILLER: Ray.
OVERSIGHT: S. Gross

GROUNDWATER			DRILLING INFORMATION						
DATE	HRS	WATER	METHOD			CASING	PVC	TEMP / PERM	Perm
			HOLE DIA.			CASING DIA.	6"	CASING TYPE	
			DEPTH			CASING DEPTH	130'	GROUT TYPE	
			SAMPLING			HAMMER WT		HAMMER FALL	

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS (SOIL CLASSIFICATION: USCS)
				Hand Auger	Topsoil
					Fill - CLAYEY SAND (SC) Med dense, dry, ~~gray~~ yellowish red, mostly fine sand, few clay, few silt
5.0	0.4				~~SILT with CLAY (ML)~~ SILTY/CLAYEY SAND (SM/SC) ~~Med dense, moist, pale light brown~~ to brown to reddish brown mostly fine sand, some silt, few clay
	0.1				~~similar to above~~ SILTY SAND (SM) Med dense, moist, olive gray to olive brown, mostly med to fine sand, some silt, trace organics
10.0	0.4				CLAYEY SAND (SC) Med dense, moist, olive brown to grayish brown, mostly fine sand, some clay, few silt
	2.6				
	1.9				
	1.9				SILTY CLAY (ML-CL) Med stiff, moist, light brown to reddish brown to gray, (mottled) mostly silt, few clay, few fine sand
15.0	1.3				
	1.9				SILTY SAND (SM) Med dense, moist, reddish brown to yellowish brown, mostly fine sand, some silt Similar to above except pale yellow to light gray to reddish brown, increasing clay
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. MW-9D

PAGE 2 OF 4

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0	2.3				SILTY SAND (SM) Dense, moist, alternating layers of light gray to pale brown, mostly Fine sand, some silt (colored layers vary in thickness from 1mm to 10mm)
	2.9				similar to above
	0.7				
25.0	0.8				similar to above
	4.1				POORLY GRADED SAND WITH SILT (SP-SM) Med dense, moist, pale reddish brown, mostly med to fine sand, few silt
					similar to above
30.0	4.6				similar to above
	3.9				
35.0	2.2				SILTY SAND (SM) Dense, dry, pale brown to pale yellow, mostly med sand some silt, (very hard drilling)
	1.4				~~similar to~~ SILTY SAND (SM) Dense, moist, gray to grayish brown, mostly med to fine sand, some silt, trace clay
40.0	14.2				
	4.1				similar to above except reddish yellow to yellowish brown
	7.7				SILTY SAND (SM) Dense, dry, gray to olive brown, mostly fine sand, some silt, trace clay
45.0	2.9				

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. 0 MW9D

PAGE 3 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
45.0	0.1				POORLY GRADED SAND WITH SILT (SP-SM) Dense, dry, light brown to yellowish brown, mostly fine sand, some silt, trace clay (formation crumbles or gets pulverized by core barrel).
	2.3				
	0.8				
	0.4				SILTY SAND (SM) Moist, med dense, olive brown to gray, mostly ~~F~~ M-F sand, some silt, little clay,
50.0	1.1				
	1.9				POORLY GRADED SAND WITH SILT (SP-SM) Dense, dry, reddish yellow to yellowish brown, mostly m-f sand, some silt, trace clay
	3.3				
	0.6				SILTY SAND (SM)
55.0	2.9				Moist, med dense, olive brown, mostly med to fine sand, some silt, little clay
	0.8 ~~2.7~~				POORLY GRADED SAND WITH SILT (SP-SM)
	0.7				Dense, dry, yellowish brown to pale brown, mostly med to fine sand little silt, trace clay, trace mica
	0.6				(Relict granitic structure w/ weathered gtz, feldspar and mica in bottom foot of core
	1.1				CLAYEY SAND (SC)
60.0	~~0.7~~				Moist, med stiff, olive brown ~~to gray~~, mostly med to fine sand, little clay, little silt
	1.7 ~~1.2~~				POORLY GRADED SAND WITH SILT (SP-SM)
	1.4 3.2				Dense, dry, pale brown to yellowish brown to white, mostly med to fine sand, some silt, trace clay, trace mica, (relict weathered granitic structure)
	0.4				
65.0	0.7				similar to above
	1.4				similar to above
	1.7				similar to above
70.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. ~~MW-6~~ MW90

PAGE 4 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
70.0	1.7				similar to above
	5.2				similar to above
75.0					"ring chatter"
					similar to above (saprolite) ~~SILTY~~ POORLY GRADED SAND w/ SILT (SP-SM) Dense, dry, pale brown to yellowish brown to white, mostly fine to fine sand, some silt (the cobble sized portions of sample that are not pulverized have weathered qtz, feldspar, accessory mineral relict structure)
80.0					similar to above
					POORLY GRADED SAND (SP) Dense, moist, pale red to reddish brown (oxidized) layers of mostly fine to med sand, few silt with intermittent layers (¼ to 1") thick pale brown silt
85.0					similar to above except thicker layers (2-3") of silt
90.0					Granite (severely weathered) Brittle, reddish brown, med grained, occassional thin layers of severely weathered (pink) feldspar
95.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. MW-90

PAGE 5 OF 9

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
~~100~~ 95					PWR - Severely weathered Granite Zones of white, hard silt w/ little sand (pulverized to powder) to layers of Yellowish brown weathered granite similar to above except intermittent intervals of hard yellowish brown weathered granite.
105					similar to above
110					similar to above
115					similar to above
125					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. MW20

PAGE 6 OF 6

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
~~120~~ 130					PWR - Severely weathered granite zones of gray ~~to white~~ hard silt w/ little sand (pulverized to powder) to layers of yellowish brown weathered granite
~~125~~ 135					Granite - gray to oak brown, phaneritic (quartz, feldspar (plagioclase) w/ biotite & hornblende & accessory minerals)
~~130~~ 140					similar to above intermittent almost vertical, very thin fractures
145					Granite - gray to brown to reddish brown, weathered, fractured evidence of fractures throughout this interval
150					similar to above except red, weathered ~~fractured~~ Possible variation in mineral assemblage - qtz, white-feldspar, dark access mins.
					similar to above except gray, less weathering
155					Boring Terminated @ 155'

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. MLSDW-2
PAGE 1 OF 4

PROJECT: Shakespeare - Newberry
CLIENT: Philips
CONTRACTOR: Cascade
EQUIPMENT: Rotosonic

PROJECT NO: 60328358
LOCATION:
ELEVATION:
NORTHING:
EASTING:
DATE START: 2/25/2016
DATE FINISH: 4/12/2016
DRILLER: Adam Marshall
OVERSIGHT: S. Ross

GROUNDWATER			DRILLING INFORMATION							
DATE	HRS	WATER	METHOD			CASING		TEMP / PERM		
			HOLE DIA.			CASING DIA.		CASING TYPE		
			DEPTH			CASING DEPTH		GROUT TYPE		
			SAMPLING			HAMMER WT		HAMMER FALL		

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS (SOIL CLASSIFICATION: USCS)
	3.4				POORLY GRADED SAND w/ SILT (SP-SM) loose, moist, brown to yellowish brown, mostly med to fine sand, little silt, trace clay
	6.2				similar to above with intermittent layers (0.5" to 1.5" thick) cemented yellow cs sand
5.0	3.8				
	3.2				similar to above except intermittent layers of black to dark green silty clay
	2.2				
	1.6				SILT w/ SAND (MH) Mod stiff, moist, brown to olive brown to olive green, mostly silt, few fine sand, trace clay, trace mica
10.0	0.0				
	0.0				similar to above
	2.2				
	1.3				similar to above (relict rock fabric evident based on color variation w/in sample)
	1.1				
15.0	2.1				similar to above, (relict rock fabric more evident w/ intervals of dark brown severely weathered accessory minerals (biotite, hornblende?) intermixed w/ layers of olive brown to pale brown to grayish brown silt
	3.6				
	2.0				similar to above.
	4.6				
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. SDW-2 ~~0~~

PAGE 2 OF 4

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
20.0					SILT (c-H) SOFT, moist, grayish brown to brown w/ thin layers of white and green, mostly silt, few med to fine sand, trace clay, trace mica (relict granitic fabric - saprolite)
					similar to above
25.0					SILTY SAND (SM) Dense, moist, ~~reddish~~ pale reddish brown ~~gray~~ to pale red, mostly silt, some cs to med sand, trace clay
					SILT (MH) SOFT, MOIST, gray to dark gray to grayish brown, mostly silt, little fine sand, trace clay, trace mica (relict granitic fabric)
30.0					similar to above (dark mineral assemblages are dominant
35.0					similar to above
					Granite? Dark, ~~gray~~ fine grained w/ thin angular qtz dikes
40.0					SILT (MH) DK gray, ~~soft~~ soft, mostly silt, few fine sand, (some relict fabric)
					similar to above
					Granite DK gray, fine grained w/ thin angular qtz dikes
45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. ~~SDW-2~~

PAGE 3 OF 4

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
~~20~~ 20.0					Granodiorite (?) Phaneritic, dark gray ~~brn~~ (hornblende, biotite) w/ small qtz crystals; intruded by thin granitic dikes
~~25~~ 25.0					similar to above
					similar to above
~~30~~ 30.0					similar to above
					Granite Pegmatitic, large qtz (white) feldspar (light gray / pink) crystals w/ hornblende, biotite accessory mins.
~~35~~ 35.0					similar to above
~~40~~ 40.0					~~Gran~~ similar to above
~~45~~ 45.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Soil Boring Log

BORING NO. SDW-2

PAGE 4 OF 4

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
70.0					Gneiss (?) Phaneritic, dark gray to black, Fine grained, with light gray granitic intrusions
75.0					similar to above Fine grained light + dark grey granitic gneiss muscovite-accessory minerals, lighter banding across the darker grey color rock
80.0					
85.0					
90.0					
95.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

Shallow Monitoring Well Construction Details

PROJECT:	Shakespeare Composite Structures	**WELL NUMBER:**	MW-24I
LOCATION:	Newberry, SC	**JOB NUMBER:**	60328302
CLIENT:	Philips	**TYPE OF INSTALLATION:**	
CONTRACTOR:	Cascade Drilling		Monitoring Well
DRILLER:		**LOCATION:**	
FIELD REPRESENTATIVE:	S. Ross	**INSTALLATION DATE:**	02/18/16

SURVEY DATUM: NAVD 88 (Vertical)
NAD 83 (Horizontal)

TOP OF CASING ELEVATION: 544.993

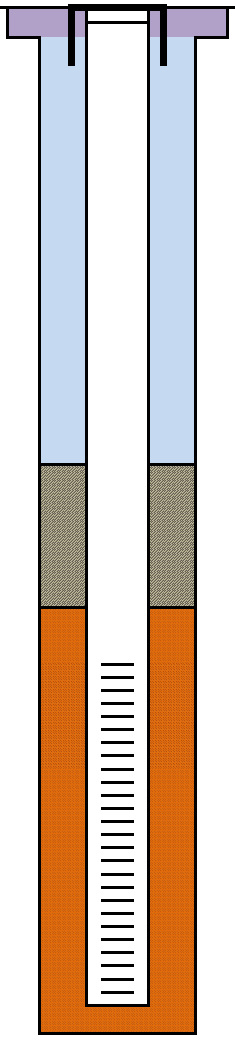
NORTHING: 904402.50

EASTING: 1807181.00

GROUND SURFACE ELEVATION:

CASING STICKUP: 0.069

COMMENTS:



TYPE OF ANNULAR SEAL	Neat Cement
TYPE OF WELL CASING OR RISER	Sch. 40 PVC
INSIDE DIAMETER	2.0 inch
NOMINAL BOREHOLE DIAMETER	8.0 inch
TOP OF WELL SEAL	2.0 feet
TYPE OF SEAL	Bentonite Chips
TOP OF SAND FILTER PACK	31.8 feet
TOP OF SCREENED INTERVAL	32.7 feet
TYPE OF SCREEN	PVC
SLOT SIZE	0.010 inch
INSIDE DIAMETER	2.0 inch
SCREEN LENGTH	5.0 feet
FILTER PACK AROUND SCREEN	No. 2 sand
BOTTOM OF WELL	37.9 feet
BOTTOM OF BOREHOLE	39.0 feet

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

AECOM itoring Well Construction Details

PROJECT:	Shakespeare Composite Structures	**WELL NUMBER:**	MW-25
LOCATION:	Newberry, SC	**JOB NUMBER:**	60328302
CLIENT:	Philips	**TYPE OF INSTALLATION:**	
CONTRACTOR:	Cascade Drilling		Monitoring Well
DRILLER:		**LOCATION:**	
FIELD REPRESENTATIVE:	S. Ross	**INSTALLATION DATE:**	02/26/16

SURVEY DATUM: NAVD 88 (Vertical)
NAD 83 (Horizontal)

NORTHING: 904165.30

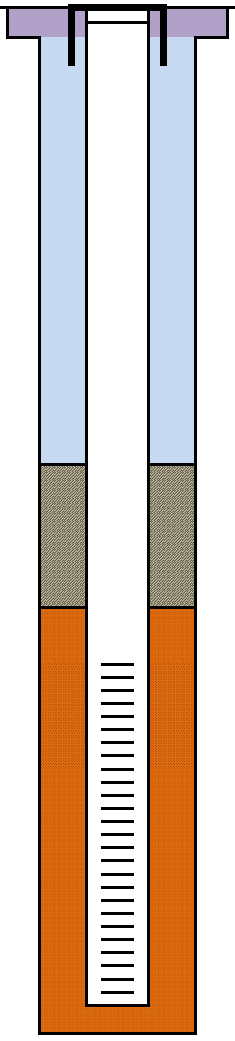
TOP OF CASING ELEVATION: 535.6

EASTING: 1806923.00

GROUND SURFACE ELEVATION:

CASING STICKUP: -0.1

COMMENTS:



TYPE OF ANNULAR SEAL	Neat Cement
TYPE OF WELL CASING OR RISER	Sch. 40 PVC
INSIDE DIAMETER	2.0 inch
NOMINAL BOREHOLE DIAMETER	8.0 inch
TOP OF WELL SEAL	12.0 feet
TYPE OF SEAL	Bentonite Chips
TOP OF SAND FILTER PACK	15.0 feet
TOP OF SCREENED INTERVAL	18.0 feet
TYPE OF SCREEN	PVC
SLOT SIZE	0.010 inch
INSIDE DIAMETER	2.0 inch
SCREEN LENGTH	10.0 feet
FILTER PACK AROUND SCREEN	No. 2 sand
BOTTOM OF WELL	28.0 feet
BOTTOM OF BOREHOLE	28.0 feet

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

Monitoring Well Construction Details

PROJECT:	Shakespeare Composite Structures	**WELL NUMBER:**	MW-9D
LOCATION:	Newberry, SC	**JOB NUMBER:**	60328308
CLIENT:	Philips	**TYPE OF INSTALLATION:**	Monitoring Well
CONTRACTOR:	Cascade Drilling		
DRILLER:	Ray	**LOCATION:**	Shakespeare Plant
FIELD REPRESENTATIVE:	S. Ross	**INSTALLATION DATE:**	04/14/16

SURVEY DATUM: NAVD 88 (Vertical)
NAD 83 (Horizontal)

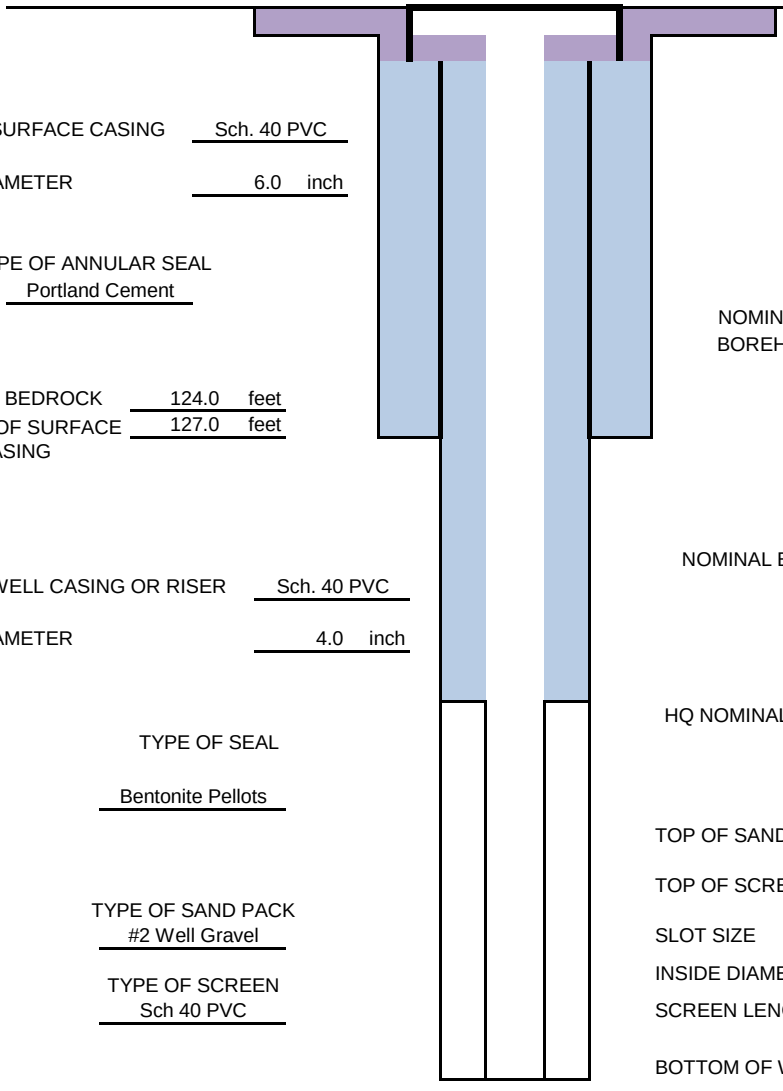
TOP OF CASING ELEVATION: 552.91

NORTHING: 904387.90

EASTING: 1807788.00

GROUND ELEVATION: feet

CASING STICKUP: 0.2 feet



TYPE OF SURFACE CASING: Sch. 40 PVC

INSIDE DIAMETER: 6.0 inch

TYPE OF ANNULAR SEAL: Portland Cement

TOP OF BEDROCK: 124.0 feet

BOTTOM OF SURFACE CASING: 127.0 feet

TYPE OF WELL CASING OR RISER: Sch. 40 PVC

INSIDE DIAMETER: 4.0 inch

TYPE OF SEAL: Bentonite Pellots

TYPE OF SAND PACK: #2 Well Gravel

TYPE OF SCREEN: Sch 40 PVC

NOMINAL SURFACE CASING BOREHOLE DIAMETER: 10.0 inch

NOMINAL BOREHOLE DIAMETER: 5.0 inch

HQ NOMINAL BOREHOLE DIAMETER: 5.0 inch

TOP OF SAND PACK: 140.0 feet

TOP OF SCREEN: 144.6 feet

SLOT SIZE: sch 40 inch

INSIDE DIAMETER: 21.0 inch

SCREEN LENGTH: 10.0 feet

BOTTOM OF WELL: 154.1 feet

BOTTOM OF BOREHOLE: 155.0 feet

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

Monitoring Well Construction Details

PROJECT:	Shakespeare Composite Structures	**WELL NUMBER:**	SDW-2
LOCATION:	Newberry, SC	**JOB NUMBER:**	60328308
CLIENT:	Philips	**TYPE OF INSTALLATION:**	Monitoring Well
CONTRACTOR:	Cascade Drilling	**LOCATION:**	Shealy Property
DRILLER:	Ray	**INSTALLATION DATE:**	04/13/16
FIELD REPRESENTATIVE:	S. Ross		

SURVEY DATUM: NAVD 88 (Vertical)
NAD 83 (Horizontal)

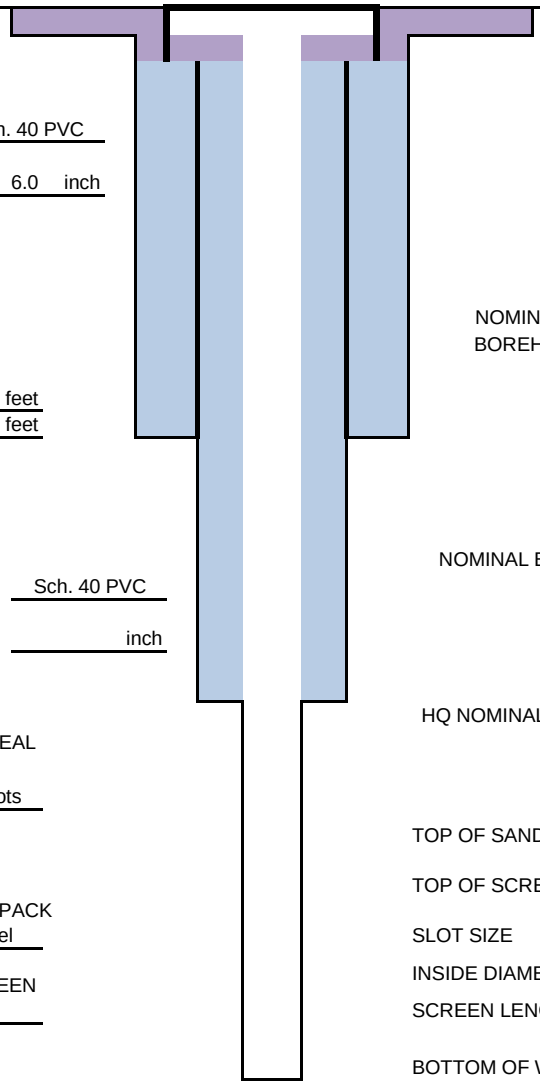
TOP OF CASING ELEVATION: 527.403

NORTHING: 904652.90

EASTING: 1806474.00

GROUND ELEVATION: feet

CASING STICKUP: 0.1 feet



TYPE OF SURFACE CASING: Sch. 40 PVC

INSIDE DIAMETER: 6.0 inch

TYPE OF ANNULAR SEAL: Portland Cement

NOMINAL SURFACE CASING BOREHOLE DIAMETER: 10.0 inch

TOP OF BEDROCK: 43.0 feet

BOTTOM OF SURFACE CASING: 45.0 feet

NOMINAL BOREHOLE DIAMETER: 5.0 inch

TYPE OF WELL CASING OR RISER: Sch. 40 PVC

INSIDE DIAMETER: inch

HQ NOMINAL BOREHOLE DIAMETER: inch

TYPE OF SEAL: Benenite Pellots

TOP OF SAND PACK: 31.0 feet

TOP OF SCREEN: 83.7 feet

TYPE OF SAND PACK: # 2 well gravel

SLOT SIZE: 0.010 inch

INSIDE DIAMETER: 2.0 inch

TYPE OF SCREEN: sch 40 Pvc

SCREEN LENGTH: 5.0 feet

BOTTOM OF WELL: 88.7 feet

BOTTOM OF BOREHOLE: 89.0 feet

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

ATTACHMENT B

WELL DEVELOPMENT LOGS AND GROUNDWATER SAMPLING FORMS

AECOM

WELL DEVELOPMENT

Well ID: MW24i

~~Low Flow~~ Ground Water Sample Collection Record

Client: SHAKESPEARE Date: 2-23-16 Time: Start _____ am/pm
Project No: 60328308.10 Finish _____ am/pm
Site Location: NEWBERRY, SC
Weather Conds: P. Cloudy 40's - 60's Collector(s): James Leyhart / EL

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 41.20 c. Length of Water Column 27.84 (a-b)

Casing Diameter/Material 2" PVC

b. Water Table Depth 13.36 d. Calculated System Volume (see back) 4.5 Gal × 5 = 23 Gal

2. WELL PURGE DATA

a. Purge Method: WHALE 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 Model Serial Number

Time (24hr)	Volume Removed (~~liters~~)	Temp. (°C)	pH	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
10:45	0.25	12.31	9.28	0.181	0.29	-88.8	1071			brown/milky-grey
10:55	4.00	12.50	8.36	0.163	0.20	-108.4	71100			" "
11:06	7.5	17.86	7.80	0.155	4.20	-24.3	71100			" "
11:21	10.00	17.70	7.14	0.141	56.9	93.2	906.1			" " little clear
11:51	14.00	17.62	6.93	0.173	11.7	-51.2	71100			" "
12:59	18.00	16.64	6.55	0.108	5.46	70.4	206.3			cloudy
14:18	24.00	17.39	5.40	0.084	5.40	127.1	65.24			clear

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION: Method:

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
NA					

Comments STICK UP 2.5' Total 24 gallons removed

Signature J L Leyhart Date 2-23-16

AECOM

Well ID: MW25

Well Development and Groundwater Sample

~~Low Flow Ground Water Sample Collection~~ Record

Client: Phillips Date: 2/20/16 Time: Start 10' am/pm
Project No: 60328388.10 Finish _____ am/pm
Site Location: Newberry, SC
Weather Conds: pt cloudy 40-50's Collector(s): S Ross / B Leaphart

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 30' c. Length of Water Column 11.28 (a-b)

Casing Diameter/Material SCH 40 PVC / 2"

b. Water Table Depth 8.72 d. Calculated System Volume (see back) _____

2. WELL PURGE DATA

a. Purge Method: S.S submersible 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 Model Serial Number

Time (24hr)	Volume Removed ~~(Liters)~~ (L)	Temp. (°C)	pH	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
Initial	INITIAL	15.57	7.93	114	1.4	-92	>1000			light brown
1118	11.0	17.28	7.07	.094	1.38	-63.8	>1100			
1130	16.0	17.27	6.52	.086	1.61	-47.8	778			
1138	20.0	17.37	6.42	.091	1.98	-37.6	>1100			
1203	25.0	17.80	6.25	.081	1.81	-25.4	183.4			
1218	30.0	17.58	6.11	.081	2.17	-12.9	288.4			
1224	33.0	17.	6.07	0.079	.	-3.0	100.3			

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION: Method: Soda straw using peristaltic pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
MW25	40 ml VIAL	3	None	TCL VOCs	1330

Comments _____

Signature _____ Date 2/20/16

Well/Piez. ID: SDW-2

AECOM

Well/Piezometer Development Record

Client: Philips Site Location: Shakespeare - Newberry, SC

Project No: 60326306.11 Date: 4/18/2016 Developer: SA/EH

WELL/PIEZOMETER DATA

Well ☒ Piezometer ☐ Diameter 2" Material Sch 40 PVC

Measuring Point Description TOC

Depth to Top of Screen (ft.) 83.68

Depth to Bottom of Screen (ft.) 88.68

Total Well Depth (ft.) 88.48

Depth to Static Water Level (ft.) 54.02 / 54.46

Geology at Screen Interval (if known) Bedrock Granitic gneiss

Time of Water Level Measurement 1145

Calculate Purge Volume (gal.) 9 gals / volume

Disposal Method

Wellhead PID/FID N/A

Original Well Development ☒ Redevelopment ☐ Date of Original Development 4/18/2016

DEVELOPMENT METHOD Pump/purge **PURGE METHOD** N/A

Field Testing Equipment Used:

	Make	Model	Serial Number
	Hach	2100Q	
	YSI	556	

Field Testing Calibration Documentation Found in Field Notebook # _____ Page # _____

Time	Volume Removed (gal)	T° (C/F)	pH	Spec. Cond (umhos)	Turbidity (NTUs)	DO	Color	Odor	Other	
1243	Initial	22.00	11.24	0.430	>1000	—	Gray	none	—	
1307	8.0 g	20.58	10.27	.195	>1100	—	milky	none	—	dry
1417	9.5 g	22.34	10.19	.200	>1100	—	gray	none	—	dry
1527	10.0 g	23.43	10.16	.432	>1100	—	gray	none	—	dry
1600	10.2 g	24.97	10.16	.170	>1100	—	gray	none	—	dry
1630	10.8 g	24.98	10.10	.162	>1000	—	gray	—	—	dry

ACCEPTANCE CRITERIA (from workplan)

Min. Purge Volume (____ well volumes) _____gallons

Maximum Turbidity Allowed _____ NTUs

Stabilization of parameters _____%

	Yes	No	N/A
Has required volume been removed	☐	☑	☐
Has required turbidity been reached	☐	☑	☐
Have parameters stabilized	☐	☑	☐

If no or N/A explain below:

Well was continuously goes dry.

Signature [signature] Date: 4/19/2016

Well/Piez. ID: MW-9D

AECOM

Well/Piezometer Development Record

Client: Philips Site Location: Shakespeare - Newberry

Project No: 60326308 Date: 4/19/16 Developer:

WELL/PIEZOMETER DATA

Well ☒ Piezometer ☐ Diameter 2" Material Sch 40 PVC

Measuring Point Description TOC Geology at Screen Interval (if known) Bedrock granite (Crystalline)

Depth to Top of Screen (ft.) 144.06

Depth to Bottom of Screen (ft.) 154.06 Time of Water Level Measurement 09:17

Total Well Depth (ft.) 154.06 Calculate Purge Volume (gal.) 23.2 gal

Depth to Static Water Level (ft.) 11.74 Disposal Method

142.32 Wellhead PID/FID N/A

Original Well Development ☒ Redevelopment ☐ Date of Original Development 4/19/16

DEVELOPMENT METHOD **PURGE METHOD** N/A

Field Testing Equipment Used:

Make	Model	Serial Number
HACH	2100Q	
YSI	556	

Field Testing Calibration Documentation Found in Field Notebook # _____ Page # _____

Time	Volume Removed (gal)	T° (C/F)	pH	Spec. Cond (umhos)	Turbidity (NTUs)	DO	Color	Odor	Other
1005	5g	20.74	7.02	.164	70.0	17.57	clear/brown	—	—
1007	10g	21.76	7.34	.145	20.6	10.29	brown/clear	—	—
1011	15g	21.96	7.83	.151	305	8.70	brown	—	—
1018	17.5g	21.81	8.41	0.152	62.8	11.85	clear	—	—
1024	20.0g	22.55	10.75	0.512	164	10.55	Murky	—	—
1108	25.0g	22.28	10.82	1.037	82.1	9.84	clear/brown	—	—
1113	30.0g	22.41	10.66	0.982	38.4	8.23	clear/brown	—	—
1116	32.5g	21.71	10.54	0.537	71.8	7.32	clear/brown	—	—
1121	35.0g	22.48	10.55	0.604	72.7	6.86	brown/clear	—	Dry
1207	40.0g	22.65	10.24	0.372	20.1	6.34	clear	—	—
1214	45.0g	21.58	10.20	0.374	19.4	6.25	clear	—	—

dry at 22g

ACCEPTANCE CRITERIA (from workplan)

Min. Purge Volume (____ well volumes) _____gallons

Maximum Turbidity Allowed _____ NTUs

Stabilization of parameters _____%

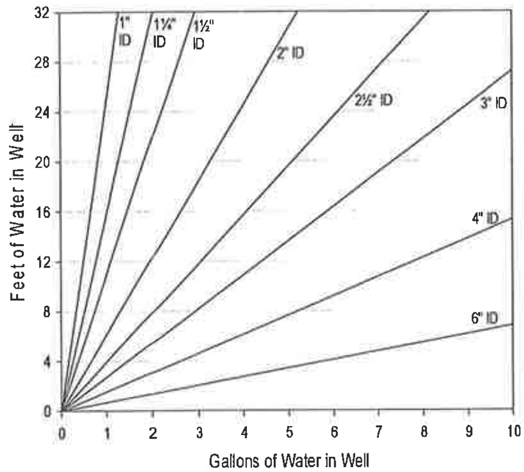
	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☐	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A explain below:

Signature _____ Date: _____

Purge Volume Calculation

AECOM



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

378 ea7
ea4 61

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (ft)	Color/Odor
1218	49 g	22.92	10.16	0.333	5.55	-112.4	25.1			clear / none
1228	50 g	22.78	10.08	0.167	5.76	-118.0	31.8			clear / none
1319	55 g	24.07	9.96	0.297	6.97	-115.3	8.71			clear / none
1324	60 g	23.37	9.83	0.282	6.06	-108.7	6.86			clear / none
1330	65 g	22.97	9.87	0.273	5.37	-110.2	13.8			clear / none
1332	67 g	22.95	9.80	0.257	5.31	-103.7	26.8			clear / none

- dry

AECOM

Well ID: MW24I

Low Flow Ground Water Sample Collection Record

Client: Philips Shakespeare Newberry Date: 3/3/2016 Time: Start 1220 am/pm
Project No: 60323308 Finish _____ am/pm
Site Location: Newberry, SC
Weather Conds: Fog Cloudy, Cool Collector(s): S. Davis

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 38.22 c. Length of Water Column ~~15.04~~ 23.18 (a-b)

b. Water Table Depth ~~22.24~~ 15.04 d. Calculated System Volume (see back) 3.78

Casing Diameter/Material 2" / Sch. 40 PVC

2. WELL PURGE DATA

a. Purge Method: low flow w/ peristaltic 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	Model	Serial Number
	YSI	556	05H1116
	MF Scientific	Micro TPW	20110407G

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Color/Odor
Initial	—	17.93	6.57	.164	1.19	13.2	73.03	—	—	cloudy
1330	1.25	18.05	5.85	.125	1.54	47.2	16.36	—	—	clear
1345	2.50	17.96	5.72	0.118	2.02	45.4	7.09	—	—	clear
1401	4.50	17.89	5.64	0.112	2.36	57.0	2.79	—	—	"
1428	7.50	17.93	5.52	104	2.73	67.9	1.06	—	—	—
1445	8.00	17.92	5.52	102	2.77	69.4	1.61	—	—	—

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☐	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☐	☐	☐

If no or N/A - Explain below.
Water level was rising when purging started

3. SAMPLE COLLECTION: Method: Soda straw

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
MW24I	40 ml vial	3	None	TCL VOCs	

Comments Encounted just over 2 well volumes prior to sample collection.

Signature _____ Date 3/3/2016

AECOM

Well ID: SDW-2

Groundwater Sample Collection Record

Client: SHAKESPEARE Date: 4-25-16 Time: Start 1200 (24hr)
Project No: 60328308.11 Finish 1220
Site Location: NEWBERRY SC
Weather: CLOUDY 70's Collector(s): JAMES LEAHART

1. WATER LEVEL DATA: (measured from Top of Casing)

Total well length: 88.00 Water column length: 2.72

Water table depth: 85.28 Casing type/diameter: PVC / 2" Minimum purge volume: NA (liters)

2. WELL PURGE DATA

Purge Method: BAILER

Acceptance Criteria defined (Field Sampling Plan - 100% Design Project Operations Plan)

- Temperature	3%	- ORP	+/-10mV	- Drawdown	< 0.3 ft
- pH	± 0.1 unit	- SpCond.	3%		
- D.O.	<0.5 mg/L	- Turbidity	<10 NTU		
	>0.5mg/L within 10%		>10 NTU within 10%		

Field Testing Equipment used:	Make	Model	Serial number(s)
	YSI	556	15J105578
	~~HF Scientific~~ HACH	2100 Q	14050C032814

Well Headspace= NA
Begin purge at 1210

Time (24hr)	Purge Vol. (Gals)	Temp. (°C)	pH	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Comments
1213	0.00	20.98	8.75	565	-49.2	1.63	OVER	NA	NA	Flow cell full

3. SAMPLE COLLECTION

Method: BAILER

Sample ID	Container Type	No. of Containers	Preservation	Analysis Required	Time
SDW-2	40 ml VOA	3	HCL	VOC's	1215

4-26-16

Comments: DRY AT 0.50 GALLONS

Signature(s) of Collector(s): J. Leahart Date: 4-26-16

AECOM

Well ID: MW-9D

Groundwater Sample Collection Record

Client: SHAKESPEARE Date: 4-25-16 Time: Start 1235 (24hr)
Project No: 60328308.11 Finish 1350
Site Location: NEWBERRY, SC
Weather: CLEAR, 70's Collector(s): JAMES LEMPHAIRE

1. WATER LEVEL DATA: (measured from Top of Casing)

Total well length: 154.14 Water column length: 143.24

Water table depth: 11.90 Casing type/diameter: PVC / 2" Minimum purge volume: NA (liters)

2. WELL PURGE DATA

Purge Method: GRUNDFOS SUB. PUMP

Acceptance Criteria defined (Field Sampling Plan - 100% Design Project Operations Plan)

- Temperature	3%	- ORP	+/-10mV	- Drawdown	< 0.3 ft
- pH	± 0.1 unit	- SpCond.	3%		
- D.O.	<0.5 mg/L >0.5mg/L within 10%	- Turbidity	<10 NTU >10 NTU within 10%		

Field Testing Equipment used:	Make	Model	Serial number(s)
	YSI	556	15J103578
JL	~~HF Scientific~~ HACH	2100 Q	14050C032814

Well Headspace= NA
Begin purge at 1248

Time (24hr)	Purge Vol. (Gals)	Temp. (°C)	pH	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Flow Rate (ml/min)	Drawdown (feet)	Comments
1299	0.00	19.10	9.76	684	-101.1	2.46	—	-0.75	16.30	Flow cell full
1254	3.00	20.41	9.10	217	-73.0	3.41	95.6	.025	25.45	SLOW PUMP TO .025 GM
1259	3.25	20.69	9.40	247	-89.1	3.12	84.5	.025	25.75	
1304	3.50	21.22	9.90	434	-113.8	2.56	71.4	.025	25.65	
1309	3.75	21.14	9.94	430	-117.8	1.93	66.3	.025	25.76	
1314	4.00	21.19	9.67	313	-107.7	1.93	59.8	.025	25.80	
1319	4.25	21.32	9.49	273	-99.4	2.25	79.2	.025	25.78	
1324	4.50	21.32	9.40	258	-95.5	2.46	85.3	.025	25.79	
1329	4.75	21.29	9.37	252	-94.2	2.63	81.6	.025	25.78	

3. SAMPLE COLLECTION

Method: GRUNDFOS

Sample ID	Container Type	No. of Containers	Preservation	Analysis Required	Time
MW-9D	40 mL VOA	3	HCL	VOC's	1340
MW-9D-DUP	40 mL VOA	3	HCL	VOC's	1340

Comments:

Signature(s) of Collector(s): Date: 4-25-16

ATTACHMENT C

GROUNDWATER SAMPLE ANALYTICAL REPORTS

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

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

Project Name: **Shakespeare - Newberry**

Project Number: **60328308.11**

Lot Number: **RC03069**

Date Completed: **03/09/2016**

Nisreen Saikaly
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: RC03069

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 NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

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

Sample Summary

AECOM

Lot Number: RC03069

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW24I	Aqueous	03/03/2016 1450	03/03/2016

(1 sample)

Executive Summary

AECOM

Lot Number: RC03069

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW24I	Aqueous	Chloroform	8260B	2.1	J	ug/L	5
001	MW24I	Aqueous	Trichloroethene	8260B	1.8	J	ug/L	6

(2 detections)

Volatile Organic Compounds by GC/MS

Client: **AECOM** Laboratory ID: **RC03069-001**

Description: **MW24I** Matrix: **Aqueous**

Date Sampled: **03/03/2016 1450**

Date Received: **03/03/2016**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/07/2016 2019	ECP		97884

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		5.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		5.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		5.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		5.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		5.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		5.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		5.0	0.28	ug/L	1
Chloroform	**67-66-3**	**8260B**	**2.1**	**J**	**5.0**	**0.21**	**ug/L**	**1**
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		5.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		5.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.17	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	0.46	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.19	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.19	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.0	0.85	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.19	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.23	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.0	0.31	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.0	0.20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	0.33	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	0.29	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	0.30	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	0.22	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		5.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		5.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		5.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		5.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.13	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	0.22	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: **AECOM**
Laboratory ID: **RC03069-001**
Description: **MW24I**
Matrix: **Aqueous**
Date Sampled: **03/03/2016 1450**
Date Received: **03/03/2016**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	03/07/2016 2019	ECP		97884

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	**79-01-6**	**8260B**	**1.8**	**J**	**5.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		2.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		96	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ97884-001
Batch: 97884
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Acetone	ND		1	20	1.6	ug/L	03/07/2016 1655
Benzene	ND		1	5.0	0.21	ug/L	03/07/2016 1655
Bromodichloromethane	ND		1	5.0	0.23	ug/L	03/07/2016 1655
Bromoform	ND		1	5.0	0.35	ug/L	03/07/2016 1655
Bromomethane (Methyl bromide)	ND		1	5.0	0.19	ug/L	03/07/2016 1655
2-Butanone (MEK)	ND		1	10	1.8	ug/L	03/07/2016 1655
Carbon disulfide	ND		1	5.0	0.45	ug/L	03/07/2016 1655
Carbon tetrachloride	ND		1	5.0	0.31	ug/L	03/07/2016 1655
Chlorobenzene	ND		1	5.0	0.20	ug/L	03/07/2016 1655
Chloroethane	ND		1	5.0	0.28	ug/L	03/07/2016 1655
Chloroform	ND		1	5.0	0.21	ug/L	03/07/2016 1655
Chloromethane (Methyl chloride)	ND		1	5.0	0.19	ug/L	03/07/2016 1655
Cyclohexane	ND		1	5.0	0.30	ug/L	03/07/2016 1655
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	5.0	0.57	ug/L	03/07/2016 1655
Dibromochloromethane	ND		1	5.0	0.23	ug/L	03/07/2016 1655
1,2-Dibromoethane (EDB)	ND		1	5.0	0.17	ug/L	03/07/2016 1655
1,2-Dichlorobenzene	ND		1	5.0	0.46	ug/L	03/07/2016 1655
1,3-Dichlorobenzene	ND		1	5.0	0.19	ug/L	03/07/2016 1655
1,4-Dichlorobenzene	ND		1	5.0	0.19	ug/L	03/07/2016 1655
Dichlorodifluoromethane	ND		1	5.0	0.85	ug/L	03/07/2016 1655
1,2-Dichloroethane	ND		1	5.0	0.23	ug/L	03/07/2016 1655
1,1-Dichloroethane	ND		1	5.0	0.19	ug/L	03/07/2016 1655
1,1-Dichloroethene	ND		1	5.0	0.31	ug/L	03/07/2016 1655
trans-1,2-Dichloroethene	ND		1	5.0	0.33	ug/L	03/07/2016 1655
cis-1,2-Dichloroethene	ND		1	5.0	0.20	ug/L	03/07/2016 1655
1,2-Dichloropropane	ND		1	5.0	0.29	ug/L	03/07/2016 1655
trans-1,3-Dichloropropene	ND		1	5.0	0.22	ug/L	03/07/2016 1655
cis-1,3-Dichloropropene	ND		1	5.0	0.30	ug/L	03/07/2016 1655
Ethylbenzene	ND		1	5.0	0.21	ug/L	03/07/2016 1655
2-Hexanone	ND		1	10	0.26	ug/L	03/07/2016 1655
Isopropylbenzene	ND		1	5.0	0.14	ug/L	03/07/2016 1655
Methyl acetate	ND		1	5.0	0.24	ug/L	03/07/2016 1655
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.23	ug/L	03/07/2016 1655
4-Methyl-2-pentanone	ND		1	10	0.29	ug/L	03/07/2016 1655
Methylcyclohexane	ND		1	5.0	0.16	ug/L	03/07/2016 1655
Methylene chloride	ND		1	5.0	0.42	ug/L	03/07/2016 1655
Styrene	ND		1	5.0	0.13	ug/L	03/07/2016 1655
1,1,2,2-Tetrachloroethane	ND		1	5.0	0.13	ug/L	03/07/2016 1655
Tetrachloroethene	ND		1	5.0	0.22	ug/L	03/07/2016 1655
Toluene	ND		1	5.0	0.24	ug/L	03/07/2016 1655
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	5.0	0.30	ug/L	03/07/2016 1655
1,2,4-Trichlorobenzene	**0.23**	**J**	**1**	**5.0**	**0.13**	**ug/L**	**03/07/2016 1655**
1,1,1-Trichloroethane	ND		1	5.0	0.24	ug/L	03/07/2016 1655
1,1,2-Trichloroethane	ND		1	5.0	0.22	ug/L	03/07/2016 1655

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ97884-001
Batch: 97884
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Trichloroethene	ND		1	5.0	0.16	ug/L	03/07/2016 1655
Trichlorofluoromethane	ND		1	5.0	0.74	ug/L	03/07/2016 1655
Vinyl chloride	ND		1	2.0	0.50	ug/L	03/07/2016 1655
Xylenes (total)	ND		1	5.0	0.32	ug/L	03/07/2016 1655

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		90	70-130
1,2-Dichloroethane-d4		91	70-130
Toluene-d8		96	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ97884-002
Batch: 97884
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	100	99		1	99	60-140	03/07/2016 1600
Benzene	50	50		1	101	70-130	03/07/2016 1600
Bromodichloromethane	50	54		1	109	70-130	03/07/2016 1600
Bromoform	50	47		1	93	70-130	03/07/2016 1600
Bromomethane (Methyl bromide)	50	53		1	107	60-140	03/07/2016 1600
2-Butanone (MEK)	100	110		1	105	60-140	03/07/2016 1600
Carbon disulfide	50	47		1	94	60-140	03/07/2016 1600
Carbon tetrachloride	50	59		1	118	70-130	03/07/2016 1600
Chlorobenzene	50	51		1	101	70-130	03/07/2016 1600
Chloroethane	50	50		1	100	60-140	03/07/2016 1600
Chloroform	50	53		1	105	70-130	03/07/2016 1600
Chloromethane (Methyl chloride)	50	48		1	97	60-140	03/07/2016 1600
Cyclohexane	50	50		1	100	70-130	03/07/2016 1600
1,2-Dibromo-3-chloropropane (DBCP)	50	46		1	91	70-130	03/07/2016 1600
Dibromochloromethane	50	53		1	107	70-130	03/07/2016 1600
1,2-Dibromoethane (EDB)	50	53		1	105	70-130	03/07/2016 1600
1,2-Dichlorobenzene	50	48		1	96	70-130	03/07/2016 1600
1,3-Dichlorobenzene	50	46		1	92	70-130	03/07/2016 1600
1,4-Dichlorobenzene	50	45		1	90	70-130	03/07/2016 1600
Dichlorodifluoromethane	50	56		1	112	60-140	03/07/2016 1600
1,2-Dichloroethane	50	49		1	99	70-130	03/07/2016 1600
1,1-Dichloroethane	50	54		1	107	70-130	03/07/2016 1600
1,1-Dichloroethene	50	54		1	108	70-130	03/07/2016 1600
trans-1,2-Dichloroethene	50	52		1	104	70-130	03/07/2016 1600
cis-1,2-Dichloroethene	50	51		1	103	70-130	03/07/2016 1600
1,2-Dichloropropane	50	51		1	103	70-130	03/07/2016 1600
trans-1,3-Dichloropropene	50	54		1	108	70-130	03/07/2016 1600
cis-1,3-Dichloropropene	50	56		1	113	70-130	03/07/2016 1600
Ethylbenzene	50	50		1	100	70-130	03/07/2016 1600
2-Hexanone	100	110		1	107	60-140	03/07/2016 1600
Isopropylbenzene	50	52		1	103	70-130	03/07/2016 1600
Methyl acetate	50	55		1	110	60-140	03/07/2016 1600
Methyl tertiary butyl ether (MTBE)	50	50		1	99	70-130	03/07/2016 1600
4-Methyl-2-pentanone	100	110		1	111	60-140	03/07/2016 1600
Methylcyclohexane	50	51		1	101	70-130	03/07/2016 1600
Methylene chloride	50	52		1	104	70-130	03/07/2016 1600
Styrene	50	54		1	108	70-130	03/07/2016 1600
1,1,2,2-Tetrachloroethane	50	47		1	93	70-130	03/07/2016 1600
Tetrachloroethene	50	52		1	104	70-130	03/07/2016 1600
Toluene	50	52		1	103	70-130	03/07/2016 1600
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	53		1	106	70-130	03/07/2016 1600
1,2,4-Trichlorobenzene	50	47		1	94	70-130	03/07/2016 1600
1,1,1-Trichloroethane	50	54		1	109	70-130	03/07/2016 1600
1,1,2-Trichloroethane	50	49		1	98	70-130	03/07/2016 1600

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ97884-002
Batch: 97884
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Trichloroethene	50	50		1	100	70-130	03/07/2016 1600
Trichlorofluoromethane	50	50		1	100	70-130	03/07/2016 1600
Vinyl chloride	50	48		1	97	70-130	03/07/2016 1600
Xylenes (total)	100	110		1	106	70-130	03/07/2016 1600

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		88	70-130
1,2-Dichloroethane-d4		86	70-130
Toluene-d8		91	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

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

SHEALY ENVIRONMENTAL SERVICES, INC.

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 54042

RC03069

Client: AECOM	Report to Contact: Scott Ross	Telephone No. / E-mail: (803) 254-4400	Quote No.
Address: 101 Research Drive	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Columbia / State: SC / Zip Code: 29203	Printed Name: Scott E. Ross		
Project Name: Shakespeare - Harbison			
Project No.: 60328308.11	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Soild	Non-Aqueous	No of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc	Analysis: TCL VOCs	Remarks / Cooler I.D.
MW24I	3/3/16	1450	G	X			X						X	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☒ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	3/3/16	1642	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by	3/3/16	1642

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack

Receipt Temp. 5.6 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Shealy Environmental Services, Inc
Document Number: ME0018C-04

Page 1 of 1
Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: JSS / 3/3/16 Lot #: RC03069

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other

Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID: NA Cl strip ID: NA

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

/ 5.6 / 5.6 °C / / °C / / °C / / °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None

Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? 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 ☐		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 ☑		9. 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. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2 mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. 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 ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ Date: _____
Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: JSS Verified by: _____ Date: 3/3/16

Comments: _____

Report of Analysis

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

Project Name: Shakespeare - Newberry

Project Number: 60328308.11

Lot Number: RB26034

Date Completed: 03/01/2016

Nisreen Saikaly
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: RB26034

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 NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

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

Sample Summary

AECOM

Lot Number: RB26034

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-25	Aqueous	02/26/2016 1330	02/26/2016

(1 sample)

Executive Summary

AECOM

Lot Number: RB26034

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-25	Aqueous	Chloroform	8260B	4.0	BJ	ug/L	5
001	MW-25	Aqueous	Trichloroethene	8260B	0.90	J	ug/L	6

(2 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: MW-25
Date Sampled: 02/26/2016 1330
Date Received: 02/26/2016

Laboratory ID: RB26034-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/27/2016 1635	RAG		97293

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		5.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		5.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		5.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		5.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		5.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		5.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		5.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	4.0	BJ	5.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		5.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		5.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.17	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	0.46	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.19	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.19	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.0	0.85	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.19	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.23	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.0	0.31	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.0	0.20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	0.33	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	0.29	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	0.30	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	0.22	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		5.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		5.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		5.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		5.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.13	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	0.22	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: RB26034-001
Description: MW-25
Matrix: Aqueous
Date Sampled: 02/26/2016 1330
Date Received: 02/26/2016

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/27/2016 1635	RAG		97293

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	0.90	J	5.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		2.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		100	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ97293-001
Batch: 97293
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Acetone	ND		1	20	1.6	ug/L	02/27/2016 1152
Benzene	ND		1	5.0	0.21	ug/L	02/27/2016 1152
Bromodichloromethane	ND		1	5.0	0.23	ug/L	02/27/2016 1152
Bromoform	ND		1	5.0	0.35	ug/L	02/27/2016 1152
Bromomethane (Methyl bromide)	ND		1	5.0	0.19	ug/L	02/27/2016 1152
2-Butanone (MEK)	ND		1	10	1.8	ug/L	02/27/2016 1152
Carbon disulfide	ND		1	5.0	0.45	ug/L	02/27/2016 1152
Carbon tetrachloride	ND		1	5.0	0.31	ug/L	02/27/2016 1152
Chlorobenzene	ND		1	5.0	0.20	ug/L	02/27/2016 1152
Chloroethane	ND		1	5.0	0.28	ug/L	02/27/2016 1152
Chloroform	0.33	J	1	5.0	0.21	ug/L	02/27/2016 1152
Chloromethane (Methyl chloride)	ND		1	5.0	0.19	ug/L	02/27/2016 1152
Cyclohexane	ND		1	5.0	0.30	ug/L	02/27/2016 1152
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	5.0	0.57	ug/L	02/27/2016 1152
Dibromochloromethane	ND		1	5.0	0.23	ug/L	02/27/2016 1152
1,2-Dibromoethane (EDB)	ND		1	5.0	0.17	ug/L	02/27/2016 1152
1,3-Dichlorobenzene	ND		1	5.0	0.19	ug/L	02/27/2016 1152
1,4-Dichlorobenzene	ND		1	5.0	0.19	ug/L	02/27/2016 1152
1,2-Dichlorobenzene	ND		1	5.0	0.46	ug/L	02/27/2016 1152
Dichlorodifluoromethane	ND		1	5.0	0.85	ug/L	02/27/2016 1152
1,2-Dichloroethane	ND		1	5.0	0.23	ug/L	02/27/2016 1152
1,1-Dichloroethane	ND		1	5.0	0.19	ug/L	02/27/2016 1152
cis-1,2-Dichloroethene	ND		1	5.0	0.20	ug/L	02/27/2016 1152
1,1-Dichloroethene	ND		1	5.0	0.31	ug/L	02/27/2016 1152
trans-1,2-Dichloroethene	ND		1	5.0	0.33	ug/L	02/27/2016 1152
1,2-Dichloropropane	ND		1	5.0	0.29	ug/L	02/27/2016 1152
trans-1,3-Dichloropropene	ND		1	5.0	0.22	ug/L	02/27/2016 1152
cis-1,3-Dichloropropene	ND		1	5.0	0.30	ug/L	02/27/2016 1152
Ethylbenzene	ND		1	5.0	0.21	ug/L	02/27/2016 1152
2-Hexanone	ND		1	10	0.26	ug/L	02/27/2016 1152
Isopropylbenzene	ND		1	5.0	0.14	ug/L	02/27/2016 1152
Methyl acetate	ND		1	5.0	0.24	ug/L	02/27/2016 1152
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.23	ug/L	02/27/2016 1152
4-Methyl-2-pentanone	ND		1	10	0.29	ug/L	02/27/2016 1152
Methylcyclohexane	ND		1	5.0	0.16	ug/L	02/27/2016 1152
Methylene chloride	ND		1	5.0	0.42	ug/L	02/27/2016 1152
Styrene	ND		1	5.0	0.13	ug/L	02/27/2016 1152
1,1,2,2-Tetrachloroethane	ND		1	5.0	0.13	ug/L	02/27/2016 1152
Tetrachloroethene	ND		1	5.0	0.22	ug/L	02/27/2016 1152
Toluene	ND		1	5.0	0.24	ug/L	02/27/2016 1152
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	5.0	0.30	ug/L	02/27/2016 1152
1,2,4-Trichlorobenzene	0.21	J	1	5.0	0.13	ug/L	02/27/2016 1152
1,1,1-Trichloroethane	ND		1	5.0	0.24	ug/L	02/27/2016 1152
1,1,2-Trichloroethane	ND		1	5.0	0.22	ug/L	02/27/2016 1152

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ97293-001
Batch: 97293
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Trichloroethene	ND		1	5.0	0.16	ug/L	02/27/2016 1152
Trichlorofluoromethane	ND		1	5.0	0.74	ug/L	02/27/2016 1152
Vinyl chloride	ND		1	2.0	0.50	ug/L	02/27/2016 1152
Xylenes (total)	ND		1	5.0	0.32	ug/L	02/27/2016 1152

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		101	70-130
1,2-Dichloroethane-d4		99	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ97293-002
Batch: 97293
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	100	100		1	100	60-140	02/27/2016 1058
Benzene	50	52		1	104	70-130	02/27/2016 1058
Bromodichloromethane	50	57		1	113	70-130	02/27/2016 1058
Bromoform	50	49		1	99	70-130	02/27/2016 1058
Bromomethane (Methyl bromide)	50	51		1	101	60-140	02/27/2016 1058
2-Butanone (MEK)	100	91		1	91	60-140	02/27/2016 1058
Carbon disulfide	50	54		1	107	60-140	02/27/2016 1058
Carbon tetrachloride	50	58		1	117	70-130	02/27/2016 1058
Chlorobenzene	50	59		1	119	70-130	02/27/2016 1058
Chloroethane	50	50		1	100	60-140	02/27/2016 1058
Chloroform	50	53		1	106	70-130	02/27/2016 1058
Chloromethane (Methyl chloride)	50	48		1	96	60-140	02/27/2016 1058
Cyclohexane	50	56		1	113	70-130	02/27/2016 1058
1,2-Dibromo-3-chloropropane (DBCP)	50	48		1	97	70-130	02/27/2016 1058
Dibromochloromethane	50	59		1	119	70-130	02/27/2016 1058
1,2-Dibromoethane (EDB)	50	55		1	111	70-130	02/27/2016 1058
1,3-Dichlorobenzene	50	62		1	123	70-130	02/27/2016 1058
1,4-Dichlorobenzene	50	60		1	121	70-130	02/27/2016 1058
1,2-Dichlorobenzene	50	59		1	118	70-130	02/27/2016 1058
Dichlorodifluoromethane	50	54		1	108	60-140	02/27/2016 1058
1,2-Dichloroethane	50	51		1	102	70-130	02/27/2016 1058
1,1-Dichloroethane	50	55		1	110	70-130	02/27/2016 1058
cis-1,2-Dichloroethene	50	54		1	108	70-130	02/27/2016 1058
1,1-Dichloroethene	50	56		1	112	70-130	02/27/2016 1058
trans-1,2-Dichloroethene	50	56		1	111	70-130	02/27/2016 1058
1,2-Dichloropropane	50	53		1	107	70-130	02/27/2016 1058
trans-1,3-Dichloropropene	50	56		1	111	70-130	02/27/2016 1058
cis-1,3-Dichloropropene	50	56		1	112	70-130	02/27/2016 1058
Ethylbenzene	50	59		1	118	70-130	02/27/2016 1058
2-Hexanone	100	92		1	92	60-140	02/27/2016 1058
Isopropylbenzene	50	63		1	126	70-130	02/27/2016 1058
Methyl acetate	50	43		1	85	60-140	02/27/2016 1058
Methyl tertiary butyl ether (MTBE)	50	47		1	94	70-130	02/27/2016 1058
4-Methyl-2-pentanone	100	96		1	96	60-140	02/27/2016 1058
Methylcyclohexane	50	59		1	118	70-130	02/27/2016 1058
Methylene chloride	50	54		1	108	70-130	02/27/2016 1058
Styrene	50	61		1	122	70-130	02/27/2016 1058
1,1,2,2-Tetrachloroethane	50	54		1	109	70-130	02/27/2016 1058
Tetrachloroethene	50	59		1	119	70-130	02/27/2016 1058
Toluene	50	55		1	111	70-130	02/27/2016 1058
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	62		1	123	70-130	02/27/2016 1058
1,2,4-Trichlorobenzene	50	51		1	102	70-130	02/27/2016 1058
1,1,1-Trichloroethane	50	57		1	114	70-130	02/27/2016 1058
1,1,2-Trichloroethane	50	54		1	109	70-130	02/27/2016 1058

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ97293-002
Batch: 97293
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Trichloroethene	50	56		1	112	70-130	02/27/2016 1058
Trichlorofluoromethane	50	56		1	112	70-130	02/27/2016 1058
Vinyl chloride	50	50		1	100	70-130	02/27/2016 1058
Xylenes (total)	100	130		1	125	70-130	02/27/2016 1058

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		99	70-130
1,2-Dichloroethane-d4		93	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit

ND = Not detected at or above the MDL

P = The RPD between two GC columns exceeds 40%

J = Estimated result < PQL and ≥ MDL

N = Recovery is out of criteria

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

SHEALY Chain of Custody Record

Number 53398

Client: AECOM	Report to Contact: Scott Ross	Telephone No. / E-mail: Scott.Ross@AECOM.com	Quote No.
Address: 101 RESEARCH DR	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 1
City: COLUMBIA	State: SC Zip Code: 29203	Printed Name: JAMES LONGHART	
Project Name: SHAKESPEARE			RB26034
Project No.: 28308.11 60308	P.C. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: TCL VOC's	Remarks / Cooler I.D.
MW-25	2-24-16	1330	G	X			X						3	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☒ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	2/26/16	1533	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by: Melinda McDonald	2/26/16	1533

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes (No) Ice Pack Receipt Temp. 11.6 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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

SHEALY ENVIRONMENTAL SERVICES, INC.

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: mcm / 022616 Lot #: KB26034

Means of receipt: ☐ SESI ☑ Client ☐ UPS ☐ FedEx ☐ Other

Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?

pH strip ID:______ Cl strip ID:______

Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt:

/11.6/11.6 °C ___/___/___°C ___/___/___°C ___/___/___°C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0.0 °C

Method of coolant: ☐ Wet Ice ☐ Blue Ice ☐ Dry Ice ☑ None

Yes ☑	No ☐	NA ☐	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? 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 ☐		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 ☐		9. 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. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. 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 ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) ______ were received incorrectly preserved and were adjusted accordingly in sample receiving with ______ (H_2SO_4, HNO3, HCl, NaOH) using SR # ______.

Sample(s) ______ were received with bubbles >6 mm in diameter.

Samples(s) ______ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: ______.

SC Drinking Water Project Sample(s) pH verified to be ≤ 2 by ______ Date: ______

Sample(s) ______ were not received at a pH of <2 and were adjusted accordingly using SR# ______

Sample labels applied by: mcm Verified by: ______ Date: 2/26/16

Comments: ______

Report of Analysis

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

Project Name: Shakespeare - Newberry

Project Number: 60328308.11

Lot Number: RD26033

Date Completed: 04/29/2016

Nisreen Saikaly
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative

AECOM

Lot Number: RD26033

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 NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

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

Sample Summary

AECOM

Lot Number: RD26033

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW 9D	Aqueous	04/25/2016 1340	04/26/2016
002	MW 9D - DUP	Aqueous	04/25/2016 1340	04/26/2016
003	SDW 2	Aqueous	04/26/2016 1215	04/26/2016
004	TRIP BLANK	Aqueous	04/26/2016	04/26/2016

(4 samples)

Executive Summary

AECOM

Lot Number: RD26033

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW 9D	Aqueous	Acetone	8260B	2.4	J	ug/L	5
001	MW 9D	Aqueous	Chloroform	8260B	2.0	J	ug/L	5
001	MW 9D	Aqueous	Trichloroethene	8260B	3.1	J	ug/L	6
002	MW 9D - DUP	Aqueous	Acetone	8260B	1.9	J	ug/L	7
002	MW 9D - DUP	Aqueous	Chloroform	8260B	1.9	J	ug/L	7
002	MW 9D - DUP	Aqueous	Trichloroethene	8260B	3.1	J	ug/L	8
003	SDW 2	Aqueous	Acetone	8260B	11	J	ug/L	9
003	SDW 2	Aqueous	2-Butanone (MEK)	8260B	2.3	J	ug/L	9
003	SDW 2	Aqueous	Chloroform	8260B	5.7		ug/L	9
003	SDW 2	Aqueous	Chloromethane (Methyl	8260B	0.37	J	ug/L	9
003	SDW 2	Aqueous	2-Hexanone	8260B	0.59	J	ug/L	9
003	SDW 2	Aqueous	4-Methyl-2-pentanone	8260B	0.92	J	ug/L	9
003	SDW 2	Aqueous	Methylene chloride	8260B	1.8	J	ug/L	9
003	SDW 2	Aqueous	Toluene	8260B	27		ug/L	9

(14 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: MW 9D
Date Sampled: 04/25/2016 1340
Date Received: 04/26/2016

Laboratory ID: RD26033-001
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1638	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	2.4	J	20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		5.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		5.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		5.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		5.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		5.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		5.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		5.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	2.0	J	5.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		5.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		5.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.17	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	0.46	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.19	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.19	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.0	0.85	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.19	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.23	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.0	0.31	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.0	0.20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	0.33	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	0.29	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	0.30	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	0.22	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		5.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		5.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		5.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		5.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.13	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	0.22	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: RD26033-001
Description: MW 9D
Matrix: Aqueous
Date Sampled: 04/25/2016 1340
Date Received: 04/26/2016

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1638	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	3.1	J	5.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		2.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		100	70-130

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Volatile Organic Compounds by GC/MS

Client: AECOM
Description: MW 9D - DUP
Date Sampled: 04/25/2016 1340
Date Received: 04/26/2016

Laboratory ID: RD26033-002
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1701	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	1.9	J	20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		5.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		5.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		5.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		5.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		5.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		5.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		5.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	1.9	J	5.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		5.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		5.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.17	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	0.46	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.19	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.19	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.0	0.85	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.19	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.23	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.0	0.31	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.0	0.20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	0.33	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	0.29	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	0.30	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	0.22	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		5.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		5.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		5.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		5.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.13	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	0.22	ug/L	1

PQL = Practical quantitation limit
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ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: MW 9D - DUP
Date Sampled: 04/25/2016 1340
Date Received: 04/26/2016

Laboratory ID: RD26033-002
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1701	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	3.1	J	5.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		2.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		100	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: SDW 2
Date Sampled: 04/26/2016 1215
Date Received: 04/26/2016

Laboratory ID: RD26033-003
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1724	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	11	J	20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		5.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		5.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		5.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	2.3	J	10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		5.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		5.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		5.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		5.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	5.7		5.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	0.37	J	5.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		5.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		5.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.17	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	0.46	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.19	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.19	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.0	0.85	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.19	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.23	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.0	0.31	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.0	0.20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	0.33	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	0.29	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	0.30	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	0.22	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	0.59	J	10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		5.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	0.92	J	10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	1.8	J	5.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		5.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		5.0	0.22	ug/L	1
Toluene	108-88-3	8260B	27		5.0	0.24	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.13	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	0.22	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Laboratory ID: RD26033-003
Description: SDW 2
Matrix: Aqueous
Date Sampled: 04/26/2016 1215
Date Received: 04/26/2016

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1724	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		5.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		2.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: TRIP BLANK
Date Sampled: 04/26/2016
Date Received: 04/26/2016

Laboratory ID: RD26033-004
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1158	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		5.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		5.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		5.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		5.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		5.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		5.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		5.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		5.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		5.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		5.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		5.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.17	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	0.46	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.19	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.19	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		5.0	0.85	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.19	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	0.23	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		5.0	0.31	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		5.0	0.20	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	0.33	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	0.29	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	0.30	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	0.22	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		5.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		5.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		5.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		5.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		5.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.13	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	0.24	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	0.22	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Volatile Organic Compounds by GC/MS

Client: AECOM
Description: TRIP BLANK
Date Sampled: 04/26/2016
Date Received: 04/26/2016

Laboratory ID: RD26033-004
Matrix: Aqueous

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1158	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Trichloroethene	79-01-6	8260B	ND		5.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		2.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		5.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		94	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		102	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12025-001
Batch: 12025
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Acetone	ND		1	20	1.6	ug/L	04/28/2016 1026
Benzene	ND		1	5.0	0.21	ug/L	04/28/2016 1026
Bromodichloromethane	ND		1	5.0	0.23	ug/L	04/28/2016 1026
Bromoform	ND		1	5.0	0.35	ug/L	04/28/2016 1026
Bromomethane (Methyl bromide)	ND		1	5.0	0.19	ug/L	04/28/2016 1026
2-Butanone (MEK)	ND		1	10	1.8	ug/L	04/28/2016 1026
Carbon disulfide	ND		1	5.0	0.45	ug/L	04/28/2016 1026
Carbon tetrachloride	ND		1	5.0	0.31	ug/L	04/28/2016 1026
Chlorobenzene	ND		1	5.0	0.20	ug/L	04/28/2016 1026
Chloroethane	ND		1	5.0	0.28	ug/L	04/28/2016 1026
Chloroform	ND		1	5.0	0.21	ug/L	04/28/2016 1026
Chloromethane (Methyl chloride)	ND		1	5.0	0.19	ug/L	04/28/2016 1026
Cyclohexane	ND		1	5.0	0.30	ug/L	04/28/2016 1026
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	5.0	0.57	ug/L	04/28/2016 1026
Dibromochloromethane	ND		1	5.0	0.23	ug/L	04/28/2016 1026
1,2-Dibromoethane (EDB)	ND		1	5.0	0.17	ug/L	04/28/2016 1026
1,4-Dichlorobenzene	ND		1	5.0	0.19	ug/L	04/28/2016 1026
1,3-Dichlorobenzene	ND		1	5.0	0.19	ug/L	04/28/2016 1026
1,2-Dichlorobenzene	ND		1	5.0	0.46	ug/L	04/28/2016 1026
Dichlorodifluoromethane	ND		1	5.0	0.85	ug/L	04/28/2016 1026
1,2-Dichloroethane	ND		1	5.0	0.23	ug/L	04/28/2016 1026
1,1-Dichloroethane	ND		1	5.0	0.19	ug/L	04/28/2016 1026
trans-1,2-Dichloroethene	ND		1	5.0	0.33	ug/L	04/28/2016 1026
cis-1,2-Dichloroethene	ND		1	5.0	0.20	ug/L	04/28/2016 1026
1,1-Dichloroethene	ND		1	5.0	0.31	ug/L	04/28/2016 1026
1,2-Dichloropropane	ND		1	5.0	0.29	ug/L	04/28/2016 1026
trans-1,3-Dichloropropene	ND		1	5.0	0.22	ug/L	04/28/2016 1026
cis-1,3-Dichloropropene	ND		1	5.0	0.30	ug/L	04/28/2016 1026
Ethylbenzene	ND		1	5.0	0.21	ug/L	04/28/2016 1026
2-Hexanone	ND		1	10	0.26	ug/L	04/28/2016 1026
Isopropylbenzene	ND		1	5.0	0.14	ug/L	04/28/2016 1026
Methyl acetate	ND		1	5.0	0.24	ug/L	04/28/2016 1026
Methyl tertiary butyl ether (MTBE)	ND		1	5.0	0.23	ug/L	04/28/2016 1026
4-Methyl-2-pentanone	ND		1	10	0.29	ug/L	04/28/2016 1026
Methylcyclohexane	ND		1	5.0	0.16	ug/L	04/28/2016 1026
Methylene chloride	ND		1	5.0	0.42	ug/L	04/28/2016 1026
Styrene	ND		1	5.0	0.13	ug/L	04/28/2016 1026
1,1,2,2-Tetrachloroethane	ND		1	5.0	0.13	ug/L	04/28/2016 1026
Tetrachloroethene	ND		1	5.0	0.22	ug/L	04/28/2016 1026
Toluene	ND		1	5.0	0.24	ug/L	04/28/2016 1026
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	5.0	0.30	ug/L	04/28/2016 1026
1,2,4-Trichlorobenzene	ND		1	5.0	0.13	ug/L	04/28/2016 1026
1,1,2-Trichloroethane	ND		1	5.0	0.22	ug/L	04/28/2016 1026
1,1,1-Trichloroethane	ND		1	5.0	0.24	ug/L	04/28/2016 1026

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12025-001
Batch: 12025
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Trichloroethene	ND		1	5.0	0.16	ug/L	04/28/2016 1026
Trichlorofluoromethane	ND		1	5.0	0.74	ug/L	04/28/2016 1026
Vinyl chloride	ND		1	2.0	0.50	ug/L	04/28/2016 1026
Xylenes (total)	ND		1	5.0	0.32	ug/L	04/28/2016 1026

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichloroethane-d4		96	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12025-002
Batch: 12025
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	100	76		1	76	60-140	04/28/2016 0919
Benzene	50	42		1	84	70-130	04/28/2016 0919
Bromodichloromethane	50	44		1	88	70-130	04/28/2016 0919
Bromoform	50	45		1	91	70-130	04/28/2016 0919
Bromomethane (Methyl bromide)	50	49		1	97	60-140	04/28/2016 0919
2-Butanone (MEK)	100	76		1	76	60-140	04/28/2016 0919
Carbon disulfide	50	34		1	68	60-140	04/28/2016 0919
Carbon tetrachloride	50	42		1	83	70-130	04/28/2016 0919
Chlorobenzene	50	46		1	92	70-130	04/28/2016 0919
Chloroethane	50	47		1	95	60-140	04/28/2016 0919
Chloroform	50	41		1	82	70-130	04/28/2016 0919
Chloromethane (Methyl chloride)	50	46		1	93	60-140	04/28/2016 0919
Cyclohexane	50	44		1	88	70-130	04/28/2016 0919
1,2-Dibromo-3-chloropropane (DBCP)	50	39		1	78	70-130	04/28/2016 0919
Dibromochloromethane	50	46		1	92	70-130	04/28/2016 0919
1,2-Dibromoethane (EDB)	50	46		1	92	70-130	04/28/2016 0919
1,4-Dichlorobenzene	50	44		1	89	70-130	04/28/2016 0919
1,3-Dichlorobenzene	50	46		1	92	70-130	04/28/2016 0919
1,2-Dichlorobenzene	50	47		1	93	70-130	04/28/2016 0919
Dichlorodifluoromethane	50	60		1	120	60-140	04/28/2016 0919
1,2-Dichloroethane	50	43		1	86	70-130	04/28/2016 0919
1,1-Dichloroethane	50	41		1	83	70-130	04/28/2016 0919
trans-1,2-Dichloroethene	50	42		1	85	70-130	04/28/2016 0919
cis-1,2-Dichloroethene	50	41		1	83	70-130	04/28/2016 0919
1,1-Dichloroethene	50	39		1	78	70-130	04/28/2016 0919
1,2-Dichloropropane	50	40		1	81	70-130	04/28/2016 0919
trans-1,3-Dichloropropene	50	43		1	86	70-130	04/28/2016 0919
cis-1,3-Dichloropropene	50	43		1	85	70-130	04/28/2016 0919
Ethylbenzene	50	48		1	95	70-130	04/28/2016 0919
2-Hexanone	100	110		1	108	60-140	04/28/2016 0919
Isopropylbenzene	50	44		1	88	70-130	04/28/2016 0919
Methyl acetate	50	42		1	84	60-140	04/28/2016 0919
Methyl tertiary butyl ether (MTBE)	50	37		1	74	70-130	04/28/2016 0919
4-Methyl-2-pentanone	100	100		1	101	60-140	04/28/2016 0919
Methylcyclohexane	50	42		1	84	70-130	04/28/2016 0919
Methylene chloride	50	35		1	71	70-130	04/28/2016 0919
Styrene	50	47		1	94	70-130	04/28/2016 0919
1,1,2,2-Tetrachloroethane	50	42		1	84	70-130	04/28/2016 0919
Tetrachloroethene	50	54		1	108	70-130	04/28/2016 0919
Toluene	50	46		1	93	70-130	04/28/2016 0919
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	41		1	82	70-130	04/28/2016 0919
1,2,4-Trichlorobenzene	50	41		1	82	70-130	04/28/2016 0919
1,1,2-Trichloroethane	50	44		1	89	70-130	04/28/2016 0919
1,1,1-Trichloroethane	50	46		1	92	70-130	04/28/2016 0919

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12025-002
Batch: 12025
Analytical Method: 8260B

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	04/28/2016 0919
Trichlorofluoromethane	50	53		1	106	70-130	04/28/2016 0919
Vinyl chloride	50	48		1	96	70-130	04/28/2016 0919
Xylenes (total)	100	98		1	98	70-130	04/28/2016 0919

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		97	70-130
1,2-Dichloroethane-d4		93	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit

ND = Not detected at or above the MDL

P = The RPD between two GC columns exceeds 40%

J = Estimated result < PQL and ≥ MDL

N = Recovery is out of criteria

+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody

and

Miscellaneous Documents

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

SHEALY Chain of Custody Record

Number 60325

Client: AECOM	Report to Contact: Scott Ross	Telephone No. / E-mail: 803 2019662 Scott.Ross@AECOM.com
Address: 101 Research Dr	Sampler's Signature: x	Analysis (Attach list if more space is needed)
City: Columbia	State: SC	Zip Code:
Project Name: Shakespeare - Newberry	Printed Name:	Page 1 of 1
Project No.: 60328308.11	P.O. No.:	RD26033

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Solid	Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	NaS2O3	VOC's	Remarks / Cooler I.D.
MW 9D	4-25-16		G	X						X			3	
MW 9D - Dup	4-25-16		G	X						X			3	
SDW 2	4-26-16	1215	G	X						X			3	
Trip Blank				X						X			2	

Turn Around Time Required (Prior lab approval required for expedited TAT): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	4-26-16	1457	1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by			4. Laboratory received by	4/26/16	1457

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack

Receipt Temp. 5.7 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-04

Page 1 of 1
Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: AECOM Cooler Inspected by/date: WA/Y 4/26/16 Lot #: RD26033

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?
pH strip ID: _____ Cl strip ID: _____ Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt: 3100 15.7/5.7 °C ___/___/___ °C ___/___/___ °C ___/___/___ °C Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? 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 ☐		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 ☐		9. 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. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. 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 ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) #3 (1) & #4 (MW) were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____.

SC Drinking Water Project Sample(s) pH verified to be ≥ 2 by _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: _____ Verified by: _____ Date: 4/26/16

Comments: _____