



HILTON HEAD PUBLIC SERVICE DISTRICT
PO BOX 21264
HILTON HEAD ISLAND SC 29925-1264

SEP 22 2017

Re: **QAPP Contractor Addendum/SSWP Directive for Free Product Delineation**
Hilton Head Public Service District, 21 Oak Park Drive, Hilton Head Island, SC
UST Permit #11399
Release #2 Reported July 27, 2017
UST Compliance Inspection Checklist Report received July 27, 2017
Beaufort County

To Whom It May Concern:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report. The Compliance Inspection indicates the presence of free phase petroleum product in the diesel dispenser and two groundwater observation wells.

Free Product Delineation is necessary to determine what risk the referenced release may pose to human health and the environment and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations. The Free Product Delineation must be conducted in accordance with the UST Quality Assurance Program Plan (UST QAPP) Revision 3.1, <http://www.scdhec.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/>, and all applicable regulations once the QAPPA/SSWP is approved.

Your contractor must complete the Site-Specific QAPP Contractor addendum (QAPPA) or the Site-Specific Work Plan (SSWP) if your contractor has an approved Annual Contractor Quality Assurance Plan (ACQAP). The QAPPA or SSWP and Cost Proposal must be submitted within 30 days from the date of this letter. The QAPPA/SSWP must be prepared using the format in the UST QAPP.

The assessment should delineate the extent of impact and evaluate receptors. A cost proposal is required that includes sampling all water supply wells and surface water bodies within 1,000 feet of the facility and 500 feet down gradient of the edge of the plume for BTEX, Naphthalene, MTBE, 1,2-DCA, 8 oxygenates, and EDB. **Please note that approval from the DHEC must be issued before work begins.**

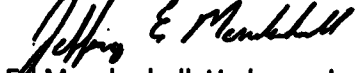
According to our records, a site rehabilitation contractor has not been selected for this release. The Owner/Operator Lead Information Sheet should be completed and returned to my attention within fifteen (15) days of the date of this letter. A list of certified contractors is enclosed for your information.

Please be aware that the release is not currently qualified for funding from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Any costs expended for site rehabilitation prior to approval of a completed SUPERB application will not be applied to the deductible or paid from the SUPERB Account. The SUPERB application form should be completed and sent to this office to the attention of Denise Place.

In accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

On all correspondence concerning this site, please reference UST Permit #11399. If there are any questions concerning this project, you may contact me at (803) 898-0586 or by email at mendenje@dhec.sc.gov.

Sincerely,



Jeffery E. Mendenhall, Hydrogeologist
Assessment and Unregulated Petroleum Section
UST Management Division
Bureau of Land and Waste Management

enc: Owner/Operator Lead Information Sheet
SUPERB Application
Contractor Certification List

cc: Technical File (w/enc)

UNDERGROUND STORAGE TANK (UST) OWNER/OPERATOR LEAD INFORMATION SHEET

1. CONTRACTOR OF CHOICE

As the UST Owner/Operator of the UST Permit #11399, I would like to use the contractor or person(s)* listed below and request that they represent me for:

- ☐ Free Product Delineation/Assessment Report
☐ All future assessment scopes. **

Name of Contractor/Person(s) _____

Address _____

Telephone Number _____ Certification # _____

Note: After September 20, 1997, rehabilitation activities must be performed by a SC Certified Site Rehabilitation Contractor.

*indicate if the person listed is your own employee

** If you would like the contractor to perform all future assessment activities at this and/or other UST sites that have confirmed releases, please provide a list of all sites on your letterhead and provide the information requested in items 2 and 3 below within the context of the letter.

2. FINANCIAL OR FAMILIAL RELATIONSHIP

Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above? ____ Yes ____ No (please initial)

Financial Relationship: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.

Familial Relationship: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, or fiancée.

3. PAYMENT

The first \$25,000.00 in eligible site rehabilitation costs will be applied against the applicable SUPERB deductible, upon submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment.

For eligible costs exceeding the \$25,000.00 deductible, you can pay the contractor and, upon the submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment, be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (check one)

____ For eligible costs exceeding the deductible, I request that payment be made to me after I have paid the contractor.

____ For eligible costs exceeding the deductible, I request that payment be made directly to the contractor.

(Note: all costs must receive prior financial approval from DHEC regardless of payment option.)

Underground Storage Tank Owner/Operator Signature _____

Printed Name _____ Date Signed _____

Re: DHEC Superb Account Application signed and dated
09.21.2017

Doll, Chris S.

Mon 1/8/2018 10:47 AM

To: Larry Sapp <lsapp@hhpsd.com>,

C: Place, Denise <placedm@dhec.sc.gov>;

E: Mehta, Mihir <mehtam@dhec.sc.gov>,

2 attachments (4 MB)

Permit #11399 Backup Costs Data.pdf, Letter dated 09.05.2017 from DHEC.pdf.



Mr. Sapp,

The Department appreciates the efforts of the Hilton Head PSD to prevent any further release of regulated substance into the environment.

Due to the presence of free phase product in the observation wells, the assessment requested in our letter dated September 22, 2017 is still required. Please submit the plan on or before February 7, 2018.

In accordance with Section 44-2-130(C)(2) of the State Underground Petroleum Environmental Response Bank (SUPERB) Act, the costs incurred for repairs and testing of the tank system are not eligible for compensation from the SUPERB Account. These costs can not be reimbursed or applied to the deductible for the release reported on July 27, 2017.

If you have any questions, please contact me.

Chris Doll, P.G.
Manager, Assessment & Unregulated Petroleum Section
UST Management Division
Bureau of Land and Waste Management
S.C. Dept. of Health & Environmental Control
Office: (803) 898-0649
Fax: (803) 898-0673
Connect: www.scdhec.gov [Facebook](#) [Twitter](#)



From: Larry Sapp <lsapp@hhpsd.com>
Sent: Monday, January 8, 2018 9:25 AM
To: Doll, Chris S.
Cc: Place, Denise
Subject: FW: DHEC Superb Account Application signed and dated 09.21.2017

Chris, per the email below our local contact in Beaufort SC is no longer employed by DHEC.

Attached are two documents:

- Letter dated 09.25.2017 regarding permit # 11399
- Backup Cost data this project is complete.

Please note the project is complete and I need to know if any reimbursements are eligible per the documents submitted to DHEC?

Larry M. Sapp, CGFO
Chief Financial Officer
Hilton Head PSD
lsapp@hhpsd.com
Office - 843.681.0521
Main Office - 843.681.5525
Cell – 843.305.0642

"What lies behind us and what lies ahead of us are tiny matters compared to what lives within us."

By Henry Stanley Haskins

From: Place, Denise [mailto:placedm@dhec.sc.gov]
Sent: Monday, December 11, 2017 9:43 AM
To: Larry Sapp <lsapp@hhpsd.com>
Subject: Re: DHEC Superb Account Application signed and dated 09.21.2017

The project manager for Beaufort County is a vacant position at this time. You can direct any questions to Chris Doll, the Assessment Section manager, at 803-898-0649 or dollcs@dhec.sc.gov.

Denise Place
Environmental Health Manager
Underground Storage Tank Management Division

Larry Sapp

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Connect: www.scdhec.gov [Facebook](#) [Twitter](#)

"Effective May 26, 2017, there were changes to the SC UST Regulations, which may affect you. Please go to <http://www.dhec.sc.gov/environment/LW/UST/Regulation/> for more information.



From: Larry Sapp <lsapp@hhpsd.com>
Sent: Friday, December 8, 2017 3:02:06 PM
To: Place, Denise
Cc: Bill Davis
Subject: RE: DHEC Superb Account Application signed and dated 09.21.2017

Good afternoon Denise, per my conversation with Bill Davis, Operations Manager @ the PSD, we believe this project update has been completed.

Total costs of repairs totals, \$59,319.29. Is the District eligible for any cost reimbursements greater than \$25,000.00.

Thanks

Larry M. Sapp, CGFO
Chief Financial Officer
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"What lies behind us and what lies ahead of us are tiny matters compared to what lives within us."

By Henry Stanley Haskins

From: Larry Sapp

Sent: Thursday, September 21, 2017 9:56 AM

To: Place, Denise <placedm@dhec.sc.gov>

Cc: Bill Davis (bdavis@hhpsd.com) <bdavis@hhpsd.com>

Subject: DHEC Superb Account Application signed and dated 09.21.2017

Good morning and thank you for your help with this matter.

I have copied Bill Davis, Operations Manager he has already has processes in place to fix the issues related to the GST.

Please let us know if DHEC has any questions.

<< File: DHEC Superb Account Application dated 09.21.2017.pdf >>

Larry M. Sapp, CGFO

Chief Financial Officer

Hilton Head PSD

lsapp@hhpsd.com

Office - 843.681.0521

Main Office - 843.681.5525

Cell – 843.305.0642

"What lies behind us and what lies ahead of us are tiny matters compared to what lives within us."

By Henry Stanley Haskins



September 5, 2017

Hilton Head Public Service District
PO Box 21284
Hilton Head Island, SC 29925-1284

Re: **Underground Storage Tank (UST) – Permit ID # 11399**
Hilton Head Public Service District, 21 Oak Park Dr., Hilton Head Island, SC
Release reported – July 27, 2017

Dear Sir or Madam:

A release was reported to the UST Management Division on July 27, 2017 when product was discovered in a groundwater monitoring well used for release detection. The State Underground Petroleum Environmental Response Bank (SUPERB) Account provides financial assistance for the cleanup of a site contaminated by a release from a regulated UST system provided that the facility associated with the release meets certain eligibility criteria. The Division has determined that this release is eligible for cleanup using SUPERB funds. The responsible party must satisfy a \$25,000.00 deductible prior to the Division using SUPERB funds.

The SUPERB Act Section 44-2-130(E)(1) states: "An owner or operator of an underground storage tank or his agent seeking to qualify for compensation from the Superb Account for site rehabilitation shall submit a written application to the department." For your convenience, a SUPERB Account Application/Statement of Insurance form is enclosed. Please complete and return the attached form. You must request access to the SUPERB Account in order for the Division to complete the SUPERB qualification process.

South Carolina UST Control Regulation 61-92, Section 280.93(a) and 280.113 of the South Carolina Underground Storage Tank Control Regulations requires that tank owners submit and maintain proof of financial responsibility (FR) until subsequent corrective action is complete.

Should you have any questions pertaining to this matter, please contact me at (803) 898-0647.

Respectfully,

Denise M. Place

Denise M. Place
Regulatory Compliance Section
UST Management Division
Bureau of Land and Waste Management

Enclosure



Superb Account Application
Ust Management Division

Pursuant to the State Underground Petroleum Environmental Response Bank (SUPERB) Act 44-2-130(E)(1): "An owner or operator of an underground storage tank or his agent seeking to qualify for compensation from the SUPERB Account for site rehabilitation shall submit a written application to the department."

Permit #: 11399 Facility Name: Hilton Head PSD.
Facility Address: 21 Oak Park Drive Hilton Head Island, S.C. 29926
Owner Name: Hilton Head #1 Public Service District
Owner Address: PO Box 21264, Hilton Head Island, S.C. 29925
Owner Phone #: 843-681-5525

For the following section, circle YES or NO:

YES or NO I request compensation from the SUPERB Account for the release discovered/reported on 7/27/17.

You/your company must satisfy a \$25,000.00 deductible prior to the Division using SUPERB funds (Pursuant to the SUPERB Act 44-2-130). According to department records, you/your company had _____ as your financial responsibility mechanism at the time the release was reported. If this information is inaccurate, please correct it by checking the appropriate mechanism below:

☐ Letter of Credit ☐ Insurance Policy ☒ Self-Insurance ☐ Surety Bond ☐ Guarantee

INSURANCE STATEMENT

This site is potentially eligible to receive state monies to assist in site rehabilitation. Before eligibility for the SUPERB funds can be determined, written confirmation of the existence or non-existence of an environmental insurance policy for this site is required. Please circle YES or NO with regard to the following:

Is there now, or has there ever been an insurance policy or other financial mechanism that covers this UST release?

YES or NO

My policy provider is _____

The policy number is _____

The policy deductible is _____ Policy limit: _____

If you have this type of insurance, please include a copy of the policy with this report.

Owner Signature: Larry M. Sapp Sworn before me this 21st day

Print Signatory Name: Larry M. Sapp of Sakmber 2017

Date: 9/21/2017

Notary Public (Signature)

for the State of Beaufort Co.
(If other than South Carolina, affix seal)
My Commission Expires 05/19/25

SCDHEC, UST Management Division, 2600 Bull Street, Columbia, SC 29201, PHONE (803) 898-0699, FAX (803) 898-0873, www.scdheo.gov/tal

DHEC 1300 (08/2014)

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL



HILTON HEAD PUBLIC SERVICE DISTRICT
PO BOX 21264
HILTON HEAD ISLAND SC 29925-1264

SEP 22 2017

Re: **QAPP Contractor Addendum/SSWP Directive for Free Product Delineation**
Hilton Head Public Service District, 21 Oak Park Drive, Hilton Head Island, SC
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Sincerely,



Jeffery E. Mendenhall, Hydrogeologist
Assessment and Unregulated Petroleum Section
UST Management Division
Bureau of Land and Waste Management

enc: Owner/Operator Lead Information Sheet
SUPERB Application
Contractor Certification List

cc: Technical File (w/enc)

Petroleum Recovery Services LLO
 4310 Amsterdam Street
 North Charleston, SC 29418
 (843)2251777
 Kalle@petroleumrecoveryservices.com
 www.petroleumrecoveryservices.com

Invoice

Hilton Head PSD
 P.O. Box 21264
 Hilton Head, SC 29925
 Attn: Accounts Payable

Hilton Head PSD
 PSD
 21 Oak Park Drive
 Hilton Head, SC 29925
 Attn: Vince Melphrus

17081	10/27/2017	TOTAL DUE \$2,520.00	TERMS Due on receipt	ENCLOSURE
SHIP DATE 10/25/2017	P.O. NUMBER Vince Melphrus	SALES REP Steve Burris		

Sample Soil using location adjacent to the dispenser island and the concrete. Soil will be cored through using a coring rig.

QTY	PRICE	TOTAL
1	2,520.00	2,520.00

Remit To: 4310 Amsterdam St., N. Charleston,
 SC 29418

BALANCE DUE

\$2,520.00

APPROVED FOR PAYMENT		
PO NO	VENDOR NO	[] PART [] COMP
	21291	
VENDOR NAME		
Petroleum Recovery Services		
INV NO	INV DATE	
17081	10/27/17	
DESCRIPTION		
Soil Sampling		
INV AMT	DISTB CODE	
\$2,520	0	
GL NO	JOB #	LINE AMT
112054559		2,520 ⁰⁰
APPROVED BY	ENTERED BY	DATE
Bill Daw	LC	11/1/17

RETURN TO ACCOUNTS PAYABLE WHEN APPROVED

FUEL DISPENSERS		Description	Qty	Unit Price	Extended
9853K DPZ		Gasboy Atlas 1 hose auction pump - Front load, single hose, single product - 1" LCD backlit GALLONS ONLY display - Electronic totalizer - Standard colors & graphics (painted black top/sides, white panels) - 1" discharge - 1 HP C.D. Motor - 1 year parts & labor warranty - Additional cost for pulser communication to fuel management system	1	\$3,914.46	\$3,914.46
Franklin F		3/4" x 8" Whip Hose	1	\$11.79	\$11.79
Husky	HSK-3360	3/4" Reconectable Break-A-Way	1	\$55.29	\$55.29
Husky	HSK-0350	3/4" x 3/4" Hose Swivel	1	\$20.43	\$20.43
Franklin F	08C124421PL	5/8" x 9/6" hose w/ Swivel One End	1	\$35.29	\$35.29
Husky	HSK-1-XS-UNL	Automatic Unleaded Nozzle	1	\$52.71	\$52.71
Universal	870-HB100	High Hose Retriever w/ 1" hose bun	1	\$369.23	\$369.23

APPROVED FOR PAYMENT			
PO NO	VENDOR NO	[] PART [] COMP	
	21201		
VENDOR NAME <i>Petroleum Recovery</i>			
INV NO	INV DATE		
10417	10/4/17		
DESCRIPTION <i>Deposit Due - Tank Repair</i>			
INV AMT	DISTB CODE		
\$7,706.79			
OL NO	JOB #	LINE AMT	
112054 559		7,706.79	
ENTERED			
APPROVED BY	ENTERED TO AP	BY	DATE
<i>Bill Dacy</i>		<i>vc</i>	10/5/17

RETURN TO ACCOUNTS PAYABLE WHEN APPROVED

Equipment Total		\$11,381.74
Estimated Sales Tax <i>tax rates will apply</i>	8%	additional
Estimated Freight		additional
Installation		\$19,445.43
TOTAL		\$30,827.17

INVOICE DATE)	
SCBBD \$650.00)	
\$7,706.79	25.00%
\$6,165.43	
\$5,548.89	
\$10,830.15	
DATE: <i>08/24/17</i>	
DATE: <i>10/4/17</i>	

Petroleum Recovery Services
 4318 Amsterdam St.
 N. Charleston, SC 29418
 843-325-1777

QUOTE

Customer Information

Hilton Head PSD
 Vince Malphrus PO Box 21284
 21 Oak Park Dr.
 Hilton Head, SC 29925
 vmalphrus@hhpsd.com
 843-661-0628

Location Information:

DNBC ID: 11259
 10,000 gallon storage tank

TANK FITTINGS/DISPENSER PUMP	Description	Qty	Unit Price	Extended
Franklin F 3452001	Section Product Line Isolation Valve 4x6x3	1	\$260.58	\$260.58
Franklin F 3152008	1.5" Single Poppet Brass Vertical check valve	1	\$153.77	\$153.77
Flexing BP13X15HMXM346	1 1/2" x 15" Brass Swivel Flex Connector	1	\$98.83	\$98.83
Universal 55-1810	12" Rigid Manhole - isolation valve	1	\$119.82	\$119.82
OPW DS1123F	Legacy dispenser pump	1	\$514.22	\$514.22
OPW OPW-BBR-1406	Stabilizer Back Kit	1	\$64.27	\$64.27
OPW REF-0300F	2" Rigid Entry Boot for Smith Pipe	1	\$53.99	\$53.99
Rhyolite	2' x 3' x 12" Steel Island Ponto	1	\$207.26	\$207.26

VEEDER-ROOT TLS41 TANK MONI	Description	Qty	Unit Price	Extended
Fixed Featured model - can not be expanded after purchase.			No electronic/die tank detection on TLS41 models	
TLS41 has total of (6) inputs with maximum of (2) probes. Can not be expanded				
Veeder Root TLS41 Fixed Featured System. Includes:		1	\$5,445.81	\$5,445.81
860199-020	TLS41 chassis, UL/ULC with touch screen	1		
332277-001	TLS41 application software	1		
333410-013	Static Tank Detection (SLD)	1		
SED requires tank shutdown for testing (1-6 hours monthly)				
846225-1xx	HGF MAG Plus Probe	1		
800406-001	4" Diesel Probe Installation Kit, 6' cable	1		
312020-932	4" Cap & Ring Kit	1		
954388-108	Piping Sample Sensor, 12' cable	1		
794390-100	Internal Sensor for Fiberglass Tanks	1	**see note	
330020-012	Internal Sensor Riser Cap and Adapter Kit, 2"	1	**see note	
303KP-1100 AC	4" Top Seal Adapter	1		
30284-0200 AA	Revised Printer	1	Optional - can be deleted	
Universal 86-1810	18" Rigid Manhole - probe	1		
**Required only if tanks are double wall. Exceptor is 60gpm				

CUSTOMER TO COMPLETE THE FOLLOWING WORK:

Customer to provide adequate electrical panel with breakers.

Customer responsible for cost and obtaining all permits.

Customer responsible for providing adequate conduit and wire for new suction pump.

IMPORTANT NOTES:Tank must be equipped with adequate openings for new tank monitor probe and new product line.
Additional costs to dispose of contaminated soil and/or water.

Additional cost for any soil/water remediation

Additional cost for any needed upgrades to existing generator and lines.

NO WORK SHALL BE DONE ON EXISTING GENERATOR OR GENERATOR PUMP LINES

Additional cost for closure reports required by DHEC for removal of existing fuel lines

Product Piping

- 1 Remove existing suction pump and set aside for disposal by others or haul away
- 2 Blow diesel from existing product line back into tank.
- 3 Remove discharge as needed to remove existing fuel line and discontinue efforts
Additional cost for soil samples if required by DHEC
- 4 Excavate to top of tank (no concrete) to install riser for tank probe & product line
Tank must be equipped with adequate openings for new tank monitor probe and new product line.
- 5 Install new double-wall fiberglass product line for diesel (not to exceed 40')
- 6 Install manifold at tank for access to fuel line
- 7 Air test product piping and perform pipe testing per drawing at 15-20 gpm

Tank Monitor

- 8 Install (1) 4" probe riser (tank must be equipped with adequate openings)
- 9 Provide conduit, wire, cable, and fittings as needed to install Veri-Tec or Kent TLS40 system with
 - (1) Interstitial Sensor for Fiberglass Tanks (not to exceed 100')
 - (1) HGR MAC Plus Probe (not to exceed 100')

Dispenser Installation

- 10 Install pump under suction pump
- 11 Use existing conduit & wire to make electrical connections for (1) Quaboy Atlas 1 hose suction pump
- 12 Calibrate and flush High Hose Reel pump
- 13 Install fuel conductors, impact valves, and new hanging hardware
- 14 Install (1) High Hose Reclaimer w/ 1" hose tank

Concrete

- 15 Set & pour (1) 3' x 3' x 15" Steel Island Form
- 16 Back fill trenches to grade with dirt. No concrete over trenches
- 17 Set & pour 1" square island (1) 18" Round Manhole - isolation valve
(1) 18" Round Manhole - probe

System Start up

- 18 Start up, train operators, and verify proper system operation

Petroleum Recovery Services LLC
 4310 Amsterdam Street
 North Charleston, SC 29418
 (843)2251777
 Katie@petroleumrecoveryservices.com
 www.petroleumrecoveryservices.com

Invoice

Hilton Head PSD
 P.O. Box 21284
 Hilton Head, SC 29925
 Attn: Accounts Payable

SHIPPED TO
 Hilton Head PSD
 PSD
 21 Oak Park Drive
 Hilton Head, SC 29925
 Attn: Vince Malphrus

INVOICE NO. 16941 DATE 08/17/2017 TOTAL DUE \$650.00
 SHIP DATE 08/16/2017 P.O. NUMBER Vince Malphrus

TERMS Due on receipt
 SALES REP Frank Antonsen

ITEM	QTY	RATE	AMOUNT
Tank Tightness Test/ 10,000 gallon UST (Main)	1	650.00	650.00

Remit To: 4310 Amsterdam St., N. Charleston, SC 29418

BALANCE DUE **\$650.00**

152096300
 OK
 omg

APPROVED FOR PAYMENT			
PO NO	VENDOR NO	[] PART [] COMP	
	21291		
VENDOR NAME Petroleum Recovery			
INV NO	INV DATE		
16941	8/17/17		
DESCRIPTION Tank Tightness test			
INV AMT	DISTB CODE		
\$ 650			
GL NO	JOB #	LINE AMT	
152096300		\$ 650	
APPROVED BY		DATE	
[Signature]		8/23/17	
ENTERED BY		DATE	
TO AP		8/23/17	

RETURN TO ACCOUNTS PAYABLE WHEN APPROVED

EZY 3 LOCATOR PLUS**PRESSURE CALCULATION & WATER SENSOR CALIBRATION**

MANUFACTURED BY: ESTABROOK'S INC. 1-877-368-7215

DATA SHEET

Petroleum Recovery Services

DATE 8/16/2017

TOTAL TANK VOL. 10000

PRODUCT VOL. _____

ULLAGE VOL. _____

PRODUCT TYPE Diesel

PBS # (NEW YORK) _____

TANK # 1 170816A-34

LOCATION HILTON HEAD PSD

21 OAK PARK DRIVE

HILTON HEAD, SC

PRESSURE SENSOR CALCULATION

<u>63</u>	X	<u>.031</u>	=	<u>1.953</u>	PSI (1)
INCHES OF PRODUCT		WEIGHT OF PRODUCT			
<u>0</u>	X	<u>.036</u>	=	<u>0</u>	PSI (2)
INCHES OF WATER IN TANK					
Line 1 + Line 2 = Total Positive Head Pressure In Tank			=	<u>1.953</u>	PSI (3)
<u>102</u>	X	<u>.036</u>	=	<u>3.672</u>	PSI (4)
INCHES OF WATER OUTSIDE TANK					
Total Head Pressure Minus Outside Water Pressure			=	<u>-1.719</u>	+/-PSI (5)
Always add .5 PSI			+	<u>-1.219</u>	PSI (6)
NOTE: If Line 6 is Less Than .5 PSI Line 7 Shall be .5 PSI					
TEST PRESSURE			=	<u>-.51</u>	+/-PSI (7)

ACOUSTIC TEST TIME

	TIME	PRESSURE
Blower Started:	<u>10:20</u>	<u>0</u>
Test Pressure Reached:	<u>10:23</u>	<u>-.51</u>
Blower Turned Off:	<u>10:26</u>	<u>-.51</u>
Test Began:	<u>10:25</u>	<u>-.51</u>
Test Ended:	<u>10:27</u>	<u>-.51</u>

Depth of Groundwater Determined:

By: Monitor WellWhere: Tank Field**WATER SENSOR CALIBRATION**

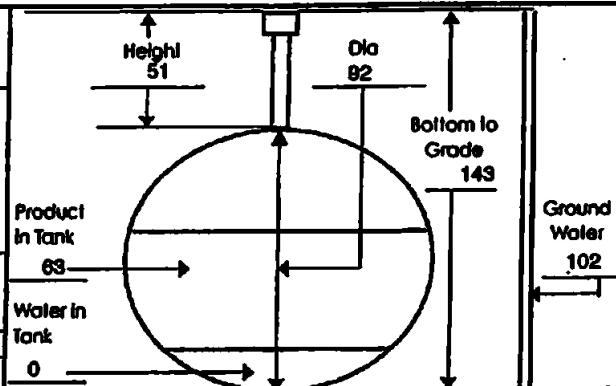
Added:	<u>90</u>	<u>90</u>	<u>90</u>
	Cal #1	Cal #2	Cal #3
Average:	<u>90.00</u>		

Calculation for Test Period:

<u>90.00</u>	} 3780 =	<u>0.024</u>	} .05 60	<u>29</u>
Ave. Cal.		"A" Factor		Min

WATER INTRUSION TEST PERIOD

Began: 10:27
Ended: 11:27



notes

EZY 3 LOCATOR PLUS

FINAL REPORT

MANUFACTURED BY: ESTABROOK'S INC. 1-877-368-7215

DATE 8/16/2017 Petroleum Recovery Services
TOTAL TANK VOL. 10000 TANK # 1
PRODUCT VOL. _____ LOCATION HILTON HEAD PSD
ULLAGE VOL. _____ 21 OAK PARK DRIVE
PRODUCT TYPE Diesel HILTON HEAD, SC

THE ACOUSTIC CHARACTERISTIC OF A LEAK REVEALS:

☒ **TIGHT TANK**

THIS UNDERGROUND STORAGE TANK PASSES THE CRITERIA SET FORTH BY THE U.S. EPA.

☐ **ULLAGE (DRY) PORTION LEAK**

THIS UNDERGROUND STORAGE TANK FAILS THE CRITERIA SET FORTH BY THE U.S. EPA.

☐ **BELOW PRODUCT LEVEL (WET) PORTION LEAK**

THIS UNDERGROUND STORAGE TANK FAILS THE CRITERIA SET FORTH BY THE U.S. EPA.

WATER SENSOR INDICATES: (CHECK ONLY ONE)

NO WATER INTRUSION ☒ WATER INTRUSION _____ NOT APPLICABLE _____

Operator Information:

Print Name Gregg Bedford Certification # 08-7699
Sign Name *Gregg Bedford* Expiration Date 08/10/2019
Testing Firm Precision Tank Service, Inc. Telephone # 800-533-8039
Address P.O. Box 2040
Cornellus, NC 28031

NEW YORK STATE REQUIREMENT: A DIAGRAM OF THE TANK SYSTEM MUST BE SUBMITTED TO THE STATE WITH THIS REPORT.

Rev: 04/2001



Petroleum Recovery Services I.L.C.
4310 Amsterdam Street
North Charleston, SC 29418
(843)2251777
Katie@petroleumrecovery.com
www.petroleumrecovery.com

[Faint handwritten notes at the bottom of the page]

BILL TO
Hilton Head PSD
P.O. Box 21264
Hilton Head, SC 29925
Attn: Accounts Payable

SHIP TO
Hilton Head PSD
PSD
21 Oak Park Drive
Hilton Head, SC 29925
Att: Vince Malphrus

INVOICE #	DATE	TOTAL DUE	TERMS	ENCLOSED
17164	12/05/2017	\$23,663.46	Due on receipt	

SHIP DATE	P.O. NUMBER	SALES REP
11/14/2017	Vince Malphrus	Steve Burris

DESCRIPTION	QTY	RATE	AMOUNT
Veedor-Root TLS4i Tank Monitoring System	1	30,827.17	30,827.17
Freight Charges	1	543.08	543.08
Deposit Amount	1	-7,706.79	-7,706.79

Remit To: 4310 Amsterdam St., N. Charleston,
SC 29418

BALANCE DUE

\$23,663.46

APPROVED FOR PAYMENT				
PO NO	VENDOR NO	[] PART [] COMP		
VENDOR NAME <i>Petroleum Rec. Servis</i>				
INV NO	<i>17164</i>	INV DATE	<i>12/5/17</i>	
DESCRIPTION <i>Upgrade of Tsm</i>				
INV AMT		DISTR CODE	JOB #	LINE AMT
	<i>112054559</i>			<i>23,663.46</i>
APPROVED BY		ENTERED BY	DATE	

RETURN TO ACCOUNTS PAYABLE WHEN APPROVED

FUEL DISPENSERS		Description	Qty	Unit Price	Extended
9853K DFZ		Gasboy Atlas 1 hose suction pump	1	\$3,914.46	\$3,914.46
		- Front load, single hose, single product			
		- 1" LCD backlit GALLONS ONLY display			
		- Electronic totalizer			
		- Standard colors & graphics (painted black top/sides, white panels)			
		- 1" discharge			
		- 1 HP C.D. Motor			
		- 1 year parts & labor warranty			
		- Additional cost for pulser communication to fuel management system			
Franklin F		3/4" x 8" Whip Hose	1	\$11.79	\$11.79
Husky	HSK-3360	3/4" Reconnectable Break-A-Way	1	\$55.29	\$55.29
Husky	HSK-0350	3/4" x 3/4" Hose Swivel	1	\$20.43	\$20.43
Franklin F	08C124421FL	5/8" x 9/6" hose w/ Swivel One End	1	\$35.29	\$35.29
Husky	HSK-1-XS-UNL	Automatic Unleaded Nozzle	1	\$52.71	\$52.71
Universal	870-HB100	High Hose Retriever w/ 1" hose bun	1	\$369.23	\$369.23

Equipment Total		\$11,381.74
Estimated Sales Tax	8%	additional
Local sales tax rates will apply		
Estimated Freight		additional
Installation		\$19,445.43
TOTAL		\$30,827.17

PAYMENT TERMS: (BALANCE DUE 30 DAYS FROM INVOICE DATE)

F.O. B. POINT: FACTORY (ESTIMATE NOT TO EXCEED \$650.00)

APPROVED FOR PAYMENT		[] PART [] COMP	
PO NO	VENDOR NO	VENDOR NAME	
		Petroleum Recovery	
INV NO	INV DATE	10/4/17	
DESCRIPTION		Deposit Due - Tank Repair	
INV AMT	DIST CODE	GL NO	JOB #
		112054 559	7706.79
APPROVED BY		ENTERED BY	DATE
Bill Dwyer		TO AP	10/17

RETURN TO ACCOUNTS PAYABLE WHEN APPROVED

valid for 30 days from 08/24/2017

Petroleum Recovery Services
4310 Amsterdam St.
N. Charleston, SC 29418
843-225-1777

QUOTE

Customer Information

Hilton Head PSD
Vince Malphrus PO Box 21264
21 Oak Park Dr.
Hilton Head, SC 29925
vmalphrus@hhpsd.com
843-681-0528

Location Information:

DHBC ID: 13399
10,000 gallon fiberglass tank

TANK FITTINGS/DISPENSER SUMP		Description	Qty	Unit Price	Extended
Franklin F	32530001	Suction Product Line Isolation Valve 4x4x2	1	\$260.58	\$260.58
Franklin F	31520001	1.5" Single Poppet Brass Vertical check valve	1	\$155.77	\$155.77
Flex-Ing	FP15X18HMXM346	1 1/2" x 18" MxM Swivel Flex Connector	1	\$98.83	\$98.83
Universal	88-1810	18" Round Manhole -- Isolation valve	1	\$119.82	\$119.82
OPW	DS1123F	Legacy dispenser sump	1	\$516.22	\$516.22
OPW	OPW-SBK-1800	Stabilizer Bar Kit	1	\$64.27	\$64.27
OPW	REF-0300F	3" Rigid Entry Boot for Smith Pipe	1	\$53.99	\$53.99
Riverside		3' x 3' x 13" Steel Island Form	1	\$207.26	\$207.26

VEEDER-ROOT TLS4i TANK MONI		Description	Qty	Unit Price	Extended
<i>Fixed Featured model -- can not be expanded after purchase.</i>			<i>No electronic line leak detection on TLS4i models</i>		
<i>TLS4i has total of (6) inputs with maximum of (2) probes. Can not be expanded</i>					
<u>Veeder Root TLS4i Fixed Featured System. Includes:</u>			1	\$5,445.81	\$5,445.81
860199-020		TLS4i console, UL/OL, with touch screen	1		
333577-001		TLS4i application software	1		
333410-013		Static Leak Detection (SLD)	1		
<i>SLD requires tank shutdown for testing (4-6 hours monthly)</i>					
846396-1xx		HGF MAG Plus Probe	1		
846400-001		4" Diesel Probe Installation Kit, 5' cable	1		
312020-952		4" Cap & Ring Kit	1		
794380-208		Piping Sump Sensor, 12' cable	1		
794390-409		Interstitial Sensor for Fiberglass Tanks	1	**see note	
330020-012		Interstitial Sensor Riser Cap and Adapter Kit, 2"	1	**see note	
305XP-1100 AC		4" Top Seal Adapter	1		
305H-0200 AA		External Printer	1	Optional -- can be deleted	
Universal	88-1810	18" Round Manhole -- probe	1		
<i>**Required only if tanks are double wall. Customer to confirm</i>					

CUSTOMER TO COMPLETE THE FOLLOWING WORK:

Customer to provide adequate electrical panel with breakers

Customer responsible for cost and obtaining all permits.

Customer responsible for providing adequate conduit and wire for new suction pump

IMPORTANT NOTES:*Tank must be equipped with adequate openings for new tank monitor probe and new product line.**Additional cost to dispose of contaminated soil and/or water.**Additional cost for any soil/water remediation**Additional cost for any repairs and/or upgrade to existing generator fuel lines.****NO UPGRADE TO EXISTING GENERATOR OR GENERATOR FUEL LINES****Additional cost for closure reports required by DHEC for removal of existing fuel line***Product Piping**

1. Remove existing suction pump and set aside for disposal by others or haul away
2. Blow diesel from existing product line back into tank.
3. Remove dirt/gravel as needed to remove existing fuel line and dispose offsite
Additional cost for soil samples if required by DHEC
4. Excavate to top of tank (no concrete) to install riser for tank probe & product line
Tank must be equipped with adequate openings for new tank monitor probe and new product line.
5. Install new doublewall fiberglass product line for diesel (not to exceed 40')
6. Install manhole at tank for access to fuel line
7. Air test product piping and perform pipe testing per drawing at time of bid

Tank Monitor

8. Install (1) 4" probe riser (tank must be equipped with adequate openings)
9. Provide conduit, wire, cable, and fittings as needed to install Vee-Ver Root TLS40 system with
 - (1) Interstitial Sensor for Fiberglass Tanks (not to exceed 100')
 - (1) HGP MAG Plus-Probe (not to exceed 100')

Dispenser Installation

10. Install pump under suction pump
11. Use existing conduit & wire to make electrical connections for (1) Gasboy Atlas 1 hose suction pump
12. Calibrate and flush lines for new pump
13. Install flex connectors, impact valves, and new hanging hardware
14. Install (1) High Hose Retriever w/ 1" hose bun

Concrete

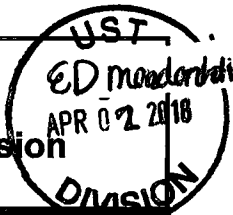
15. Set & pour (1) 3' x 3' x 13" Steel Island Form
16. Back fill trenches to grade with dirt. No concrete over trenches
17. Set & pour 1' square around
 - (1) 18" Round Manhole - Isolation valve
 - (1) 18" Round Manhole - probe

System Start up

18. Start up, train customer, and verify proper system operation



Owner/Operator Contractor Selection Form
Underground Storage Tank (UST) Management Division



1. CONTRACTOR OF CHOICE

As the current or former UST Owner/Operator and the designated party responsible for the confirmed release reported on the date and permit number provided.

Date: 3/28/2018

Permit Number: 11399

I would like to use the contractor listed below and request that they represent me for:

☐ Directed work scope:

☒ All future site rehabilitation scopes, except pay-for-performance contract solicitation.

Name of Contractor: AECOM - Jeremy Grant

Address: 4016 Salt Point Parkway Ste 260

City: Charleston

State: SC

Zip: 29405

Telephone Number: (803) 400-0090

UCC Number: CC-0035

NOTE: After September 20, 1997, rehabilitation activities must be performed by a S.C. Certified Site Rehabilitation Contractor per Section 44-2-120(A) of the SUPERB Act and Section IV(A) of the S.C. DHEC SUPERB Site Rehabilitation and Fund Access Regulation R.61-98.

2. FINANCIAL OR FAMILIAL RELATIONSHIP

Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above?

☐ Yes ☒ No

O/O Initial: JWS

FINANCIAL RELATIONSHIP: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.

FAMILIAL RELATIONSHIP: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great-grandchild, step-grandparent, step-great-grandparent, step-grandchild, step-great-grandchild or fiancée.

3. PAYMENT

A. The first \$25,000.00 in eligible site rehabilitation costs for releases reported subsequent to July 1, 1993 will be applied against the applicable SUPERB deductible per Section 44-2-40(D) of the SUPERB Act, upon submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment.

B. For eligible costs exceeding the \$25,000.00 deductible, you can pay the contractor and, upon the submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment, be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (Check one.)

☒ For eligible costs exceeding the deductible, I request that payment be made to me after I have paid the contractor.

O/O Initial: JWS

- OR -

☐ For eligible costs exceeding the deductible, I request that payment be made directly to the contractor.

O/O Initial:

C. If the release qualifies under amnesty (reported prior to July 1, 1993) per Section 44-2-40(B) of the SUPERB Act, you can pay the contractor and be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (Check one.)

☐ For eligible costs, I request that payment be made to me after I have paid the contractor.

O/O Initial: JWS

- OR -

☐ For eligible costs, I request that payment be made directly to the contractor.

O/O Initial:

NOTE: As required by the SUPERB Act, all costs must receive prior financial approval from DHEC regardless of payment option.

4. UST OWNER/OPERATOR OR PARTY RESPONSIBLE FOR ABOVE REFERENCED RELEASE

Signature: [Signature]

Date Signed: 3/28/2018

Printed Name: Larry M. Sapp

Telephone Number: (843) 681 5525 ext 304

Affiliation (if applicable): CFO

Email Address: LSapp@HHPSC.com



Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

UST

APR 03 2018

Division

To: Mr. Ed Mendenhall (SCDHEC Project Manager)
From: Mr. Jeremy Grant (Contractor Project Manager)
Contractor: AECOM UST Contractor Certification Number: UCC 0035

Facility Name: Hilton Head Public Service District UST Permit #: 11399
Facility Address: 21 Oak Park Drive Hilton Head, SC 29926
Responsible Party: HHPSD, Mr. J. Pete Nardi, General Manager Phone: (843) 681-0525
RP Address: PO Box 21264 Hilton Head, SC 29925
Property Owner (if different): _____
Property Owner Address: _____
Current Use of Property: HHPSD offices and wastewater treatment plant

Scope of Work (Please check all that apply)

☐ IGWA ☐ Tier II ☐ Groundwater Sampling ☐ GAC
☒ Tier I ☐ Monitoring Well Installation ☐ Other _____

Analyses (Please check all that apply)

Groundwater/Surface Water:

☒ BTEXNMDCA (8260B) ☒ Lead ☐ BOD ☐ Methane
☒ Oxygenates (8260B) ☐ 8 RCRA Metals ☐ Nitrate ☐ Ethanol
☒ EDB (8011) ☐ TPH ☐ Sulfate ☐ Dissolved Iron
☒ PAH (8270D) ☐ pH ☐ Other _____

Drinking Water Supply Wells:

☐ BTEXNMDCA (524.2) ☐ Mercury (200.8 245.1 or 245.2) ☐ EDB (504.1)
☐ Oxygenates & Ethanol (8260B) ☐ RCRA Metals (200.8)

Soil:

☒ BTEXNM ☒ Lead ☐ RCRA Metals ☒ TPH-DRO (3550B/8015B) ☒ Grain Size
☒ PAH ☐ Oil & Grease (9071) ☐ TPH-GRO (5030B/8015B) ☒ TOC

Air:

☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

5 Soil Water Supply Wells Air 1 Field Blank
3 Monitoring Wells Surface Water 1 Duplicate 1 Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

of shallow points proposed: _____ Estimated Footage: _____ feet per point
of deep points proposed: _____ Estimated Footage: _____ feet per point

Field Screening Methodology: _____

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

of shallow wells: 3 Estimated Footage: 12-15 feet per point
of deep wells: _____ Estimated Footage: _____ feet per point
of recovery wells: _____ Estimated Footage: _____ feet per point

Comments, if warranted:

UST Permit #: 11399 Facility Name: Hilton Head Public Service District

Implementation Schedule (Number of calendar days from approval)

Field Work Start-Up: 14 Field Work Completion: 30

Report Submittal: 60 # of Copies Provided to Property Owners: 0

Aquifer Characterization

Pump Test: ☐ Slug Test: ☒ (Check one and provide explanation below for choice)

Investigation Derived Waste Disposal

Soil: 3 Tons Purge Water: 55 Gallons
Drilling Fluids: 0 Gallons Free-Phase Product: 10 Gallons

Additional Details For This Scope of Work

For example, list wells to be sampled, wells to be abandoned/repared, well pads/bolts/caps to replace, details of AFVR event, etc.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)

No Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.

Name of Laboratory: Pace Analytical Services

SCDHEC Certification Number: SC99006001

Name of Laboratory Director: Jeff Graham

Yes Well Driller as indicated in ACQAP? (Yes/No) If no, indicate driller information below.

Name of Well Driller: _____

SCLLR Certification Number: _____

____ Other variations from ACQAP. Please describe below.

Attachments

1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:

North Arrow	Proposed monitoring well locations
Location of property lines	Legend with facility name and address, UST permit number, and bar scale
Location of buildings	Streets or highways (indicate names and numbers)
Previous soil sampling locations	Location of all present and former ASTs and USTs
Previous monitoring well locations	Location of all potential receptors
Proposed soil boring locations	
3. Assessment Component Cost Agreement, SCDHEC Form D-3664



U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

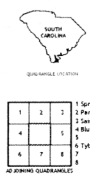
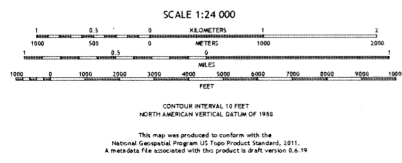
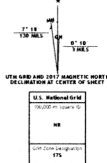


HILTON HEAD QUADRANGLE
SOUTH CAROLINA-BEAUFORT CO.
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84) Projection and
1:50,000 meter grid. Universal Transverse Mercator, Zone 17S,
10 000-foot ticks. South Carolina Coordinate System of 1983
This map is not a legal document. Boundaries may be
generalized for this map scale. Private land within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery: NAIP, July 2013
Roads: U.S. Census Bureau, 2010, 2016
Names: OGC, 2016
Hydrography: National Hydrography Dataset, 2011
Contours: National Elevation Dataset, 2011
Boundaries: Multiple sources; see metadata file 1972-2016
Waterbodies: FWS National Wetlands Inventory 1977-2014



ROAD CLASSIFICATION	
Expressway	Local Connector
Secondary Hwy	Local Road
Ramp	4WD
Interstate Route	UT Route
	State Route

1	2	3
4	5	6
7	8	9

1 Spring Island
2 Parris Island
3 Santa Pedra Island
4 Bluffton
5 Tybee Island North
6

HILTON HEAD, SC
2017

Google Maps 21 Oak Park Dr



Imagery ©2018 Google, Map data ©2018 Google 20 ft



21 Oak Park Dr

Hilton Head Island, SC 29926

At this location

Hilton Head Public Service District

3.0 ★★★★★ (2)

Water Utility Company · 21 Oak Park Dr





ASSESSMENT COMPONENT INVOICE
SOUTH CAROLINA
 Department of Health and Environmental Control
 Underground Storage Tank Management Division
 State Underground Petroleum Environmental Response Bank Account

Facility Name: Hilton Head Public Service District

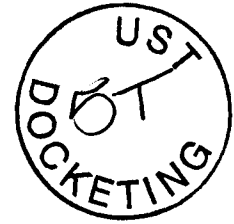
UST Permit #: 11399

Cost Agreement #: _____

ITEM	QUANTITY	UNIT	UNIT PRICE		TOTAL
1 Plan*					
B Tax Map		x	\$50 00		\$0 00
C Tier II or Comp Plan (QAPP Appendix B)		x	\$525 00		\$0 00
2 Receptor Survey *		x	\$500 00		\$0 00
3 Survey (500 x 500 feet)					
A Comprehensive Survey		x	\$1,000 00		\$0 00
B Subsurface Geophysical Survey					
1 < 10 meters below grade		x	\$2,750 00		\$0 00
2 > 10 meters below grade		x	\$3,250 00		\$0 00
C Geophysical UST or Drum Survey		x	\$1,125 00		\$0 00
4 Mob/Demob (Each)					
A Equipment		x	\$575 00		\$0 00
B Personnel		x	\$290 00		\$0 00
C Adverse Terrain Vehicle to install wells		x	\$575 00		\$0 00
5 Soil Borings (hand auger)* (Feet)		feet x	\$14 00		\$0 00
6 Soil Borings (drilled) & Field Screening *					
Rate includes collection of water sample or soil sample, and lab or other analyses					
A Standard		feet x	\$17 00		\$0 00
C Fractured Rock		feet x	\$27 50		\$0 00
7 Soil Leachability Model (Each)		each x	\$200 00		\$0 00
8 Abandonment* (per foot)					
A 2" diameter or less		feet x	\$5 00		\$0 00
B Greater than 2" to 6" diameter		feet x	\$5 50		\$0 00
C Dug/Bored well (up to 6 foot diameter)		feet x	\$18 00		\$0 00
9 Well Installation* (per foot)					
A Water Table (hand augered)		feet x	\$20 00		\$0 00
B Water Table (drilling)		feet x	\$38 00		\$0 00
C Telescoping/ Pit Cased		feet x	\$58 00		\$0 00
D Rock Drilling		feet x	\$58 00		\$0 00
E 2" Rock Coring		feet x	\$45 00		\$0 00
G Rock Multi-sampling ports/screens		feet x	\$47 20		\$0 00
H Recovery Well (4 inch diameter)		each x	\$45 00		\$0 00
I Pushed Pre-packed screen (1 25 diameter)		each x	\$18 50		\$0 00
J Rotasonic (2 inch diameter)		each x	\$45 00		\$0 00
10 Groundwater Sample Collection / Gauge Depth to Water or Product (Each)					
A Groundwater Purge		wells x	\$55 00		\$0 00
B Air or Vapors		samples x	\$90 00		\$0 00
C Water Supply		samples x	\$30 00		\$0 00
D Groundwater No Purge or Duplicate		samples x	\$35 00		\$0 00
E Gauge Well only		per well x	\$20 00		\$0 00
F Sample Below Product		wells x	\$50 00		\$0 00
G Passive Diffusion Bag		each x	\$40 00		\$0 00
H Field Blank		each x	\$5 00		\$0 00
11. Laboratory Analyses-Groundwater (Each Sample)					
A1 BTEX+Naphth + Oxyg's+ 1,2 DCA + Ethanol		samples x	\$100 00		\$0 00
AA Lead, Filtered		samples x	\$46 00		\$0 00
B1 Rush EPA Method 8260B (All of item A)		samples x	\$143 00		\$0 00
C1 Trmethyl, Butyl, and Isopropyl Benzenes		samples x	\$40 00		\$0 00
D PAH's		samples x	\$120 00		\$0 00
E Lead, Unfiltered		samples x	\$20 00		\$0 00
F EDB by EPA 8011		samples x	\$55 00		\$0 00
FF EDB by EPA Method 8011 Rush		samples x	\$75 00		\$0 00
G 8 RCRA Metals		samples x	\$140 00		\$0 00
H TPH (9070)		samples x	\$55 00		\$0 00

I pH		samples x	\$10 00		\$0 00
J BOD		samples x	\$40 00		\$0 00
P1 Ethanol		samples x	\$21 50		\$0 00
11 Analyses-Soil (Each Sample)					
Q BTEX + Naphth		samples x	\$100 00		\$0 00
R PAH's		samples x	\$120 00		\$0 00
S 8 RCRA Metals		samples x	\$150 00		\$0 00
T Oil & Grease (9071)		samples x	\$60 00		\$0 00
U TPH-DRO (3550B/8015B)		samples x	\$65 00		\$0 00
V TPH- GRO (5030B/8015B)		samples x	\$65 00		\$0 00
W Grain size/hydrometer		samples x	\$99 00		\$0 00
X Total Organic Carbon		samples x	\$35 00		\$0 00
11 Analyses-Air (Each Sample)					
Y BTEX + Naphthalene		samples x	\$247 50		\$0 00
11 Analyses-Free Phase Product (Each Sample)					
Z Hydrocarbon Fuel Identification		samples x	\$620 00		\$0 00
12 Aquifer Characterization*					
A Pumping Test		hours x	\$120 00		\$0 00
B Slug Test*		tests x	\$150 00		\$0 00
C Fractured Rock		tests x	\$500 00		\$0 00
13 Free Product Recovery Rate Test* (Each)					
		tests x	\$120 00		\$0 00
14 Fate/Transport Modeling					
A Mathematical Model		each x	\$300 00		\$0 00
B Computer Model		each x	\$500 00		\$0 00
15 Risk Evaluation					
A Tier I Risk Evaluation		x	\$301 00		\$0 00
B Tier II Risk Evaluation		x	\$500 00		\$0 00
16 Subsequent Survey*					
		x	\$300 00		\$0 00
17 Disposal* (gallons or tons)					
A Wastewater		gallons x	\$0 80		\$0 00
B1 Free Product		gallons x	\$0 85		\$0 00
C Soil Treatment/Disposal		tons x	\$72 50		\$0 00
D Drilling fluids		gallons x	\$0 80		\$0 00
18 Miscellaneous (attach receipts)					
		x			\$0 00
		x			\$0 00
		x			\$0 00
20 Tier I Assessment (Use DHEC 3665 form)					
	1	x	\$10,334 00		\$10,334 00
21 IGWA (Use DHEC 3666 form)					
		x			\$0 00
22 Corrective Action (Use DHEC 3667 form)					
		x			\$0 00
23 Aggressive Fluid & Vapor Recovery (AFVR)					
A 8-hour Event*		each x	\$3,000 00		\$0 00
B AFVR per-hour Continuance		per hour x	\$204 00		\$0 00
C Off-gas treatment per-hour Continuance		per hour x	\$35 00		\$0 00
24 Granulated Activated Carbon (GAC) filter system installation & service:					
A New GAC System Installation*		each x	\$2,500 00		\$0 00
B1 Refurbished GAC Sys. Install*		each x	\$1,180 00		\$0 00
C Filter replacement/removal*		each x	\$450 00		\$0 00
D1 GAC System removal, cleaning, & refurbishment*		each x	\$720 00		\$0 00
E GAC System housing		each x	\$450 00		\$0 00
F In-line particulate filter		each x	\$150 00		\$0 00
G Additional piping & fittings		feet x	\$4 00		\$0 00
25 Well Repair					
A Additional Copies of the Report Delivered		each x	\$32 50		\$0 00
B Repair 2x2 MW pad		each x	\$100 00		\$0 00
C Repair 4x4 MW pad		each x	\$150 00		\$0 00
D Repair well vault		each x	\$225 00		\$0 00
F Replace well cover bolts		each x	\$10 00		\$0 00
G Replace locking well cap & lock		each x	\$15 00		\$0 00
H Replace/Repair stick-up		each x	\$137 50		\$0 00
I Convert Flush-mount to Stick-up		each x	\$175 00		\$0 00
J Convert Stick-up to Flush-mount		each x	\$125 00		\$0 00
K Replace missing/ilegible well ID plate		each x	\$22 50		\$0 00
Report Prep & Project Management		15%	x	\$10,334 00	\$1,550 10
TOTAL					\$11,884 10

*The appropriate mobilization cost can be added to complete these tasks, as necessary



VINCE MAPLHRUS
HILTON HEAD PUBLIC SERVICE DISTRICT
PO BOX 21264
HILTON HEAD ISLAND SC 29925-1264

MAY 15 2018

Re: **Tier I Assessment Notice to Proceed**
Hilton Head Public Service District, 21 Oak Park Drive, Hilton Head Island, SC
UST Permit #11399; CA # 55564; MWA #UMW-27024
Release #2 reported July 27, 2017
UST Compliance Inspection Checklist report received July 27, 2017
Site-Specific Work Plan received April 3, 2018
Beaufort County

Dear Mr. Malphrus:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report and the Site-Specific Work Plan (SSWP) submitted by AECOM. The report documents free phase petroleum product in the dispenser and two observation wells associated with the UST System.

The Tier I Assessment may proceed immediately upon receipt of this correspondence and must be conducted in accordance with your contractor's Annual Contractor's Quality Assurance Plan (ACQAP), all applicable regulations, and the SSWP. **The assessment report and invoice are due within sixty (60) days from the date of this letter.**

Approval to install three permanent monitoring wells is enclosed. All municipal wells within 1,000 feet of the facility and all water supply wells and surface water bodies within 500 feet of the facility must be sampled and analyzed for BTEX, naphthalene, 8 oxygenates, 1,2-DCA, ethanol, and EDB. Analyses should be in accordance with the UST QAPP Appendix F.

Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. Any site rehabilitation activity associated with the UST release must be performed by a DHEC certified site rehabilitation contractor as required by R.61-98.

In accordance with the UST QAPP, a weekly status report of the project should be provided via e-mail. If any quality assurance problems arise, you must contact me within 24 hours via phone or e-mail. In addition, a discussion of the problem(s) encountered, including quality assurance problems, the actions taken, and the results must be included in the final report submitted to the UST Management Division.

According to Division records, the release at the facility was reported to the Agency on July 27, 2017. In accordance with Section 44-2-40(D) of the SUPERB Act, you are responsible for the first \$25,000 of site rehabilitation costs. To ensure that expenditures made toward rehabilitation apply to the \$25,000 deductible, the Division has pre-approved costs for implementing the Tier I Assessment and assigned a cost agreement number for tracking. By law, the SUPERB Account cannot compensate any costs that are not pre-approved.

Upon receipt of a report of findings and a completed invoice with all necessary supporting documentation, up to \$10,334.00 may be applied to the \$25,000 deductible. The total includes costs for completion of up to 75 feet of permanent monitoring well footage. Additional monitoring well footage can be billed at the SUPERB allowable rate per foot as well as collection and laboratory analyses of groundwater from water supply wells provided that the cost is pre-approved by the Division.

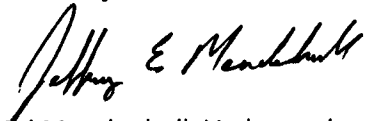
Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the DHEC is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated costs must be pre-approved by the DHEC in order for the costs to be paid. Failure to obtain pre-approval of additional costs will result in the denial of any and all such costs. The DHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the DHEC reserves the right to question and/or reject costs if deemed unreasonable and to audit project records at any time during the project or after completion of work.

The DHEC grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If, based on laboratory analysis, the CoC concentrations are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on-site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit #11399. Should you have any questions regarding this correspondence, you may contact me at (803) 898-7542, fax me at (803) 898-0673, or e-mail me at mendenje@dhec.sc.gov.

Sincerely,



Ed Mendenhall, Hydrogeologist
Assessment & Unregulated Petroleum Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement (ACA)
Monitoring Well Approval (MWA)

cc: AECOM, 4016 Salt Pointe Parkway, Suite 200, Charleston, SC 29405-8419 (w/enc)
Technical File (w/enc)



Monitoring Well Approval Form

Approval is hereby granted to: AECOM
(on behalf of): Hilton Head Public Service District
Facility: Hilton Head Public Service District, 21 Oak Park Drive,
Hilton Head Island, SC
UST Permit Number: 11399
County: Beaufort

This approval is for the installation of 3 permanent shallow monitoring wells. The monitoring wells are to be installed in the approved locations following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

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

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the DHEC shall be completed and submitted to the DHEC within 30 days after well completion or abandonment unless another schedule has been approved by the DHEC. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the DHEC within 30 days of receipt of laboratory results unless another schedule has been approved by the DHEC as required by R.61-71.H.1.d.
5. If any of the information provided to the DHEC changes, notification to Ed Mendenhall (tel: (803) 898-7542 or e-mail: mendenje@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. DHEC approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina well standards and regulations, dated May 27, 2016. A copy of this approval should be on the site during well installation.

Date of Issuance: April 27, 2018

Approval #: UMW-27024

Ed Mendenhall, Hydrogeologist
Assessment & Unregulated Petroleum Section
UST Management Division
Bureau of Land and Waste Management

Approved Cost Agreement 55564

Facility: 11399 HILTON HEAD PUBLIC SERVICE DISTRICT

MENDENJE

PO Number:

<u>Task / Description</u>	<u>Categories</u>	<u>Item Description</u>	<u>Qty / Pct</u>	<u>Unit Price</u>	<u>Amount</u>
20 TIER I		TIER I	1.0000	\$10,334.000	10,334.00
Total Amount					10,334.00

Document Receipt Information

☐

Hard Copy

☒

CD

☐

Email

Date Received

12-19-2018

Permit Number

11399

Project Manager

Ed Mendenhall

Name of Contractor

AECOM

UST Certification Number

Tier 1 Assessment Report

Docket Number

6 Tech

Scanned

Tier I Assessment Report

**Hilton Head Public Service District
21 Oak Park Drive
Hilton Head, South Carolina**

Prepared for:

Hilton Head Public Service District
21 Oak Park Drive
Hilton Head, South Carolina 29926

Prepared by:



AECOM Technical Services, Inc.
101 Research Drive
Columbia, SC 29203

AECOM Project No. 60567861

December 17, 2018

HF Spiking Station #2 Assessment Report

**Westinghouse Columbia Fuel Fabrication Facility
5801 Bluff Road
Hopkins, South Carolina**

Prepared By Elliott Harrington, Staff Geologist

A handwritten signature in blue ink that reads "Jeremy Grant". The signature is written in a cursive, flowing style.

Reviewed By Jeremy Grant, P.G., Senior Project Manager

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1.0 INTRODUCTION

1.1 Owner/Operator Information

Name: Hilton Head Public Service District

UST Permit #: 11399

Address: 21 Oak Park Dr. Hilton Head Island, SC 29926

Telephone Number: (843) 681-5525

1.2 Property Owner Information

Name: Hilton Head Public Service District

Address: 21 Oak Park Dr. Hilton Head Island, SC 29926

Telephone Number: (843) 681-5525

1.3 Contractor Information

Name: AECOM

SCDHEC Certification #: UCC 0035

Address: 101 Research Dr. Columbia, SC 29203

Telephone Number: (803) 254-4400

1.4 Facility Information

Address: 21 Oak Park Dr. Hilton Head Island, SC 29926

Description of Adjacent Land Use: Wastewater Treatment Facility

Predicted Future Land Use: Wastewater Treatment Facility

1.5 Facility History

Date Release Reported to SCDHEC: July 27, 2017

Estimated Quantity of Product Released: Unknown

Cause of Release: Leak from the dispenser

UST #	Product	Date Installed	Currently in Use	Date Closed
11399-1	Diesel Fuel	12/13/1988	No	12/18/1998
11399-2	Diesel Fuel	9/12/1989	Yes	

Other releases at this site? Yes

If yes, date release reported to SCDHEC: 9/30/1999

Status of release: Closed

No further action date: 10/8/1999

2.0 SITE CHARACTERISTICS

2.1 Site Geography

The site is located at 21 Oak Park Dr. in Hilton Head South Carolina, is surrounded by various buildings associated with the water treatment facility and consists of a 10,000-gallon fiberglass reinforced plastic underground storage tank (UST) used to supply diesel fuel to fleet vehicles. A fuel dispenser is located approximately 10 feet (ft) from the UST and is directly adjacent to an access road within the wastewater facility. The site is located within a commercial business district, with other light commercial and residential properties in the vicinity of the site. The topography of the site generally slopes to the southeast with an elevation of approximately 4 feet above mean sea level (msl).

2.2 Exposure Analysis

Describe all potential receptors and preferred pathways within a 1,000-foot radius of the site.

Description of Receptor	Distance/Direction from Site
Municipal water line	Approximately 20 feet east of the UST
Salt marsh and associated creek	Approximately 1,500 feet southeast

2.3 Utilities Survey

List the utilities on-site, and adjacent to the site within a 250-foot radius, that could serve as exposure points or ingestion pathways.

Utility	On-site or Distance/Direction from Site	Depth to Utility
Water Line	On-site	4 ft
Electrical Line	On-site	2 ft

2.4 Site Geology

Hilton Head Island is located in the southeastern portion of the South Carolina Coastal Plain and is south of the Garner-Edisto fault line. Much of the depositional features of the coastal plain were developed from a series of stratigraphic, climatic, tectonic, and oceanic periods generated by the breakup of the supercontinent Pangea approximately 250 million years ago (Clendenin, SCDNR Geological Survey). Hilton Head Island is located within the Hawthorn formation and is comprised of various sands and limestone deposits (Horton and Zullo, et al. 1991). Hilton Head Island was formed from the erosional fragments of coastal and sand bodies deposited from the Pleistocene high sea level changes (Clendenin, SCDNR Geological Survey). Hilton Head is considered to be a sea island having a roughly rectangular shape and is parallel to the shoreline of the Atlantic Ocean.

Aquifers associated with the Hilton Head area include the Tertiary Limestone, Peedee, Black Creek, and the Middendorf Aquifer Systems (Colquhoun, et al. 1983). The subsurface geology beneath the site is comprised of fine to medium grained brown sand to the investigative depth of 15 ft.

2.5 Soil Assessment

Drilling Date(s): 06/14/2018 to 06/15/2018

Provide a brief justification for the location of the soil borings:

Four soil borings and three permanent groundwater monitoring wells were installed by Elite Techniques Inc. (Elite) The four soil boring locations were chosen to assess the source of the release from the UST system (tank, piping and dispenser). Soils from these borings were screened every foot for petroleum vapors using an organic vapor analyzer photoionization device (OVA PID). The highest OVA PID readings were measured in subsurface soil from boring SB-02.

AECOM personnel instructed Elite to install monitoring well MW-01 in the same borehole as SB-02. A background boring, outside of the suspected source area, was installed north of the access roads and monitoring well MW-02 was installed within this borehole. Monitoring well MW-03 was also installed north of the UST system. Vadose zone soil samples were collected during the installation of MW-02 and MW-03. Boring logs are contained in Appendix B.

UST Area Borings:

Borehole: 11399-SB01 Sampling Date: 06/14/2018

Sample Depth: 3 ft

Sampling Interval (ft)	Field Screening Results (parts per million PPM)]	Lithology	Soil Conditions
1	5.1	Mostly medium to fine dark brown sand. Trace of silt.	Dry
2	3.0	Same as above (SAA)	Dry
3	10.9	SAA	Damp
4	N/A	SAA	Saturated

Borehole: 11399-SB02

Sampling Date: 06/14/2018

Sample Depth: 3 ft.

Sampling Interval (ft)	Field Screening Results (PPM)	Lithology	Soil Conditions
1	10.9	Mostly medium to fine dark brown sand.	Dry
2	480.2	SAA	Dry
3	996.7	SAA	Damp
4	N/A	SAA	Saturated

Piping and Dispenser Area Borings:

Borehole: 11399-SB03

Sampling Date: 06/14/2018

Sample Depth: 4 ft.

Sampling Interval (ft)	Field Screening Results (PPM)	Lithology	Soil Conditions
1	5.8	Mostly medium to fine brown sand.	Dry
2	5.8	SAA	Dry
3	173.1	SAA	Dry
4	837.3	SAA	Damp
5	N/A	SAA	Saturated

Borehole: 11399-SB04

Sampling Date: 06/14/2018

Sample Depth: 1 ft.

Sampling Interval (ft)	Field Screening Results (PPM)	Lithology	Soil Conditions
1	9.5	Mostly medium to fine brown sand.	Dry
2	5.6	SAA	Dry
3	7.5	SAA	Dry
4	5.4	SAA	Damp
5	N/A	SAA	Saturated

Background Boring:

Borehole: 11399-MW02

Sampling Date: 06/14/2018

Sample Depth: 4 ft.

Sampling Interval (ft)	Field Screening Results (PPM)	Lithology	Soil Conditions
1	2.4	Mostly medium to fine brown sand.	Dry
2	4.2	SAA	Dry
3	4.2	Mostly medium to fine light brown sand.	Dry
4	3.8	SAA	Dry
5	4.9	Mostly medium to fine light brown sand mixed with gravel.	Damp
6	N/A	Brown fine to medium sand.	Saturated

Groundwater Flow Boring:

Borehole: 11399-MW03

Sampling Date: 06/14/2018

Sample Depth: 3 ft.

Sampling Interval (feet)	Field Screening Results (PPM)	Lithology	Soil Conditions
1	1	Mostly medium to fine brown sand.	Dry
2	5.4	SAA	Dry
3	8.4	Mostly medium to fine light brown sand.	Dry
4	3.6	SAA	Dry
5	7.8	Mostly medium to fine light brown sand mixed with gravel.	damp
6	N/A	Brown fine to medium sand.	Saturated

2.6 Chemicals of Concern - Soil

Soil Analytical Data:

COC	RBSL ¹	11399-SB01-3'	11399-SB02-3'	11399-SB03-4'	11399-SB04-1'	11399-MW2-5'	11399-MW3-3'
Benzene	7	< 161	< 82.9	< 143	< 163	< 150	< 3.1
Toluene	1,450	< 161	< 82.9	< 143	< 163	< 150	< 3.1
Ethylbenzene	1,150	< 161	81.5J	5,030	< 163	< 150	< 3.1
Xylenes	14,500	< 321	532	20,700	< 326	< 300	< 6.1
Naphthalene	36	< 161	68.3J	< 143	< 163	< 150	< 3.1
Benzo(a)anthracene	66	< 395	< 3,860	< 3,650	< 374	< 386	< 350
Benzo(b)fluoranthene	66	< 395	< 3,860	< 3,650	< 374	< 386	< 350
Benzo(k)fluoranthene	66	< 395	< 3,860	< 3,650	< 374	< 386	< 350
Chrysene	66	< 395	< 3,860	< 3,650	< 374	< 386	< 350
Dibenz(a,h)anthracene	66	< 395	< 3,860	< 3,650	< 374	< 386	< 350
Phenanthrene	NA	< 395	1,350J	1,730J	< 374	< 386	< 350
Pyrene	NA	< 395	919J	< 3,650	< 374	< 386	< 350
1-Methylnaphthalene	NA	< 395	6,560	6,150	< 374	< 386	< 350
2-Methylnaphthalene	NA	< 395	7,160	9,150	< 374	< 386	< 350
Lead	NA	2,300	2,500	1,800	2,200	1,500	1,900
TPH DRO (C10-C28)	NA	16,700,000	N/A	N/A	N/A	N/A	N/A
TOC (Background Boring)	NA	N/A	N/A	N/A	N/A	1,440,000	N/A

Notes:

1 – Risk-Based Screening Level (RBSL) for sandy soil.

J – Concentration is greater than the method detection limit but less than the reporting limit.

NA – Not applicable.

N/A – Not analyzed.

Concentrations displayed in micrograms per kilogram (µg/kg)

Concentrations in **bold** face type exceeded the RBSL.

Discuss the horizontal and vertical extent of COC in soil:

Vadose zone soil from boring SB-02 at a depth of 3 feet below land surface (bls) contained naphthalene above its RBSL. Although naphthalene (and compounds such as benzene) was not detected in the other borings, the detections limits for these samples exceed the RBSL. Vadose zone soils from boring SB-03 at a depth of 4 feet bls contained ethylbenzene and xylenes above their respective RBSLs. No other constituents of concern (COCs) were detected in the soil samples above RBSLs. Due to the shallow water table at the site, vertical delineation of soil contamination is not necessary. Soil analytical data is contained in Appendix A.

2.7 Groundwater Assessment

Elite Techniques installed three monitoring wells using hollow stem augers on June 15, 2018. Monitoring well MW-01 was installed in boring SB-02. Vadose zone soil from boring SB-02 contained the highest OVA PID readings. Monitoring wells MW-02 and MW-03 were installed outside of the source area in approximately triangular positions to allow for the estimation of the site-specific direction of groundwater flow.

Boring logs from the monitoring well installation and well construction diagrams are contained in Appendix B and C; respectively. Soil generated from the installation of soil borings and monitoring wells was containerized in 55-gallon drums. A copy of the non-hazardous waste disposal manifest is contained in Appendix G. A copy of the survey map of the subject property and surrounding area is in Appendix H.

Well Installation Information

Well No.	Installation Date	Development Date	Sampling Date
11399-MW01	06/15/2018	06/16/2018	NA
11399-MW02	06/15/2018	06/16/2018	06/18/2018
11399-MW03	06/15/2018	06/16/2018	06/18/2018

Notes: NA – not applicable due to the presence of free phase product (FP).

2.8 Groundwater Sample Collection

Groundwater samples were obtained on June 18, 2018. Prior to collecting the groundwater sample, the depth to water and free phase product, if present, were measured using an electronic interface probe capable of measuring these depths to 0.01 foot increments. The interface probe was decontaminated between wells using an Alconox solution to prevent cross contamination. Three well volumes of groundwater was purged from each well prior to groundwater sample collection. Due to the presence of free phase product in monitoring well MW-01, a groundwater sample was not collected from this well. Well development and purge water was containerized in 55-gallon drums. A copy of the non-hazardous waste disposal manifest is contained in Appendix G.

Summary of Monitoring Well and Groundwater Data (measurements reported in feet)

Well No.	TOC Elevation	Depth to Water	Depth to Free Product	Water Table Elevation	Screened Interval
11399-MW01	12.80	5.48	5.21	7.40*	10
11399-MW02	14.29	6.09	NA	8.20	10
11399-MW03	14.13	6.09	NA	8.04	10

* - corrected for a free phase product thickness of 0.27 feet and a product density of 0.70

Field Data Measurements

Parameter	MW-02	MW-03
Temperature (°C)	24.19	24.73
Conductivity (us/cm)	616	429
Dissolved Oxygen (mg/L)	1.30	1.31
pH	6.55	5.77
ORP (us/cm)	-81.6	-28.3

2.9 Chemicals of Concern - Groundwater

Groundwater Analytical Data

COC	RBSL	MW-01	MW-02	MW-03
Benzene	5	FP	< 1	< 1
Toluene	1000	FP	< 1	< 1
Ethylbenzene	700	FP	< 1	< 1
Xylenes	10,000	FP	< 1	< 1
MTBE	40	FP	< 1	< 1
Naphthalene	25	FP	< 1	< 1
1,2-DCA	5	FP	< 1	< 1
EDB	0.05	FP	< 0.020	< 0.020
Lead	15	FP	73.1	71.8
Benzo(a)anthracene	10	FP	< 100	< 100
Benzo(b)fluoranthene	10	FP	< 100	< 100
Benzo(k)fluoranthene	10	FP	< 100	< 100
Chrysene	10	FP	< 100	< 100
Dibenz(a,h)anthracene	10	FP	< 100	< 100
Tert-Amyl Alcohol	NA	FP	< 100	< 100
Tert-Amylmethyl ether	NA	FP	< 10	< 10
3,3 Dimethyl-1-Butanol	NA	FP	< 100	< 100
Tert-Butyl Alcohol	NA	FP	< 100	< 100
Tert-Butyl Formate	NA	FP	< 50	< 50
Diisopropyl ether	NA	FP	< 1	< 1
Ethanol	NA	FP	297	209
Ethyl-tert-butyl ether	NA	FP	< 10	< 10

Notes:

Concentrations reported in µg/L.

Concentrations in **bold** face type exceeded the RBSLs.

FP – groundwater was not sampled due to the presence of free phase product in the well.

Groundwater sampling logs are included in Appendix D. Laboratory analytical reports are included in Appendix A.

2.10 Aquifer Characteristics

Hydraulic Conductivity: MW-02 - 3.60 ft./day

MW-03 - 62.83 ft/day

Average hydraulic conductivity = 33.22 ft/day

Hydraulic Gradient: 0.012

Effective Porosity: (assumed effective porosity) 0.25

Estimates of the horizontal groundwater flow velocity were calculated using a modified form of the Darcy equation:

$$V = (K/n) * (dh/dl)$$

where,

V = horizontal groundwater flow velocity (ft/day)

K = horizontal hydraulic conductivity (ft/day)

n = effective porosity

dh/dl = hydraulic gradient (ft/day)

Estimated Seepage Velocity: 1.59 ft/day

The slug test form and supporting data used to derive the aquifer characteristics and hydrologic parameters are included Appendix E.

3.0 TIER I EVALUATION**Current Land Use**

Identify any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1,000-foot radius for current land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation (Yes/No)	Exposure Point or Reason for Non-selection	Data Requirements (If pathway selected)
Air	Inhalation Explosion Hazard	No No	No basements or other structures where vapors could accumulate.	
Groundwater	Ingestion Dermal Contact Volatile Inhalation	No No No	Municipal water is provided to the area and no private water supply wells were identified during the site survey.	
Surface Water	Ingestion Dermal Contact Volatile Inhalation	No No No	A salt marsh creek was identified approximately 1,500 feet southeast from the site.	
Surficial Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	No No No No	Surficial soils are not contaminated by petroleum hydrocarbons. Ground surface is primarily grass in the source area.	
Subsurface Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	Yes Yes Yes Yes	Exposure through soil excavation could occur. Groundwater has been affected by the release and the water table is shallow.	Conduct a Tier II Assessment

Future Land Use

Identify any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1,000-foot radius for future land use. Property ownership information was collected for adjacent properties for the purpose of future additional assessment work. The adjacent properties information and applicable portion of the Beaufort County tax map is in Appendix F.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation (Yes/No)	Exposure Point or Reason for Non-selection	Data Requirements (If pathway selected)
Air	Inhalation Explosion Hazard	No No	No basements or other structures where vapors could accumulate.	
Groundwater	Ingestion Dermal Contact Volatile Inhalation	No No No	Municipal water is provided to the area and no private water supply wells were identified during the site survey.	
Surface Water	Ingestion Dermal Contact Volatile Inhalation	No No No	A salt marsh creek was identified approximately 1,500 feet southeast from the site. Contaminants not likely to migrate that far.	
Surficial Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	No No No No	Surficial soils are not contaminated by petroleum hydrocarbons. Ground surface is primarily grass in the source area.	
Subsurface Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	Yes Yes Yes Yes	Exposure through soil excavation could occur. Groundwater has been affected by the release and the water table is shallow.	Conduct a Tier II Assessment

4.0 RECOMMENDATIONS

Field and analytical data indicate that soil and groundwater have been impacted by petroleum hydrocarbons from the diesel distribution system. Free product was detected in one of the monitoring wells, MW-01, installed adjacent to the diesel UST. Due to the presence of petroleum hydrocarbons in soil and free phase product on the water table, a Tier 2 assessment is recommended. This assessment will include evaluating the extent of impact to soil in the former dispenser area, the extent of free phase product and vertical and horizontal delineation of groundwater impact.

5.0 REFERENCES

Colquhoun, D. J. et al. 1983. Surface and subsurface stratigraphy, structure and aquifers of the South Carolina Coastal Plain: Report to the South Carolina Department of Health and Environmental Control, Ground Water Protection Division, Office of the Governor, State of South Carolina.

Horton and Zullo. et. al. 1991. The Geology of the Carolinas: Carolina Geological Society Fiftieth Anniversary Volume. The University of Tennessee Press.

W. Clendenin, SCDNR Geological Survey. The Characterization of the ACE Basin. Date accessed by Elliott Harrington of AECOM: September 4, 2018.

https://webapp1.dlib.indiana.edu/virtual_disk_library/index.cgi/4928836/FID1596/html/envicond/geology/glgeotxt.htm#summary

FIGURES



AECOM

101 Research Drive
Columbia, SC 29203

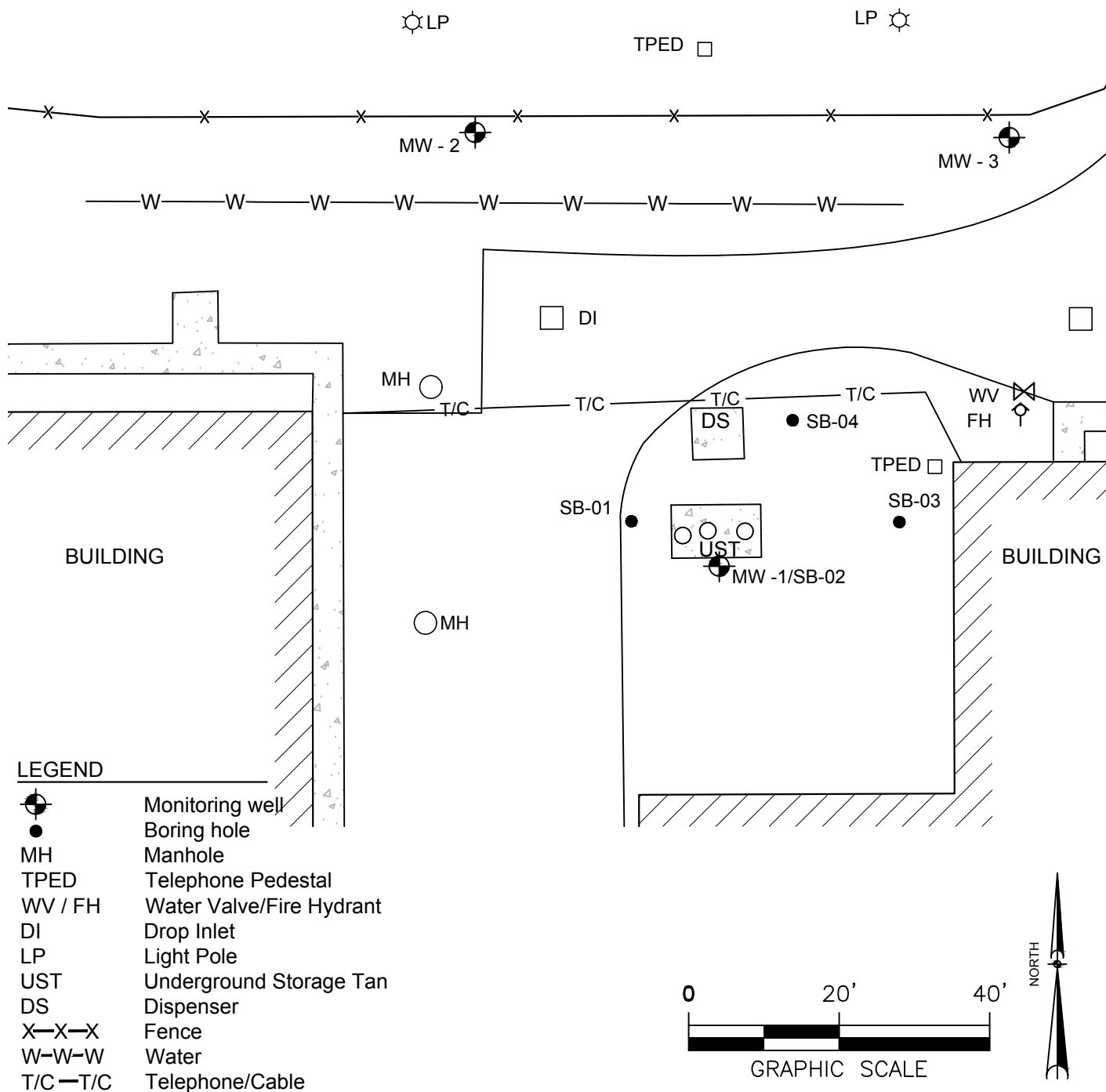
Telephone: (803) 254-4400, Fax: (803) 771-6676
www.AECOM.com

Site Topographic Map
Tier 1 Assessment Report
Hilton Head Public Service District
21 Oak Park Drive
Hilton Head Island, South Carolina



Date: October 2018

N:\PROJECTS\60567861_HH_TIER I UST ASSISTANCE\900-WORK\910-DRAWINGS\60567861_SITE LOC MAP.DWG 12/12/2018 2:30:15 PM



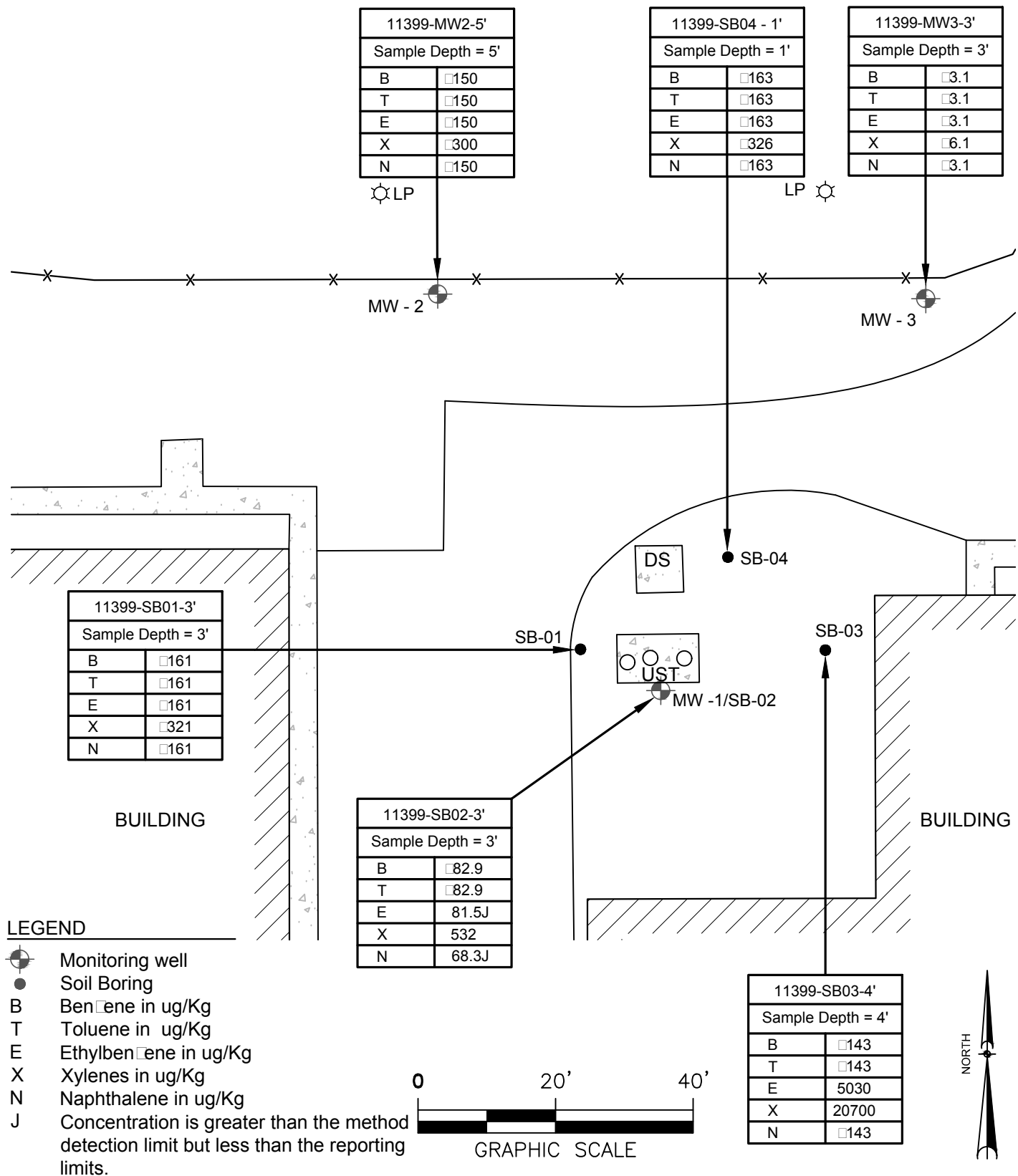
101 Research Drive
Columbia, South Carolina 29203
Telephone (803) 254-4400 : Fax (803) 771-6676
www.AECOM.com

SITE MAP
TIER I ASSESSMENT REPORT
HILTON HEAD PUBLIC SERVICE DISTRICT
21 OAK PARK DRIVE
HILTON HEAD ISLAND, SOUTH CAROLINA

DATE: SEPTEMBER 2018

FIGURE 2

N:\PROJECTS\60567861_HH_TIER I UST ASSISTANCE\900-WORK\910-DRAWINGS\60567861_SOIL MAP.DWG 12/12/2018 2:26:50 PM



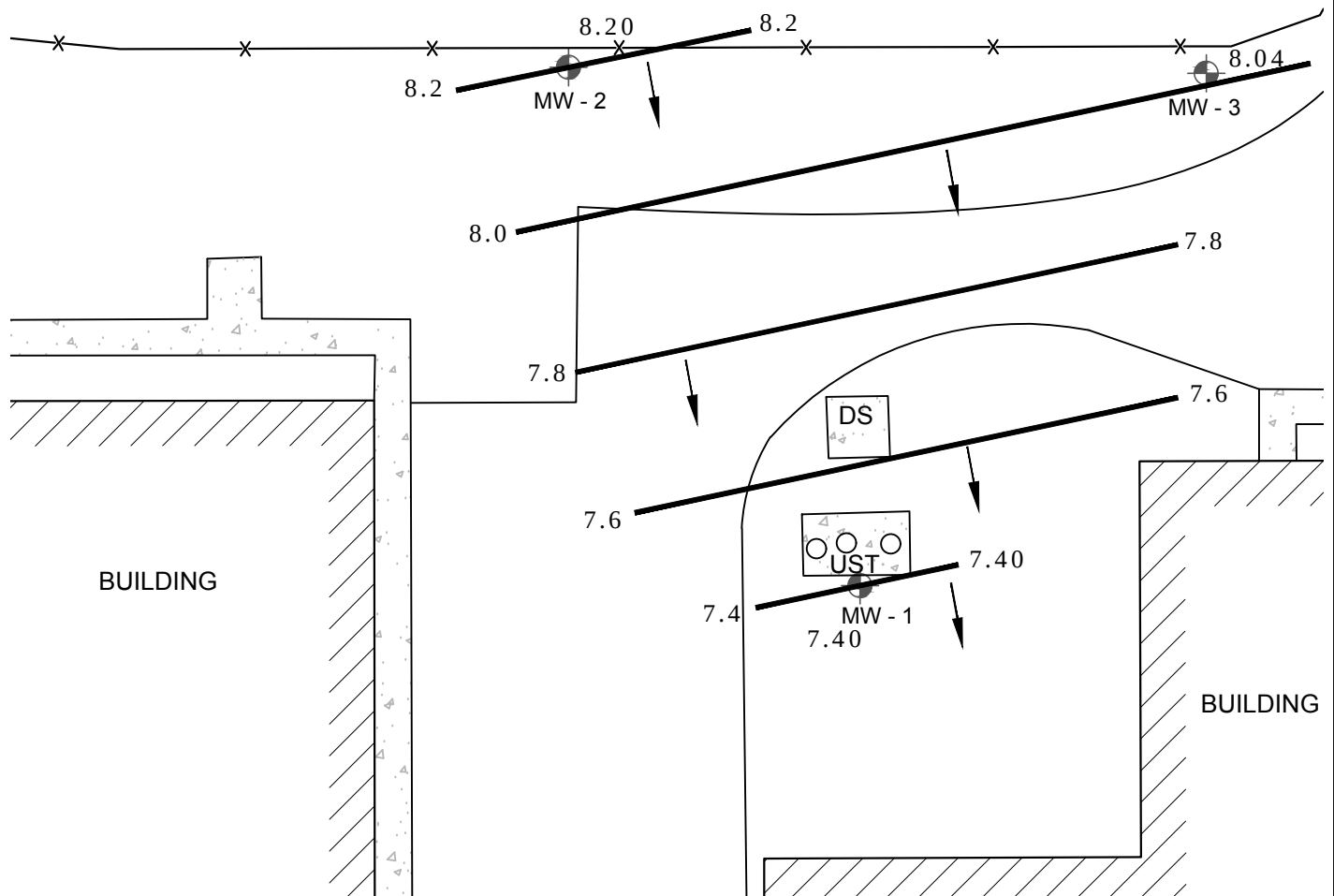
101 Research Drive
Columbia, South Carolina 29203
Telephone (803) 254-4400 : Fax (803) 771-6676
www.AECOM.com

SOIL COC MAP
TIER I ASSESSMENT REPORT
HILTON HEAD PUBLIC SERVICE DISTRICT
21 OAK PARK DRIVE
HILTON HEAD ISLAND, SOUTH CAROLINA

DATE: SEPTEMBER 2018

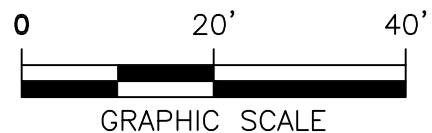
FIGURE 3

N:\PROJECTS\60567861_HH TIER I UST ASSISTANCE\900-WORK\910-DRAWINGS\60567861_POTENTIOMETRIC.DWG 12/12/2018 2:28:49 PM



LEGEND

-  Monitoring well
-  8.20 Groundwater Elevation
-  Potentiometric Line (C.I.=0.2ft)
-  Direction of Groundwater Flow



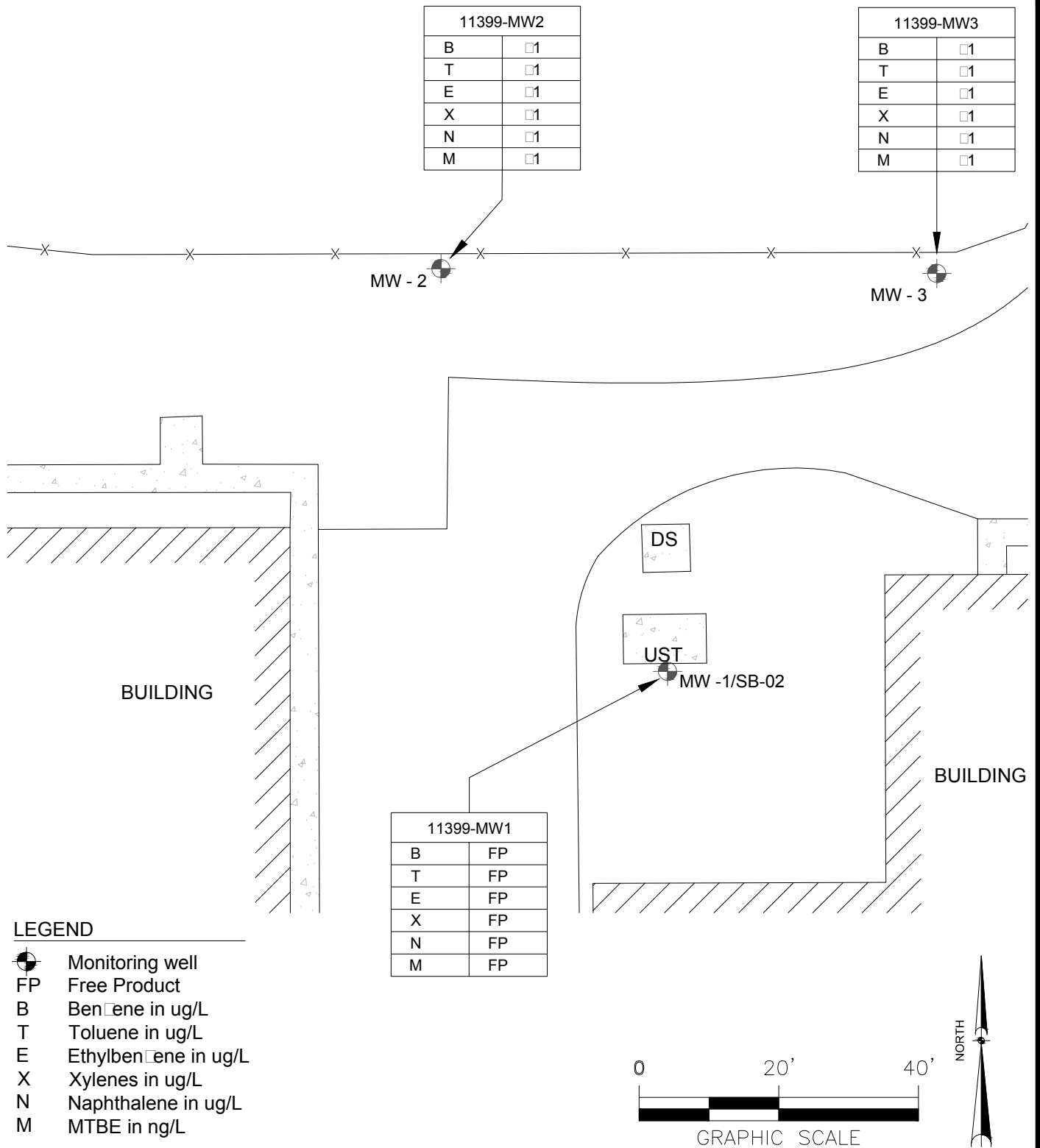
101 Research Drive
Columbia, South Carolina 29203
Telephone (803) 254-4400 : Fax (803) 771-6676
www.AECOM.com

POTENTIOMETRIC MAP
TIER I ASSESSMENT REPORT
HILTON HEAD PUBLIC SERVICE DISTRICT
21 OAK PARK DRIVE
HILTON HEAD ISLAND, SOUTH CAROLINA

DATE: SEPTEMBER 2018

FIGURE 4

N:\PROJECTS\60567861_HH TIER I UST ASSISTANCE\900-WORK\910-DRAWINGS\60567861_GROUNDWATER.DWG 12/12/2018 2:32:55 PM



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Columbia, South Carolina 29203
Telephone (803) 254-4400 : Fax (803) 771-6676
www.AECOM.com

GROUNDWATER COC MAP
TIER I ASSESSMENT REPORT
HILTON HEAD PUBLIC SERVICE DISTRICT
21 OAK PARK DRIVE
HILTON HEAD ISLAND, SOUTH CAROLINA

DATE: SEPTEMBER 2018

FIGURE 5

APPENDIX A

LABORATORY ANALYTICAL RESULTS

June 29, 2018

Jeremy Grant
AECOM
101 Research Drive
Columbia, SC 29203

RE: Project: Hilton Head (soil)
Pace Project No.: 92388710

Dear Jeremy Grant:

Enclosed are the analytical results for sample(s) received by the laboratory on June 16, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Atlanta Certification IDs

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Texas Certification #: T104704397-08-TX

Virginia Certification #: 460204

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

Charlotte Certification IDs

9800 Kinsey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

North Carolina Drinking Water Certification #: 37706

North Carolina Field Services Certification #: 5342

North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001

Florida/NELAP Certification #: E87627

Kentucky UST Certification #: 84

Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Hilton Head (soil)

Pace Project No.: 92388710

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92388710001	11399-SB02-3'	Solid	06/14/18 13:15	06/16/18 10:15
92388710002	11399-SB04-1'	Solid	06/14/18 13:30	06/16/18 10:15
92388710003	11399-SB01-3'	Solid	06/14/18 13:45	06/16/18 10:15
92388710004	11399-SB03-4'	Solid	06/14/18 13:55	06/16/18 10:15
92388710005	11399-MW2-5'	Solid	06/15/18 12:20	06/16/18 10:15
92388710006	11399-MW3-3'	Solid	06/15/18 13:10	06/16/18 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Hilton Head (soil)

Pace Project No.: 92388710

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92388710001	11399-SB02-3'	EPA 8015C	SFI	2	PASI-GA
		EPA 6010	SH1	1	PASI-A
		EPA 8270	BPJ	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92388710002	11399-SB04-1'	EPA 6010	SH1	1	PASI-A
		EPA 8270	BPJ	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
		EPA 6010	SH1	1	PASI-A
92388710003	11399-SB01-3'	EPA 8270	BPJ	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
		EPA 6010	SH1	1	PASI-A
		EPA 8270	BPJ	21	PASI-C
92388710004	11399-SB03-4'	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
		EPA 6010	SH1	1	PASI-A
		EPA 8270	BPJ	21	PASI-C
		EPA 8260	DLK	11	PASI-C
92388710005	11399-MW2-5'	ASTM D2974-87	KDF	1	PASI-C
		EPA 6010	SH1	1	PASI-A
		EPA 8270	BPJ	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92388710006	11399-MW3-3'	EPA 9060	TJJ	6	PASI-G
		EPA 6010	SH1	1	PASI-A
		EPA 8270	RES	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	KDF	1	PASI-C

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: Hilton Head (soil)

Pace Project No.: 92388710

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92388710001	11399-SB02-3'					
EPA 8015C	DRO (C10-C28)	16700	mg/kg	806	06/21/18 17:15	
EPA 6010	Lead	2.5	mg/kg	0.34	06/20/18 16:40	
EPA 8270	1-Methylnaphthalene	6560	ug/kg	3860	06/22/18 11:31	
EPA 8270	2-Methylnaphthalene	7160	ug/kg	3860	06/22/18 11:31	
EPA 8270	Naphthalene	1660J	ug/kg	3860	06/22/18 11:31	
EPA 8270	Phenanthrene	1350J	ug/kg	3860	06/22/18 11:31	
EPA 8270	Pyrene	919J	ug/kg	3860	06/22/18 11:31	
EPA 8260	Ethylbenzene	81.5J	ug/kg	82.9	06/22/18 23:11	
EPA 8260	Naphthalene	68.3J	ug/kg	82.9	06/22/18 23:11	
EPA 8260	Xylene (Total)	532	ug/kg	166	06/22/18 23:11	
EPA 8260	m&p-Xylene	357	ug/kg	166	06/22/18 23:11	
EPA 8260	o-Xylene	175	ug/kg	82.9	06/22/18 23:11	
ASTM D2974-87	Percent Moisture	13.4	%	0.10	06/19/18 10:03	
92388710002	11399-SB04-1'					
EPA 6010	Lead	2.2	mg/kg	0.49	06/20/18 16:49	
ASTM D2974-87	Percent Moisture	10.8	%	0.10	06/19/18 10:03	
92388710003	11399-SB01-3'					
EPA 6010	Lead	2.3	mg/kg	0.35	06/20/18 16:52	
ASTM D2974-87	Percent Moisture	15.4	%	0.10	06/19/18 10:03	
92388710004	11399-SB03-4'					
EPA 6010	Lead	1.8	mg/kg	0.40	06/20/18 16:55	
EPA 8270	1-Methylnaphthalene	6150	ug/kg	3650	06/21/18 17:13	
EPA 8270	2-Methylnaphthalene	9150	ug/kg	3650	06/21/18 17:13	
EPA 8270	Naphthalene	2630J	ug/kg	3650	06/21/18 17:13	
EPA 8270	Phenanthrene	1730J	ug/kg	3650	06/21/18 17:13	
EPA 8260	Ethylbenzene	5030	ug/kg	143	06/26/18 03:13	
EPA 8260	Xylene (Total)	20700	ug/kg	2280	06/26/18 18:42	
EPA 8260	m&p-Xylene	20700	ug/kg	2280	06/26/18 18:42	
ASTM D2974-87	Percent Moisture	8.6	%	0.10	06/19/18 10:03	
92388710005	11399-MW2-5'					
EPA 6010	Lead	1.5	mg/kg	0.34	06/20/18 16:58	
ASTM D2974-87	Percent Moisture	13.1	%	0.10	06/19/18 10:04	
EPA 9060	Total Organic Carbon	1480	mg/kg	740	06/25/18 09:24	
EPA 9060	Total Organic Carbon	1450	mg/kg	745	06/25/18 09:29	
EPA 9060	Total Organic Carbon	1220	mg/kg	746	06/25/18 09:34	
EPA 9060	Total Organic Carbon	1590	mg/kg	746	06/25/18 09:40	
EPA 9060	Mean Total Organic Carbon	1440	mg/kg	744	06/25/18 09:24	
EPA 9060	RSD%	10.8	%		06/25/18 09:24	
92388710006	11399-MW3-3'					
EPA 6010	Lead	1.9	mg/kg	0.41	06/20/18 17:01	
ASTM D2974-87	Percent Moisture	7.3	%	0.10	06/19/18 10:04	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)
Pace Project No.: 92388710

Method: EPA 8015C
Description: 8015C GCS DRO Solid
Client: AECOM, SC
Date: June 29, 2018

General Information:

1 sample was analyzed for EPA 8015C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3550C with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 8349

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- 11399-SB02-3' (Lab ID: 92388710001)
 - o-Terphenyl (S)
- MS (Lab ID: 38553)
 - o-Terphenyl (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 8349

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92388685001

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 38553)
 - DRO (C10-C28)
- MSD (Lab ID: 38554)
 - DRO (C10-C28)

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Method: EPA 6010

Description: 6010 MET ICP

Client: AECOM, SC

Date: June 29, 2018

General Information:

6 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Method: EPA 8270

Description: 8270 MSSV PAH Microwave SC

Client: AECOM, SC

Date: June 29, 2018

General Information:

6 samples were analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 415539

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- 11399-SB02-3' (Lab ID: 92388710001)
 - 2-Fluorobiphenyl (S)
 - Nitrobenzene-d5 (S)
 - Terphenyl-d14 (S)
- 11399-SB03-4' (Lab ID: 92388710004)
 - 2-Fluorobiphenyl (S)
 - Nitrobenzene-d5 (S)
 - Terphenyl-d14 (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Method: EPA 8270

Description: 8270 MSSV PAH Microwave SC

Client: AECOM, SC

Date: June 29, 2018

Analyte Comments:

QC Batch: 415539

1g: Comment applies to all compounds with recovery outside control limits.

- LCS (Lab ID: 2304412)
- 1-Methylnaphthalene

2g: Recovery did not meet 70-130% South Carolina required limits. Recovery meets method required in-house generated control limits.

- LCS (Lab ID: 2304412)
- 1-Methylnaphthalene

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 11399-SB02-3' (Lab ID: 92388710001)
 - Nitrobenzene-d5 (S)
- 11399-SB03-4' (Lab ID: 92388710004)
 - Nitrobenzene-d5 (S)

QC Batch: 416452

2g: Recovery did not meet 70-130% South Carolina required limits. Recovery meets method required in-house generated control limits.

- LCS (Lab ID: 2309414)
 - Acenaphthene
 - Benzo(k)fluoranthene
 - Benzo(b)fluoranthene
 - Chrysene
 - Fluorene
 - Naphthalene
 - Pyrene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Method: EPA 8260

Description: 8260/5035A SC Volatile Org

Client: AECOM, SC

Date: June 29, 2018

General Information:

6 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 416582

S2: Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

- 11399-SB03-4' (Lab ID: 92388710004)
- 4-Bromofluorobenzene (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 416383

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 11399-SB02-3' (Lab ID: 92388710001)
- Toluene-d8 (S)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Method: EPA 8260

Description: 8260/5035A SC Volatile Org

Client: AECOM, SC

Date: June 29, 2018

Analyte Comments:

QC Batch: 416582

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- 11399-MW2-5' (Lab ID: 92388710005)
 - Toluene-d8 (S)
- 11399-SB01-3' (Lab ID: 92388710003)
 - Toluene-d8 (S)
- 11399-SB04-1' (Lab ID: 92388710002)
 - Toluene-d8 (S)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Method: EPA 9060

Description: Total Organic Carbon Quad

Client: AECOM, SC

Date: June 29, 2018

General Information:

1 sample was analyzed for EPA 9060. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-SB02-3' **Lab ID: 92388710001** Collected: 06/14/18 13:15 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015C GCS DRO Solid Analytical Method: EPA 8015C Preparation Method: EPA 3550C									
DRO (C10-C28)	16700	mg/kg	806	346	100	06/20/18 14:30	06/21/18 17:15		
Surrogates									
o-Terphenyl (S)	0	%	50-150		100	06/20/18 14:30	06/21/18 17:15	84-15-1	S4
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3050									
Lead	2.5	mg/kg	0.34	0.17	1	06/20/18 00:45	06/20/18 16:40	7439-92-1	
8270 MSSV PAH Microwave SC Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	ug/kg	3860	889	10	06/16/18 15:48	06/22/18 11:31	83-32-9	
Acenaphthylene	ND	ug/kg	3860	913	10	06/16/18 15:48	06/22/18 11:31	208-96-8	
Anthracene	ND	ug/kg	3860	866	10	06/16/18 15:48	06/22/18 11:31	120-12-7	
Benzo(a)anthracene	ND	ug/kg	3860	714	10	06/16/18 15:48	06/22/18 11:31	56-55-3	
Benzo(a)pyrene	ND	ug/kg	3860	737	10	06/16/18 15:48	06/22/18 11:31	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	3860	667	10	06/16/18 15:48	06/22/18 11:31	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	3860	983	10	06/16/18 15:48	06/22/18 11:31	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	3860	761	10	06/16/18 15:48	06/22/18 11:31	207-08-9	
Chrysene	ND	ug/kg	3860	515	10	06/16/18 15:48	06/22/18 11:31	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	3860	819	10	06/16/18 15:48	06/22/18 11:31	53-70-3	
Fluoranthene	ND	ug/kg	3860	562	10	06/16/18 15:48	06/22/18 11:31	206-44-0	
Fluorene	ND	ug/kg	3860	796	10	06/16/18 15:48	06/22/18 11:31	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3860	796	10	06/16/18 15:48	06/22/18 11:31	193-39-5	
1-Methylnaphthalene	6560	ug/kg	3860	1010	10	06/16/18 15:48	06/22/18 11:31	90-12-0	
2-Methylnaphthalene	7160	ug/kg	3860	831	10	06/16/18 15:48	06/22/18 11:31	91-57-6	
Naphthalene	1660J	ug/kg	3860	948	10	06/16/18 15:48	06/22/18 11:31	91-20-3	
Phenanthrene	1350J	ug/kg	3860	644	10	06/16/18 15:48	06/22/18 11:31	85-01-8	
Pyrene	919J	ug/kg	3860	655	10	06/16/18 15:48	06/22/18 11:31	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	23-110		10	06/16/18 15:48	06/22/18 11:31	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	30-110		10	06/16/18 15:48	06/22/18 11:31	321-60-8	S4
Terphenyl-d14 (S)	0	%	28-110		10	06/16/18 15:48	06/22/18 11:31	1718-51-0	S4
8260/5035A SC Volatile Org Analytical Method: EPA 8260									
Benzene	ND	ug/kg	82.9	26.5	25		06/22/18 23:11	71-43-2	
Ethylbenzene	81.5J	ug/kg	82.9	29.9	25		06/22/18 23:11	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	82.9	24.9	25		06/22/18 23:11	1634-04-4	
Naphthalene	68.3J	ug/kg	82.9	19.9	25		06/22/18 23:11	91-20-3	
Toluene	ND	ug/kg	82.9	29.9	25		06/22/18 23:11	108-88-3	
Xylene (Total)	532	ug/kg	166	59.7	25		06/22/18 23:11	1330-20-7	
m&p-Xylene	357	ug/kg	166	59.7	25		06/22/18 23:11	179601-23-1	
o-Xylene	175	ug/kg	82.9	31.5	25		06/22/18 23:11	95-47-6	
Surrogates									
Toluene-d8 (S)	102	%	70-130		25		06/22/18 23:11	2037-26-5	D3
4-Bromofluorobenzene (S)	106	%	70-130		25		06/22/18 23:11	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-130		25		06/22/18 23:11	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-SB02-3' **Lab ID: 92388710001** Collected: 06/14/18 13:15 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	13.4	%	0.10	0.10	1		06/19/18 10:03		

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-SB04-1' **Lab ID: 92388710002** Collected: 06/14/18 13:30 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3050									
Lead	2.2	mg/kg	0.49	0.25	1	06/20/18 00:45	06/20/18 16:49	7439-92-1	
8270 MSSV PAH Microwave SC Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	ug/kg	374	86.1	1	06/16/18 15:48	06/21/18 16:12	83-32-9	
Acenaphthylene	ND	ug/kg	374	88.4	1	06/16/18 15:48	06/21/18 16:12	208-96-8	
Anthracene	ND	ug/kg	374	83.8	1	06/16/18 15:48	06/21/18 16:12	120-12-7	
Benzo(a)anthracene	ND	ug/kg	374	69.1	1	06/16/18 15:48	06/21/18 16:12	56-55-3	
Benzo(a)pyrene	ND	ug/kg	374	71.4	1	06/16/18 15:48	06/21/18 16:12	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	374	64.6	1	06/16/18 15:48	06/21/18 16:12	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	374	95.2	1	06/16/18 15:48	06/21/18 16:12	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	374	73.6	1	06/16/18 15:48	06/21/18 16:12	207-08-9	
Chrysene	ND	ug/kg	374	49.8	1	06/16/18 15:48	06/21/18 16:12	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	374	79.3	1	06/16/18 15:48	06/21/18 16:12	53-70-3	
Fluoranthene	ND	ug/kg	374	54.4	1	06/16/18 15:48	06/21/18 16:12	206-44-0	
Fluorene	ND	ug/kg	374	77.0	1	06/16/18 15:48	06/21/18 16:12	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	374	77.0	1	06/16/18 15:48	06/21/18 16:12	193-39-5	
1-Methylnaphthalene	ND	ug/kg	374	97.4	1	06/16/18 15:48	06/21/18 16:12	90-12-0	
2-Methylnaphthalene	ND	ug/kg	374	80.4	1	06/16/18 15:48	06/21/18 16:12	91-57-6	
Naphthalene	ND	ug/kg	374	91.8	1	06/16/18 15:48	06/21/18 16:12	91-20-3	
Phenanthrene	ND	ug/kg	374	62.3	1	06/16/18 15:48	06/21/18 16:12	85-01-8	
Pyrene	ND	ug/kg	374	63.4	1	06/16/18 15:48	06/21/18 16:12	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	46	%	23-110		1	06/16/18 15:48	06/21/18 16:12	4165-60-0	
2-Fluorobiphenyl (S)	48	%	30-110		1	06/16/18 15:48	06/21/18 16:12	321-60-8	
Terphenyl-d14 (S)	39	%	28-110		1	06/16/18 15:48	06/21/18 16:12	1718-51-0	
8260/5035A SC Volatile Org Analytical Method: EPA 8260									
Benzene	ND	ug/kg	163	52.2	25		06/26/18 02:32	71-43-2	
Ethylbenzene	ND	ug/kg	163	58.7	25		06/26/18 02:32	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	163	48.9	25		06/26/18 02:32	1634-04-4	
Naphthalene	ND	ug/kg	163	39.1	25		06/26/18 02:32	91-20-3	
Toluene	ND	ug/kg	163	58.7	25		06/26/18 02:32	108-88-3	
Xylene (Total)	ND	ug/kg	326	117	25		06/26/18 02:32	1330-20-7	
m&p-Xylene	ND	ug/kg	326	117	25		06/26/18 02:32	179601-23-1	
o-Xylene	ND	ug/kg	163	61.9	25		06/26/18 02:32	95-47-6	
Surrogates									
Toluene-d8 (S)	106	%	70-130		25		06/26/18 02:32	2037-26-5	D3
4-Bromofluorobenzene (S)	101	%	70-130		25		06/26/18 02:32	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-130		25		06/26/18 02:32	17060-07-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	10.8	%	0.10	0.10	1		06/19/18 10:03		

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-SB01-3' **Lab ID: 92388710003** Collected: 06/14/18 13:45 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3050									
Lead	2.3	mg/kg	0.35	0.17	1	06/20/18 00:45	06/20/18 16:52	7439-92-1	
8270 MSSV PAH Microwave SC Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	ug/kg	395	91.1	1	06/16/18 15:48	06/21/18 16:43	83-32-9	
Acenaphthylene	ND	ug/kg	395	93.5	1	06/16/18 15:48	06/21/18 16:43	208-96-8	
Anthracene	ND	ug/kg	395	88.7	1	06/16/18 15:48	06/21/18 16:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	395	73.1	1	06/16/18 15:48	06/21/18 16:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	395	75.5	1	06/16/18 15:48	06/21/18 16:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	395	68.3	1	06/16/18 15:48	06/21/18 16:43	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	395	101	1	06/16/18 15:48	06/21/18 16:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	395	77.9	1	06/16/18 15:48	06/21/18 16:43	207-08-9	
Chrysene	ND	ug/kg	395	52.7	1	06/16/18 15:48	06/21/18 16:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	395	83.9	1	06/16/18 15:48	06/21/18 16:43	53-70-3	
Fluoranthene	ND	ug/kg	395	57.5	1	06/16/18 15:48	06/21/18 16:43	206-44-0	
Fluorene	ND	ug/kg	395	81.5	1	06/16/18 15:48	06/21/18 16:43	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	395	81.5	1	06/16/18 15:48	06/21/18 16:43	193-39-5	
1-Methylnaphthalene	ND	ug/kg	395	103	1	06/16/18 15:48	06/21/18 16:43	90-12-0	
2-Methylnaphthalene	ND	ug/kg	395	85.1	1	06/16/18 15:48	06/21/18 16:43	91-57-6	
Naphthalene	ND	ug/kg	395	97.1	1	06/16/18 15:48	06/21/18 16:43	91-20-3	
Phenanthrene	ND	ug/kg	395	65.9	1	06/16/18 15:48	06/21/18 16:43	85-01-8	
Pyrene	ND	ug/kg	395	67.1	1	06/16/18 15:48	06/21/18 16:43	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	56	%	23-110		1	06/16/18 15:48	06/21/18 16:43	4165-60-0	
2-Fluorobiphenyl (S)	53	%	30-110		1	06/16/18 15:48	06/21/18 16:43	321-60-8	
Terphenyl-d14 (S)	35	%	28-110		1	06/16/18 15:48	06/21/18 16:43	1718-51-0	
8260/5035A SC Volatile Org Analytical Method: EPA 8260									
Benzene	ND	ug/kg	161	51.4	25		06/26/18 02:53	71-43-2	
Ethylbenzene	ND	ug/kg	161	57.8	25		06/26/18 02:53	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	161	48.2	25		06/26/18 02:53	1634-04-4	
Naphthalene	ND	ug/kg	161	38.6	25		06/26/18 02:53	91-20-3	
Toluene	ND	ug/kg	161	57.8	25		06/26/18 02:53	108-88-3	
Xylene (Total)	ND	ug/kg	321	116	25		06/26/18 02:53	1330-20-7	
m&p-Xylene	ND	ug/kg	321	116	25		06/26/18 02:53	179601-23-1	
o-Xylene	ND	ug/kg	161	61.0	25		06/26/18 02:53	95-47-6	
Surrogates									
Toluene-d8 (S)	102	%	70-130		25		06/26/18 02:53	2037-26-5	D3
4-Bromofluorobenzene (S)	108	%	70-130		25		06/26/18 02:53	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-130		25		06/26/18 02:53	17060-07-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	15.4	%	0.10	0.10	1		06/19/18 10:03		

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-SB03-4' **Lab ID: 92388710004** Collected: 06/14/18 13:55 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3050									
Lead	1.8	mg/kg	0.40	0.20	1	06/20/18 00:45	06/20/18 16:55	7439-92-1	
8270 MSSV PAH Microwave SC Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	ug/kg	3650	840	10	06/16/18 15:48	06/21/18 17:13	83-32-9	
Acenaphthylene	ND	ug/kg	3650	862	10	06/16/18 15:48	06/21/18 17:13	208-96-8	
Anthracene	ND	ug/kg	3650	818	10	06/16/18 15:48	06/21/18 17:13	120-12-7	
Benzo(a)anthracene	ND	ug/kg	3650	674	10	06/16/18 15:48	06/21/18 17:13	56-55-3	
Benzo(a)pyrene	ND	ug/kg	3650	696	10	06/16/18 15:48	06/21/18 17:13	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	3650	630	10	06/16/18 15:48	06/21/18 17:13	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	3650	929	10	06/16/18 15:48	06/21/18 17:13	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	3650	719	10	06/16/18 15:48	06/21/18 17:13	207-08-9	
Chrysene	ND	ug/kg	3650	486	10	06/16/18 15:48	06/21/18 17:13	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	3650	774	10	06/16/18 15:48	06/21/18 17:13	53-70-3	
Fluoranthene	ND	ug/kg	3650	531	10	06/16/18 15:48	06/21/18 17:13	206-44-0	
Fluorene	ND	ug/kg	3650	752	10	06/16/18 15:48	06/21/18 17:13	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3650	752	10	06/16/18 15:48	06/21/18 17:13	193-39-5	
1-Methylnaphthalene	6150	ug/kg	3650	951	10	06/16/18 15:48	06/21/18 17:13	90-12-0	
2-Methylnaphthalene	9150	ug/kg	3650	785	10	06/16/18 15:48	06/21/18 17:13	91-57-6	
Naphthalene	2630J	ug/kg	3650	895	10	06/16/18 15:48	06/21/18 17:13	91-20-3	
Phenanthrene	1730J	ug/kg	3650	608	10	06/16/18 15:48	06/21/18 17:13	85-01-8	
Pyrene	ND	ug/kg	3650	619	10	06/16/18 15:48	06/21/18 17:13	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	23-110		10	06/16/18 15:48	06/21/18 17:13	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	30-110		10	06/16/18 15:48	06/21/18 17:13	321-60-8	S4
Terphenyl-d14 (S)	0	%	28-110		10	06/16/18 15:48	06/21/18 17:13	1718-51-0	S4
8260/5035A SC Volatile Org Analytical Method: EPA 8260									
Benzene	ND	ug/kg	143	45.6	25		06/26/18 03:13	71-43-2	
Ethylbenzene	5030	ug/kg	143	51.3	25		06/26/18 03:13	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	143	42.8	25		06/26/18 03:13	1634-04-4	
Naphthalene	ND	ug/kg	143	34.2	25		06/26/18 03:13	91-20-3	
Toluene	ND	ug/kg	143	51.3	25		06/26/18 03:13	108-88-3	
Xylene (Total)	20700	ug/kg	2280	821	200		06/26/18 18:42	1330-20-7	
m&p-Xylene	20700	ug/kg	2280	821	200		06/26/18 18:42	179601-23-1	
o-Xylene	ND	ug/kg	143	54.2	25		06/26/18 03:13	95-47-6	
Surrogates									
Toluene-d8 (S)	107	%	70-130		25		06/26/18 03:13	2037-26-5	
4-Bromofluorobenzene (S)	240	%	70-130		25		06/26/18 03:13	460-00-4	S2
1,2-Dichloroethane-d4 (S)	97	%	70-130		25		06/26/18 03:13	17060-07-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	8.6	%	0.10	0.10	1		06/19/18 10:03		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-MW2-5' **Lab ID: 92388710005** Collected: 06/15/18 12:20 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3050									
Lead	1.5	mg/kg	0.34	0.17	1	06/20/18 00:45	06/20/18 16:58	7439-92-1	
8270 MSSV PAH Microwave SC Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	ug/kg	386	88.9	1	06/16/18 15:48	06/21/18 17:43	83-32-9	
Acenaphthylene	ND	ug/kg	386	91.3	1	06/16/18 15:48	06/21/18 17:43	208-96-8	
Anthracene	ND	ug/kg	386	86.6	1	06/16/18 15:48	06/21/18 17:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	386	71.4	1	06/16/18 15:48	06/21/18 17:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	386	73.7	1	06/16/18 15:48	06/21/18 17:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	386	66.7	1	06/16/18 15:48	06/21/18 17:43	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	386	98.3	1	06/16/18 15:48	06/21/18 17:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	386	76.0	1	06/16/18 15:48	06/21/18 17:43	207-08-9	
Chrysene	ND	ug/kg	386	51.5	1	06/16/18 15:48	06/21/18 17:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	386	81.9	1	06/16/18 15:48	06/21/18 17:43	53-70-3	
Fluoranthene	ND	ug/kg	386	56.2	1	06/16/18 15:48	06/21/18 17:43	206-44-0	
Fluorene	ND	ug/kg	386	79.6	1	06/16/18 15:48	06/21/18 17:43	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	386	79.6	1	06/16/18 15:48	06/21/18 17:43	193-39-5	
1-Methylnaphthalene	ND	ug/kg	386	101	1	06/16/18 15:48	06/21/18 17:43	90-12-0	
2-Methylnaphthalene	ND	ug/kg	386	83.1	1	06/16/18 15:48	06/21/18 17:43	91-57-6	
Naphthalene	ND	ug/kg	386	94.8	1	06/16/18 15:48	06/21/18 17:43	91-20-3	
Phenanthrene	ND	ug/kg	386	64.3	1	06/16/18 15:48	06/21/18 17:43	85-01-8	
Pyrene	ND	ug/kg	386	65.5	1	06/16/18 15:48	06/21/18 17:43	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	62	%	23-110		1	06/16/18 15:48	06/21/18 17:43	4165-60-0	
2-Fluorobiphenyl (S)	66	%	30-110		1	06/16/18 15:48	06/21/18 17:43	321-60-8	
Terphenyl-d14 (S)	44	%	28-110		1	06/16/18 15:48	06/21/18 17:43	1718-51-0	
8260/5035A SC Volatile Org Analytical Method: EPA 8260									
Benzene	ND	ug/kg	150	47.9	25		06/26/18 03:34	71-43-2	
Ethylbenzene	ND	ug/kg	150	53.9	25		06/26/18 03:34	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	150	44.9	25		06/26/18 03:34	1634-04-4	
Naphthalene	ND	ug/kg	150	35.9	25		06/26/18 03:34	91-20-3	
Toluene	ND	ug/kg	150	53.9	25		06/26/18 03:34	108-88-3	
Xylene (Total)	ND	ug/kg	300	108	25		06/26/18 03:34	1330-20-7	
m&p-Xylene	ND	ug/kg	300	108	25		06/26/18 03:34	179601-23-1	
o-Xylene	ND	ug/kg	150	56.9	25		06/26/18 03:34	95-47-6	
Surrogates									
Toluene-d8 (S)	104	%	70-130		25		06/26/18 03:34	2037-26-5	D3
4-Bromofluorobenzene (S)	102	%	70-130		25		06/26/18 03:34	460-00-4	
1,2-Dichloroethane-d4 (S)	85	%	70-130		25		06/26/18 03:34	17060-07-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	13.1	%	0.10	0.10	1		06/19/18 10:04		
Total Organic Carbon Quad Analytical Method: EPA 9060									
Total Organic Carbon	1480	mg/kg	740	222	1		06/25/18 09:24	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-MW2-5' **Lab ID: 92388710005** Collected: 06/15/18 12:20 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Total Organic Carbon Quad		Analytical Method: EPA 9060							
Total Organic Carbon	1450	mg/kg	745	223	1		06/25/18 09:29	7440-44-0	
Total Organic Carbon	1220	mg/kg	746	224	1		06/25/18 09:34	7440-44-0	
Total Organic Carbon	1590	mg/kg	746	224	1		06/25/18 09:40	7440-44-0	
Mean Total Organic Carbon	1440	mg/kg	744	223	1		06/25/18 09:24	7440-44-0	
Surrogates									
RSD%	10.8	%			1		06/25/18 09:24		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (soil)

Pace Project No.: 92388710

Sample: 11399-MW3-3' Lab ID: 92388710006 Collected: 06/15/18 13:10 Received: 06/16/18 10:15 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3050									
Lead	1.9	mg/kg	0.41	0.20	1	06/20/18 00:45	06/20/18 17:01	7439-92-1	
8270 MSSV PAH Microwave SC Analytical Method: EPA 8270 Preparation Method: EPA 3546									
Acenaphthene	ND	ug/kg	350	80.7	1	06/23/18 16:36	06/26/18 22:17	83-32-9	
Acenaphthylene	ND	ug/kg	350	82.8	1	06/23/18 16:36	06/26/18 22:17	208-96-8	
Anthracene	ND	ug/kg	350	78.6	1	06/23/18 16:36	06/26/18 22:17	120-12-7	
Benzo(a)anthracene	ND	ug/kg	350	64.8	1	06/23/18 16:36	06/26/18 22:17	56-55-3	
Benzo(a)pyrene	ND	ug/kg	350	66.9	1	06/23/18 16:36	06/26/18 22:17	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	350	60.5	1	06/23/18 16:36	06/26/18 22:17	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	350	89.2	1	06/23/18 16:36	06/26/18 22:17	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	350	69.0	1	06/23/18 16:36	06/26/18 22:17	207-08-9	
Chrysene	ND	ug/kg	350	46.7	1	06/23/18 16:36	06/26/18 22:17	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	350	74.3	1	06/23/18 16:36	06/26/18 22:17	53-70-3	
Fluoranthene	ND	ug/kg	350	51.0	1	06/23/18 16:36	06/26/18 22:17	206-44-0	
Fluorene	ND	ug/kg	350	72.2	1	06/23/18 16:36	06/26/18 22:17	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	350	72.2	1	06/23/18 16:36	06/26/18 22:17	193-39-5	
1-Methylnaphthalene	ND	ug/kg	350	91.3	1	06/23/18 16:36	06/26/18 22:17	90-12-0	
2-Methylnaphthalene	ND	ug/kg	350	75.4	1	06/23/18 16:36	06/26/18 22:17	91-57-6	
Naphthalene	ND	ug/kg	350	86.0	1	06/23/18 16:36	06/26/18 22:17	91-20-3	
Phenanthrene	ND	ug/kg	350	58.4	1	06/23/18 16:36	06/26/18 22:17	85-01-8	
Pyrene	ND	ug/kg	350	59.4	1	06/23/18 16:36	06/26/18 22:17	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	32	%	23-110		1	06/23/18 16:36	06/26/18 22:17	4165-60-0	
2-Fluorobiphenyl (S)	35	%	30-110		1	06/23/18 16:36	06/26/18 22:17	321-60-8	
Terphenyl-d14 (S)	31	%	28-110		1	06/23/18 16:36	06/26/18 22:17	1718-51-0	
8260/5035A SC Volatile Org Analytical Method: EPA 8260									
Benzene	ND	ug/kg	3.1	0.98	1		06/23/18 00:54	71-43-2	
Ethylbenzene	ND	ug/kg	3.1	1.1	1		06/23/18 00:54	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	3.1	0.92	1		06/23/18 00:54	1634-04-4	
Naphthalene	ND	ug/kg	3.1	0.74	1		06/23/18 00:54	91-20-3	
Toluene	ND	ug/kg	3.1	1.1	1		06/23/18 00:54	108-88-3	
Xylene (Total)	ND	ug/kg	6.1	2.2	1		06/23/18 00:54	1330-20-7	
m&p-Xylene	ND	ug/kg	6.1	2.2	1		06/23/18 00:54	179601-23-1	
o-Xylene	ND	ug/kg	3.1	1.2	1		06/23/18 00:54	95-47-6	
Surrogates									
Toluene-d8 (S)	107	%	70-130		1		06/23/18 00:54	2037-26-5	
4-Bromofluorobenzene (S)	107	%	70-130		1		06/23/18 00:54	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	70-130		1		06/23/18 00:54	17060-07-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	7.3	%	0.10	0.10	1		06/19/18 10:04		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

QC Batch: 415867 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 92388710001, 92388710002, 92388710003, 92388710004, 92388710005, 92388710006

METHOD BLANK: 2306172 Matrix: Solid
Associated Lab Samples: 92388710001, 92388710002, 92388710003, 92388710004, 92388710005, 92388710006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Lead	mg/kg	ND	0.50	0.25	06/23/18 12:39	

LABORATORY CONTROL SAMPLE: 2306173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	50	44.5	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2306174 2306175

Parameter	Units	92388710001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	2.5	34.4	33.1	30.1	30.2	80	84	75-125	1	20	

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

QC Batch: 416383

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV 5035A Volatile Organics

Associated Lab Samples: 92388710001, 92388710006

METHOD BLANK: 2309095

Matrix: Solid

Associated Lab Samples: 92388710001, 92388710006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/kg	ND	6.4	2.1	06/22/18 17:04	
Ethylbenzene	ug/kg	ND	6.4	2.3	06/22/18 17:04	
m&p-Xylene	ug/kg	ND	12.8	4.6	06/22/18 17:04	
Methyl-tert-butyl ether	ug/kg	ND	6.4	1.9	06/22/18 17:04	
Naphthalene	ug/kg	ND	6.4	1.5	06/22/18 17:04	
o-Xylene	ug/kg	ND	6.4	2.4	06/22/18 17:04	
Toluene	ug/kg	ND	6.4	2.3	06/22/18 17:04	
Xylene (Total)	ug/kg	ND	12.8	4.6	06/22/18 17:04	
1,2-Dichloroethane-d4 (S)	%	93	70-130		06/22/18 17:04	
4-Bromofluorobenzene (S)	%	105	70-130		06/22/18 17:04	
Toluene-d8 (S)	%	102	70-130		06/22/18 17:04	

LABORATORY CONTROL SAMPLE: 2309096

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	59.5	57.4	96	70-130	
Ethylbenzene	ug/kg	59.5	54.6	92	70-130	
m&p-Xylene	ug/kg	119	109	92	70-130	
Methyl-tert-butyl ether	ug/kg	59.5	56.6	95	70-130	
Naphthalene	ug/kg	59.5	56.1	94	70-130	
o-Xylene	ug/kg	59.5	56.5	95	70-130	
Toluene	ug/kg	59.5	54.2	91	70-130	
Xylene (Total)	ug/kg	179	166	93	70-130	
1,2-Dichloroethane-d4 (S)	%			94	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE SAMPLE: 2309923

Parameter	Units	92389221002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	ND	26.7	24.1	90	70-130	
Ethylbenzene	ug/kg	ND	26.7	22.6	85	70-130	
m&p-Xylene	ug/kg	ND	53.3	45.2	85	70-130	
Methyl-tert-butyl ether	ug/kg	ND	26.7	28.3	106	70-130	
Naphthalene	ug/kg	ND	26.7	24.9	93	70-130	
o-Xylene	ug/kg	ND	26.7	22.3	84	70-130	
Toluene	ug/kg	ND	26.7	22.7	85	70-130	
Xylene (Total)	ug/kg	ND	80.1	67.5	84	70-130	

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

MATRIX SPIKE SAMPLE: 2309923		92389221002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%				107	70-130	
4-Bromofluorobenzene (S)	%				98	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2309922

Parameter	Units	92389221001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	
m&p-Xylene	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
o-Xylene	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	96	104	20		
4-Bromofluorobenzene (S)	%	99	99	11		
Toluene-d8 (S)	%	104	105	12		

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QUALITY CONTROL DATA

Project: Hilton Head (soil)
Pace Project No.: 92388710

QC Batch: 416582 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92388710002, 92388710003, 92388710004, 92388710005

METHOD BLANK: 2309972 Matrix: Solid
Associated Lab Samples: 92388710002, 92388710003, 92388710004, 92388710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/kg	ND	6.2	2.0	06/25/18 19:42	
Ethylbenzene	ug/kg	ND	6.2	2.2	06/25/18 19:42	
m&p-Xylene	ug/kg	ND	12.5	4.5	06/25/18 19:42	
Methyl-tert-butyl ether	ug/kg	ND	6.2	1.9	06/25/18 19:42	
Naphthalene	ug/kg	ND	6.2	1.5	06/25/18 19:42	
o-Xylene	ug/kg	ND	6.2	2.4	06/25/18 19:42	
Toluene	ug/kg	ND	6.2	2.2	06/25/18 19:42	
Xylene (Total)	ug/kg	ND	12.5	4.5	06/25/18 19:42	
1,2-Dichloroethane-d4 (S)	%	92	70-130		06/25/18 19:42	
4-Bromofluorobenzene (S)	%	96	70-130		06/25/18 19:42	
Toluene-d8 (S)	%	100	70-130		06/25/18 19:42	

LABORATORY CONTROL SAMPLE: 2309973

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	59.5	49.8	84	70-130	
Ethylbenzene	ug/kg	59.5	50.2	84	70-130	
m&p-Xylene	ug/kg	119	100	84	70-130	
Methyl-tert-butyl ether	ug/kg	59.5	51.0	86	70-130	
Naphthalene	ug/kg	59.5	52.3	88	70-130	
o-Xylene	ug/kg	59.5	51.5	86	70-130	
Toluene	ug/kg	59.5	45.8	77	70-130	
Xylene (Total)	ug/kg	179	152	85	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			94	70-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2309974 2309975

Parameter	Units	92388710005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	ND	778	757	675	704	87	93	70-130	4	30	
Ethylbenzene	ug/kg	ND	778	757	689	718	89	95	70-130	4	30	
m&p-Xylene	ug/kg	ND	1550	1520	1430	1480	92	98	70-130	3	30	
Methyl-tert-butyl ether	ug/kg	ND	778	757	653	699	84	92	70-130	7	30	
Naphthalene	ug/kg	ND	778	757	607	621	78	82	70-130	2	30	
o-Xylene	ug/kg	ND	778	757	734	761	94	101	70-130	4	30	
Toluene	ug/kg	ND	778	757	655	657	84	87	70-130	0	30	

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2309974 2309975												
Parameter	Units	92388710005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Max RPD	Qual
Xylene (Total)	ug/kg	ND	2340	2270	2170	2240	93	99	70-130	3	30	
1,2-Dichloroethane-d4 (S)	%						88	93	70-130			
4-Bromofluorobenzene (S)	%						102	105	70-130			
Toluene-d8 (S)	%						99	100	70-130			

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

QC Batch: 8349

Analysis Method: EPA 8015C

QC Batch Method: EPA 3550C

Analysis Description: 8015C Solid GCSV

Associated Lab Samples: 92388710001

METHOD BLANK: 38551

Matrix: Solid

Associated Lab Samples: 92388710001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
DRO (C10-C28)	mg/kg	5.0J	7.0	3.0	06/21/18 10:34	
o-Terphenyl (S)	%.	92	50-150		06/21/18 10:34	

LABORATORY CONTROL SAMPLE: 38552

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
DRO (C10-C28)	mg/kg	33.3	26.3	79	70-130	
o-Terphenyl (S)	%.			89	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38553

38554

Parameter	Units	92388685001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
DRO (C10-C28)	mg/kg	2130	36.7	36.6	1910	2320	-609	522	10-126	20	37	M6
o-Terphenyl (S)	%.						41	58	50-150			S4

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (soil)
Pace Project No.: 92388710

QC Batch: 415539 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 Solid MSSV Microwave PAH SC
Associated Lab Samples: 92388710001, 92388710002, 92388710003, 92388710004, 92388710005

METHOD BLANK: 2304411 Matrix: Solid
Associated Lab Samples: 92388710001, 92388710002, 92388710003, 92388710004, 92388710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	325	84.6	06/18/18 19:01	
2-Methylnaphthalene	ug/kg	ND	325	69.8	06/18/18 19:01	
Acenaphthene	ug/kg	ND	325	74.8	06/18/18 19:01	
Acenaphthylene	ug/kg	ND	325	76.7	06/18/18 19:01	
Anthracene	ug/kg	ND	325	72.8	06/18/18 19:01	
Benzo(a)anthracene	ug/kg	ND	325	60.0	06/18/18 19:01	
Benzo(a)pyrene	ug/kg	ND	325	62.0	06/18/18 19:01	
Benzo(b)fluoranthene	ug/kg	ND	325	56.1	06/18/18 19:01	
Benzo(g,h,i)perylene	ug/kg	ND	325	82.6	06/18/18 19:01	
Benzo(k)fluoranthene	ug/kg	ND	325	63.9	06/18/18 19:01	
Chrysene	ug/kg	45.6J	325	43.3	06/18/18 19:01	
Dibenz(a,h)anthracene	ug/kg	ND	325	68.9	06/18/18 19:01	
Fluoranthene	ug/kg	ND	325	47.2	06/18/18 19:01	
Fluorene	ug/kg	ND	325	66.9	06/18/18 19:01	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	325	66.9	06/18/18 19:01	
Naphthalene	ug/kg	ND	325	79.7	06/18/18 19:01	
Phenanthrene	ug/kg	ND	325	54.1	06/18/18 19:01	
Pyrene	ug/kg	ND	325	55.1	06/18/18 19:01	
2-Fluorobiphenyl (S)	%	73	30-110		06/18/18 19:01	
Nitrobenzene-d5 (S)	%	72	23-110		06/18/18 19:01	
Terphenyl-d14 (S)	%	49	28-110		06/18/18 19:01	

LABORATORY CONTROL SAMPLE: 2304412

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	1650	1110	67	70-130	1g,2g
2-Methylnaphthalene	ug/kg	1650	1160	70	70-130	
Acenaphthene	ug/kg	1650	1120	68	70-130	
Acenaphthylene	ug/kg	1650	1170	71	70-130	
Anthracene	ug/kg	1650	1140	69	70-130	
Benzo(a)anthracene	ug/kg	1650	1180	72	70-130	
Benzo(a)pyrene	ug/kg	1650	1110	67	70-130	
Benzo(b)fluoranthene	ug/kg	1650	1080	66	70-130	
Benzo(g,h,i)perylene	ug/kg	1650	1150	70	70-130	
Benzo(k)fluoranthene	ug/kg	1650	1130	69	70-130	
Chrysene	ug/kg	1650	1180	72	70-130	
Dibenz(a,h)anthracene	ug/kg	1650	1130	69	70-130	
Fluoranthene	ug/kg	1650	1150	70	70-130	
Fluorene	ug/kg	1650	1090	66	70-130	
Indeno(1,2,3-cd)pyrene	ug/kg	1650	1160	70	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

LABORATORY CONTROL SAMPLE: 2304412

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	1650	1130	69	70-130	
Phenanthrene	ug/kg	1650	1140	69	70-130	
Pyrene	ug/kg	1650	1200	73	70-130	
2-Fluorobiphenyl (S)	%			70	30-110	
Nitrobenzene-d5 (S)	%			68	23-110	
Terphenyl-d14 (S)	%			48	28-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (soil)
Pace Project No.: 92388710

QC Batch:	416452	Analysis Method:	EPA 8270
QC Batch Method:	EPA 3546	Analysis Description:	8270 Solid MSSV Microwave PAH SC
Associated Lab Samples:	92388710006		

METHOD BLANK: 2309413 Matrix: Solid
Associated Lab Samples: 92388710006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	325	84.6	06/26/18 20:19	
2-Methylnaphthalene	ug/kg	ND	325	69.8	06/26/18 20:19	
Acenaphthene	ug/kg	ND	325	74.8	06/26/18 20:19	
Acenaphthylene	ug/kg	ND	325	76.7	06/26/18 20:19	
Anthracene	ug/kg	ND	325	72.8	06/26/18 20:19	
Benzo(a)anthracene	ug/kg	ND	325	60.0	06/26/18 20:19	
Benzo(a)pyrene	ug/kg	ND	325	62.0	06/26/18 20:19	
Benzo(b)fluoranthene	ug/kg	ND	325	56.1	06/26/18 20:19	
Benzo(g,h,i)perylene	ug/kg	ND	325	82.6	06/26/18 20:19	
Benzo(k)fluoranthene	ug/kg	ND	325	63.9	06/26/18 20:19	
Chrysene	ug/kg	ND	325	43.3	06/26/18 20:19	
Dibenz(a,h)anthracene	ug/kg	ND	325	68.9	06/26/18 20:19	
Fluoranthene	ug/kg	ND	325	47.2	06/26/18 20:19	
Fluorene	ug/kg	ND	325	66.9	06/26/18 20:19	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	325	66.9	06/26/18 20:19	
Naphthalene	ug/kg	ND	325	79.7	06/26/18 20:19	
Phenanthrene	ug/kg	ND	325	54.1	06/26/18 20:19	
Pyrene	ug/kg	ND	325	55.1	06/26/18 20:19	
2-Fluorobiphenyl (S)	%	73	30-110		06/26/18 20:19	
Nitrobenzene-d5 (S)	%	65	23-110		06/26/18 20:19	
Terphenyl-d14 (S)	%	57	28-110		06/26/18 20:19	

LABORATORY CONTROL SAMPLE: 2309414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	1640	1150	70	70-130	
2-Methylnaphthalene	ug/kg	1640	1170	71	70-130	
Acenaphthene	ug/kg	1640	1120	68	70-130	2g
Acenaphthylene	ug/kg	1640	1270	77	70-130	
Anthracene	ug/kg	1640	1210	74	70-130	
Benzo(a)anthracene	ug/kg	1640	1150	70	70-130	
Benzo(a)pyrene	ug/kg	1640	1170	71	70-130	
Benzo(b)fluoranthene	ug/kg	1640	1130	69	70-130	2g
Benzo(g,h,i)perylene	ug/kg	1640	1210	74	70-130	
Benzo(k)fluoranthene	ug/kg	1640	1100	67	70-130	2g
Chrysene	ug/kg	1640	1080	65	70-130	2g
Dibenz(a,h)anthracene	ug/kg	1640	1150	70	70-130	
Fluoranthene	ug/kg	1640	1190	73	70-130	
Fluorene	ug/kg	1640	1140	69	70-130	2g
Indeno(1,2,3-cd)pyrene	ug/kg	1640	1240	75	70-130	

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

LABORATORY CONTROL SAMPLE: 2309414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	1640	1090	66	70-130	2g
Phenanthrene	ug/kg	1640	1180	71	70-130	
Pyrene	ug/kg	1640	1130	69	70-130	2g
2-Fluorobiphenyl (S)	%			73	30-110	
Nitrobenzene-d5 (S)	%			68	23-110	
Terphenyl-d14 (S)	%			48	28-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

QC Batch: 415619 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92388710001, 92388710002, 92388710003, 92388710004, 92388710005, 92388710006

SAMPLE DUPLICATE: 2304742

Parameter	Units	92388696023 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.3	17.3	0	25	

SAMPLE DUPLICATE: 2304938

Parameter	Units	92388710006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.3	7.3	1	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (soil)

Pace Project No.: 92388710

QC Batch: 292689

Analysis Method: EPA 9060

QC Batch Method: EPA 9060

Analysis Description: 9060 TOC Average

Associated Lab Samples: 92388710005

METHOD BLANK: 1711735

Matrix: Solid

Associated Lab Samples: 92388710005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mean Total Organic Carbon	mg/kg	ND	647	194	06/25/18 08:37	

LABORATORY CONTROL SAMPLE: 1711736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/kg	120000	117000	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1711737 1711738

Parameter	Units	92388710005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/kg	1440	6880	6900	7940	8080	94	96	50-150	2	30	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Hilton Head (soil)

Pace Project No.: 92388710

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte
PASI-G	Pace Analytical Services - Green Bay
PASI-GA	Pace Analytical Services - Atlanta, GA

ANALYTE QUALIFIERS

1g	Comment applies to all compounds with recovery outside control limits.
2g	Recovery did not meet 70-130% South Carolina required limits. Recovery meets method required in-house generated control limits.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
S2	Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Hilton Head (soil)

Pace Project No.: 92388710

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92388710001	11399-SB02-3'	EPA 3550C	8349	EPA 8015C	8446
92388710001	11399-SB02-3'	EPA 3050	415867	EPA 6010	415931
92388710002	11399-SB04-1'	EPA 3050	415867	EPA 6010	415931
92388710003	11399-SB01-3'	EPA 3050	415867	EPA 6010	415931
92388710004	11399-SB03-4'	EPA 3050	415867	EPA 6010	415931
92388710005	11399-MW2-5'	EPA 3050	415867	EPA 6010	415931
92388710006	11399-MW3-3'	EPA 3050	415867	EPA 6010	415931
92388710001	11399-SB02-3'	EPA 3546	415539	EPA 8270	415654
92388710002	11399-SB04-1'	EPA 3546	415539	EPA 8270	415654
92388710003	11399-SB01-3'	EPA 3546	415539	EPA 8270	415654
92388710004	11399-SB03-4'	EPA 3546	415539	EPA 8270	415654
92388710005	11399-MW2-5'	EPA 3546	415539	EPA 8270	415654
92388710006	11399-MW3-3'	EPA 3546	416452	EPA 8270	416731
92388710001	11399-SB02-3'	EPA 8260	416383		
92388710002	11399-SB04-1'	EPA 8260	416582		
92388710003	11399-SB01-3'	EPA 8260	416582		
92388710004	11399-SB03-4'	EPA 8260	416582		
92388710005	11399-MW2-5'	EPA 8260	416582		
92388710006	11399-MW3-3'	EPA 8260	416383		
92388710001	11399-SB02-3'	ASTM D2974-87	415619		
92388710002	11399-SB04-1'	ASTM D2974-87	415619		
92388710003	11399-SB01-3'	ASTM D2974-87	415619		
92388710004	11399-SB03-4'	ASTM D2974-87	415619		
92388710005	11399-MW2-5'	ASTM D2974-87	415619		
92388710006	11399-MW3-3'	ASTM D2974-87	415619		
92388710005	11399-MW2-5'	EPA 9060	292689		
92388710005	11399-MW2-5'	EPA 9060	292690		

REPORT OF LABORATORY ANALYSIS

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	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:

Asheville ☐

Eden ☐

Greenwood ☐

Huntersville ☒

Raleigh ☐

Mechanicsville ☐

Sample Condition
Upon Receipt

Client Name:

AECOM

Project #:

WO#: 92388710



92388710

Courier:

☒ Fed Ex

☐ UPS

☐ USPS

☐ Client

☐ Commercial

☐ Pace

☐ Other: _____

Custody Seal Present?

☒ Yes

☐ No

Seals Intact?

☒ Yes

☐ No

Date/Initials Person Examining Contents: LBG-16-18

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other

Thermometer:

☐ IR Gun ID: 92T040

Type of Ice:

☒ Wet

☐ Blue

☐ None

Biological Tissue Frozen?

☐ Yes

☐ No

☐ N/A

Cooler Temp (°C): 4.6, 4.7

Correction Factor: Add/Subtract (°C) +0.4

Temp should be above freezing to 6°C

Cooler Temp Corrected (°C): 5.0, 5.1

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil ☒ N/A, water sample

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

☐ Yes

☐ No

Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

			Comments/Discrepancy:
Chain of Custody Present?	☒ Yes ☐ No ☐ N/A	1.	
Samples Arrived within Hold Time?	☒ Yes ☐ No ☐ N/A	2.	
Short Hold Time Analysis (<72 hr.)?	☐ Yes ☒ No ☐ N/A	3.	
Rush Turn Around Time Requested?	☐ Yes ☒ No ☐ N/A	4.	
Sufficient Volume?	☒ Yes ☐ No ☐ N/A	5.	
Correct Containers Used?	☒ Yes ☐ No ☐ N/A	6.	
-Pace Containers Used?	☒ Yes ☐ No ☐ N/A		
Containers Intact?	☒ Yes ☐ No ☐ N/A	7.	
Dissolved analysis: Samples Field Filtered?	☐ Yes ☒ No ☐ N/A	8.	
Sample Labels Match COC?	☒ Yes ☐ No ☐ N/A	9.	
-Includes Date/Time/ID/Analysis Matrix: <u>SL</u>			
Headspace in VOA Vials (>5-6mm)?	☐ Yes ☐ No ☒ N/A	10.	
Trip Blank Present?	☐ Yes ☒ No ☐ N/A	11.	
Trip Blank Custody Seals Present?	☐ Yes ☐ No ☐ N/A		

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____

Date/Time: _____

Project Manager SCURF Review: ACP

Date: 06/18/18

Project Manager SRF Review: NMG

Date: 6/18/18



Document Name:
Sample Condition Upon Receipt(SCUR)
Document No.:
F-CAR-CS-033-Rev.06

Document Revised: February 7, 2018
Page 1 of 2
Issuing Authority:
Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project #

WO#: 92388710

PM: NMG

Due Date: 06/27/18

CLIENT: 92-AECOM-SC

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-S035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1									3											6								
2									2											6								
3									2											6								
4									2											6								
5									3											6								
6									2											6								
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, Incorrect preservative, out of temp, Incorrect containers.

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A	Section B	Section C	Page : 1 Of 1
Required Client Information:	Required Project Information:	Invoice Information:	
Company: AECOM	Report To: Jeremy Grant	Attention:	
Address: 101 Research Dr	Copy To: <i>elliott.henderson@aecom.com</i>	Company Name:	
Columbia, SC 29203		Address:	
Email: <i>jeremy.grant@aecom.com</i>	Purchase Order #:	Pace Quote:	Regulatory Agency
Phone: <i>803-754-4466</i> Fax:	Project Name: Hilton Head (soil)	Pace Project Manager:	
Requested Due Date: <i>5/22/2014</i>	Project #: <i>60567861</i>	Pace Profile #:	State / Location
			SC

[illegible]



June 25, 2018

Ms. Nicole Gasiorowski

Pace Analytical Labs
9800 Kinsey Avenue
Suite 100
Huntersville, North Carolina 28078

Subject: **Laboratory Test Results**
Pace Workorder Name: Hilton Head -60567891 6/14
Pace Workorder: 92388710
Shield Job Number: 1100026-01
LRF # 18-082

Dear Ms. Gasiorowski:

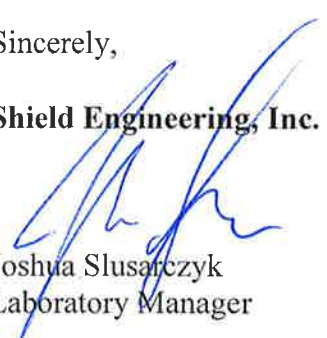
As requested, Shield Engineering Inc., has completed the laboratory testing on the above referenced project. The test results for Grain Size Analysis with Hydrometer are attached to this letter.

The laboratory tests were provided in accordance with the applicable ASTM Standards. The test samples were obtained by a representative of Pace Analytical, and then delivered to Shield's Charlotte, North Carolina laboratory for testing.

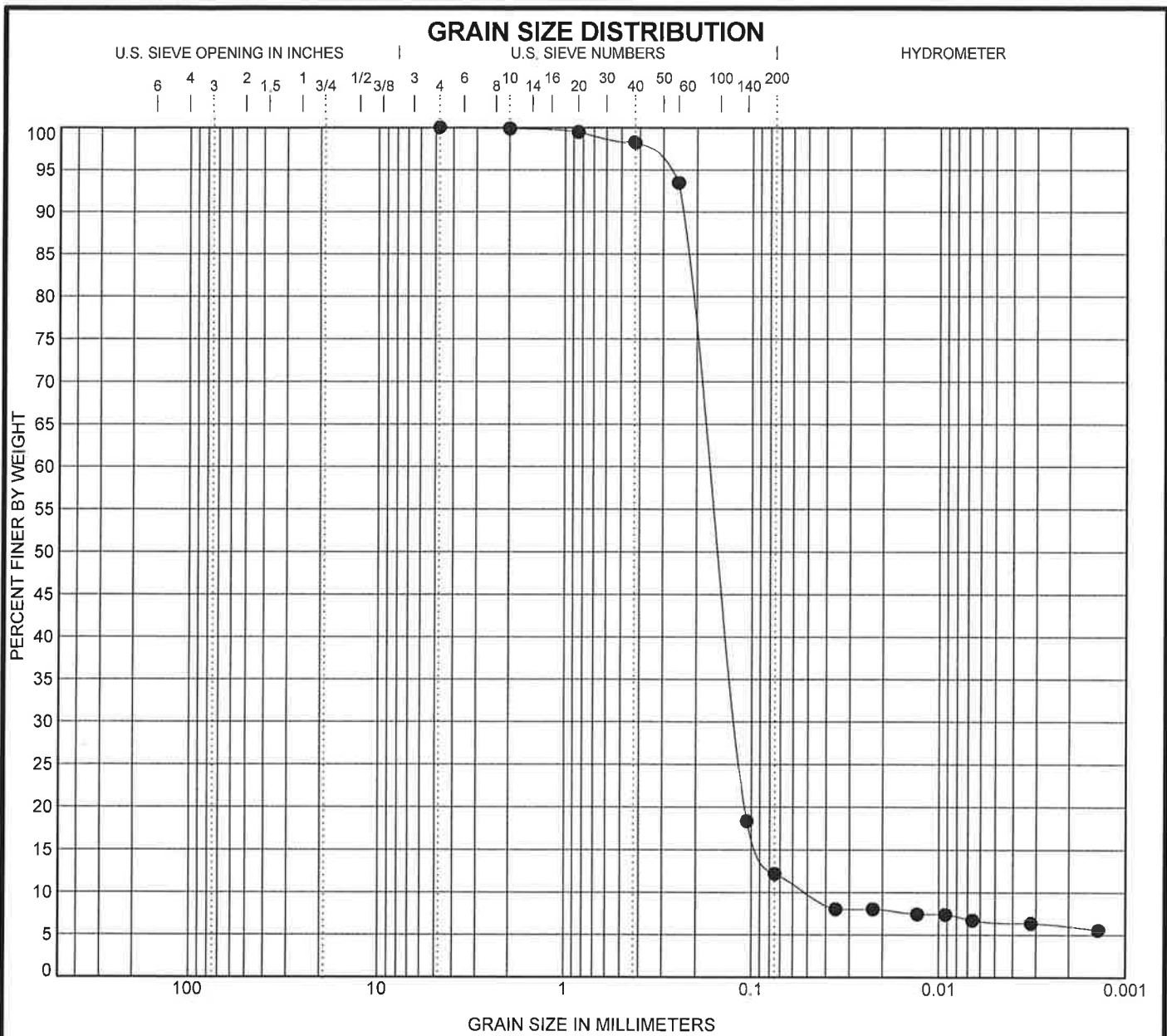
If you have any questions concerning our test results, please do not hesitate to call our office at (704) 394-6913.

Sincerely,

Shield Engineering, Inc.


Joshua Slusarczyk
Laboratory Manager





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification					LL	PL	PI	Cc	Cu
● 11399-SB										1.70	3.37
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
● 11399-SB	3.0'	4.75	0.171	0.121	0.051	0.0	87.8	5.6	6.6		



4301 Taggart Creek Road
Charlotte, NC 28208
Telephone: 704-394-6913
Toll Free: 800-395-5220
Fax: 704-394-6968

Pace Project No.: 92388710
Pace Lab ID: 92388710001
Pace Analytical
Shield Project No.: 1109026-01

June 29, 2018

Jeremy Grant
AECOM
101 Research Drive
Columbia, SC 29203

RE: Project: Hilton Head (Water)
Pace Project No.: 92389197

Dear Jeremy Grant:

Enclosed are the analytical results for sample(s) received by the laboratory on June 20, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Hilton Head (Water)

Pace Project No.: 92389197

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Hilton Head (Water)

Pace Project No.: 92389197

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92389197001	11399-MW2	Water	06/18/18 13:55	06/20/18 10:46
92389197002	11399-MW3	Water	06/18/18 15:15	06/20/18 10:46
92389197003	11399-TB01	Water	06/18/18 00:00	06/20/18 10:46

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Hilton Head (Water)

Pace Project No.: 92389197

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92389197001	11399-MW2	EPA 8011	SEM	2	PASI-C
		EPA 6010	SH1	1	PASI-A
		EPA 8270	PKS	21	PASI-C
		EPA 8260	GAW	20	PASI-C
92389197002	11399-MW3	EPA 8011	SEM	2	PASI-C
		EPA 6010	SH1	1	PASI-A
		EPA 8270	PKS	21	PASI-C
		EPA 8260	GAW	20	PASI-C
92389197003	11399-TB01	EPA 8260	CAH	20	PASI-C

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SUMMARY OF DETECTION

Project: Hilton Head (Water)

Pace Project No.: 92389197

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92389197001	11399-MW2					
EPA 6010	Lead	73.1	ug/L	5.0	06/26/18 22:07	M1
EPA 8260	Ethanol	297	ug/L	200	06/27/18 13:57	
92389197002	11399-MW3					
EPA 6010	Lead	71.8	ug/L	5.0	06/26/18 22:16	
EPA 8260	Ethanol	209	ug/L	200	06/27/18 14:31	M1

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (Water)

Pace Project No.: 92389197

Method: EPA 8011

Description: 8011 GCS EDB and DBCP

Client: AECOM, SC

Date: June 29, 2018

General Information:

2 samples were analyzed for EPA 8011. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 8011 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (Water)

Pace Project No.: 92389197

Method: EPA 6010

Description: 6010 MET ICP

Client: AECOM, SC

Date: June 29, 2018

General Information:

2 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 416541

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92389197001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2309816)
 - Lead
- MSD (Lab ID: 2309817)
 - Lead

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (Water)

Pace Project No.: 92389197

Method: EPA 8270

Description: 8270 MSSV PAH SPE SC

Client: AECOM, SC

Date: June 29, 2018

General Information:

2 samples were analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 416030

S0: Surrogate recovery outside laboratory control limits.

- 11399-MW2 (Lab ID: 92389197001)
 - Terphenyl-d14 (S)
- 11399-MW3 (Lab ID: 92389197002)
 - Terphenyl-d14 (S)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (Water)

Pace Project No.: 92389197

Method: EPA 8270

Description: 8270 MSSV PAH SPE SC

Client: AECOM, SC

Date: June 29, 2018

Analyte Comments:

QC Batch: 416030

2g: Recovery did not meet 70-130% South Carolina required limits. Recovery meets method required in-house generated control limits.

- LCS (Lab ID: 2307175)
 - 1-Methylnaphthalene
 - 2-Methylnaphthalene
 - Naphthalene

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (Water)
Pace Project No.: 92389197

Method: EPA 8260
Description: 8260 MSV Low Level SC
Client: AECOM, SC
Date: June 29, 2018

General Information:

3 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 416711

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92389474003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2310783)
- tert-Butyl Alcohol

P5: The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

- MS (Lab ID: 2310783)
- tert-Butyl Formate

QC Batch: 416840

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92389197002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2311360)
- Ethanol
- tert-Butyl Alcohol

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Hilton Head (Water)

Pace Project No.: 92389197

Method: EPA 8260

Description: 8260 MSV Low Level SC

Client: AECOM, SC

Date: June 29, 2018

QC Batch: 416840

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92389197002

P5: The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

- MS (Lab ID: 2311360)
- tert-Butyl Formate

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (Water)
Pace Project No.: 92389197

Sample: 11399-MW2 Lab ID: 92389197001 Collected: 06/18/18 13:55 Received: 06/20/18 10:46 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP Analytical Method: EPA 8011 Preparation Method: EPA 8011									
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/22/18 10:37	06/23/18 03:16	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	06/22/18 10:37	06/23/18 03:16	301-79-56	
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010A									
Lead	73.1	ug/L	5.0	2.5	1	06/25/18 16:25	06/26/18 22:07	7439-92-1	M1
8270 MSSV PAH SPE SC Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Acenaphthene	ND	ug/L	100	16.0	1	06/20/18 13:25	06/22/18 17:10	83-32-9	
Acenaphthylene	ND	ug/L	100	14.8	1	06/20/18 13:25	06/22/18 17:10	208-96-8	
Anthracene	ND	ug/L	100	17.1	1	06/20/18 13:25	06/22/18 17:10	120-12-7	
Benzo(a)anthracene	ND	ug/L	100	21.1	1	06/20/18 13:25	06/22/18 17:10	56-55-3	
Benzo(a)pyrene	ND	ug/L	100	22.1	1	06/20/18 13:25	06/22/18 17:10	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	100	21.9	1	06/20/18 13:25	06/22/18 17:10	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	100	20.8	1	06/20/18 13:25	06/22/18 17:10	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	100	19.9	1	06/20/18 13:25	06/22/18 17:10	207-08-9	
Chrysene	ND	ug/L	100	20.9	1	06/20/18 13:25	06/22/18 17:10	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	100	20.3	1	06/20/18 13:25	06/22/18 17:10	53-70-3	
Fluoranthene	ND	ug/L	100	22.2	1	06/20/18 13:25	06/22/18 17:10	206-44-0	
Fluorene	ND	ug/L	100	15.6	1	06/20/18 13:25	06/22/18 17:10	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	100	20.5	1	06/20/18 13:25	06/22/18 17:10	193-39-5	
1-Methylnaphthalene	ND	ug/L	100	14.3	1	06/20/18 13:25	06/22/18 17:10	90-12-0	
2-Methylnaphthalene	ND	ug/L	100	14.2	1	06/20/18 13:25	06/22/18 17:10	91-57-6	
Naphthalene	ND	ug/L	100	14.0	1	06/20/18 13:25	06/22/18 17:10	91-20-3	
Phenanthrene	ND	ug/L	100	15.9	1	06/20/18 13:25	06/22/18 17:10	85-01-8	
Pyrene	ND	ug/L	100	22.0	1	06/20/18 13:25	06/22/18 17:10	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	74	%	21-110		1	06/20/18 13:25	06/22/18 17:10	4165-60-0	
2-Fluorobiphenyl (S)	68	%	27-110		1	06/20/18 13:25	06/22/18 17:10	321-60-8	
Terphenyl-d14 (S)	23	%	31-107		1	06/20/18 13:25	06/22/18 17:10	1718-51-0	S0
8260 MSV Low Level SC Analytical Method: EPA 8260									
tert-Amyl Alcohol	ND	ug/L	100	50.0	1		06/27/18 13:57	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	0.10	1		06/27/18 13:57	994-05-8	
Benzene	ND	ug/L	1.0	0.25	1		06/27/18 13:57	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	50.0	1		06/27/18 13:57	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	3.6	1		06/27/18 13:57	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1.9	1		06/27/18 13:57	762-75-4	
1,2-Dichloroethane	ND	ug/L	1.0	0.24	1		06/27/18 13:57	107-06-2	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		06/27/18 13:57	108-20-3	
Ethanol	297	ug/L	200	131	1		06/27/18 13:57	64-17-5	
Ethylbenzene	ND	ug/L	1.0	0.30	1		06/27/18 13:57	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	0.070	1		06/27/18 13:57	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		06/27/18 13:57	1634-04-4	
Naphthalene	ND	ug/L	1.0	0.24	1		06/27/18 13:57	91-20-3	
Toluene	ND	ug/L	1.0	0.26	1		06/27/18 13:57	108-88-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (Water)

Pace Project No.: 92389197

Sample: 11399-MW2		Lab ID: 92389197001		Collected: 06/18/18 13:55		Received: 06/20/18 10:46		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC		Analytical Method: EPA 8260							
Xylene (Total)	ND	ug/L	1.0	1.0	1		06/27/18 13:57	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		06/27/18 13:57	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.23	1		06/27/18 13:57	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		06/27/18 13:57	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		06/27/18 13:57	17060-07-0	
Toluene-d8 (S)	111	%	70-130		1		06/27/18 13:57	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (Water)
Pace Project No.: 92389197

Sample: 11399-MW3 Lab ID: 92389197002 Collected: 06/18/18 15:15 Received: 06/20/18 10:46 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP Analytical Method: EPA 8011 Preparation Method: EPA 8011									
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/22/18 10:37	06/23/18 03:36	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	06/22/18 10:37	06/23/18 03:36	301-79-56	
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010A									
Lead	71.8	ug/L	5.0	2.5	1	06/25/18 16:25	06/26/18 22:16	7439-92-1	
8270 MSSV PAH SPE SC Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Acenaphthene	ND	ug/L	100	16.0	1	06/20/18 13:25	06/22/18 17:40	83-32-9	
Acenaphthylene	ND	ug/L	100	14.8	1	06/20/18 13:25	06/22/18 17:40	208-96-8	
Anthracene	ND	ug/L	100	17.1	1	06/20/18 13:25	06/22/18 17:40	120-12-7	
Benzo(a)anthracene	ND	ug/L	100	21.1	1	06/20/18 13:25	06/22/18 17:40	56-55-3	
Benzo(a)pyrene	ND	ug/L	100	22.1	1	06/20/18 13:25	06/22/18 17:40	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	100	21.9	1	06/20/18 13:25	06/22/18 17:40	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	100	20.8	1	06/20/18 13:25	06/22/18 17:40	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	100	19.9	1	06/20/18 13:25	06/22/18 17:40	207-08-9	
Chrysene	ND	ug/L	100	20.9	1	06/20/18 13:25	06/22/18 17:40	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	100	20.3	1	06/20/18 13:25	06/22/18 17:40	53-70-3	
Fluoranthene	ND	ug/L	100	22.2	1	06/20/18 13:25	06/22/18 17:40	206-44-0	
Fluorene	ND	ug/L	100	15.6	1	06/20/18 13:25	06/22/18 17:40	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	100	20.5	1	06/20/18 13:25	06/22/18 17:40	193-39-5	
1-Methylnaphthalene	ND	ug/L	100	14.3	1	06/20/18 13:25	06/22/18 17:40	90-12-0	
2-Methylnaphthalene	ND	ug/L	100	14.2	1	06/20/18 13:25	06/22/18 17:40	91-57-6	
Naphthalene	ND	ug/L	100	14.0	1	06/20/18 13:25	06/22/18 17:40	91-20-3	
Phenanthrene	ND	ug/L	100	15.9	1	06/20/18 13:25	06/22/18 17:40	85-01-8	
Pyrene	ND	ug/L	100	22.0	1	06/20/18 13:25	06/22/18 17:40	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	77	%	21-110		1	06/20/18 13:25	06/22/18 17:40	4165-60-0	
2-Fluorobiphenyl (S)	77	%	27-110		1	06/20/18 13:25	06/22/18 17:40	321-60-8	
Terphenyl-d14 (S)	20	%	31-107		1	06/20/18 13:25	06/22/18 17:40	1718-51-0	S0
8260 MSV Low Level SC Analytical Method: EPA 8260									
tert-Amyl Alcohol	ND	ug/L	100	50.0	1		06/27/18 14:31	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	0.10	1		06/27/18 14:31	994-05-8	
Benzene	ND	ug/L	1.0	0.25	1		06/27/18 14:31	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	50.0	1		06/27/18 14:31	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	3.6	1		06/27/18 14:31	75-65-0	M1
tert-Butyl Formate	ND	ug/L	50.0	1.9	1		06/27/18 14:31	762-75-4	P5
1,2-Dichloroethane	ND	ug/L	1.0	0.24	1		06/27/18 14:31	107-06-2	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		06/27/18 14:31	108-20-3	
Ethanol	209	ug/L	200	131	1		06/27/18 14:31	64-17-5	M1
Ethylbenzene	ND	ug/L	1.0	0.30	1		06/27/18 14:31	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	0.070	1		06/27/18 14:31	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		06/27/18 14:31	1634-04-4	
Naphthalene	ND	ug/L	1.0	0.24	1		06/27/18 14:31	91-20-3	
Toluene	ND	ug/L	1.0	0.26	1		06/27/18 14:31	108-88-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (Water)

Pace Project No.: 92389197

Sample: 11399-MW3		Lab ID: 92389197002		Collected: 06/18/18 15:15		Received: 06/20/18 10:46		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC		Analytical Method: EPA 8260							
Xylene (Total)	ND	ug/L	1.0	1.0	1		06/27/18 14:31	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		06/27/18 14:31	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.23	1		06/27/18 14:31	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	106	%	70-130		1		06/27/18 14:31	460-00-4	
1,2-Dichloroethane-d4 (S)	114	%	70-130		1		06/27/18 14:31	17060-07-0	
Toluene-d8 (S)	113	%	70-130		1		06/27/18 14:31	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Hilton Head (Water)

Pace Project No.: 92389197

Sample: 11399-TB01		Lab ID: 92389197003		Collected: 06/18/18 00:00		Received: 06/20/18 10:46		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC		Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	50.0	1		06/26/18 17:39	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	0.10	1		06/26/18 17:39	994-05-8	
Benzene	ND	ug/L	1.0	0.25	1		06/26/18 17:39	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	50.0	1		06/26/18 17:39	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	3.6	1		06/26/18 17:39	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1.9	1		06/26/18 17:39	762-75-4	
1,2-Dichloroethane	ND	ug/L	1.0	0.24	1		06/26/18 17:39	107-06-2	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		06/26/18 17:39	108-20-3	
Ethanol	ND	ug/L	200	131	1		06/26/18 17:39	64-17-5	
Ethylbenzene	ND	ug/L	1.0	0.30	1		06/26/18 17:39	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	0.070	1		06/26/18 17:39	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		06/26/18 17:39	1634-04-4	
Naphthalene	ND	ug/L	1.0	0.24	1		06/26/18 17:39	91-20-3	
Toluene	ND	ug/L	1.0	0.26	1		06/26/18 17:39	108-88-3	
Xylene (Total)	ND	ug/L	1.0	1.0	1		06/26/18 17:39	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		06/26/18 17:39	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.23	1		06/26/18 17:39	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		06/26/18 17:39	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		06/26/18 17:39	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		06/26/18 17:39	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

QC Batch:	416541	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010A	Analysis Description:	6010 MET
Associated Lab Samples: 92389197001, 92389197002			

METHOD BLANK: 2309814 Matrix: Water

Associated Lab Samples: 92389197001, 92389197002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	2.5	06/26/18 22:01	

LABORATORY CONTROL SAMPLE: 2309815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	446	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2309816 2309817

Parameter	Units	92389197001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	73.1	500	500	433	425	72	70	75-125	2	20	M1

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QUALITY CONTROL DATA

Project: Hilton Head (Water)
Pace Project No.: 92389197

QC Batch:	416711	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV Low Level SC
Associated Lab Samples:	92389197003		

METHOD BLANK: 2310780 Matrix: Water
Associated Lab Samples: 92389197003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	1.0	0.24	06/26/18 16:50	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	50.0	06/26/18 16:50	
Benzene	ug/L	ND	1.0	0.25	06/26/18 16:50	
Diisopropyl ether	ug/L	ND	1.0	0.12	06/26/18 16:50	
Ethanol	ug/L	ND	200	131	06/26/18 16:50	
Ethyl-tert-butyl ether	ug/L	ND	10.0	0.070	06/26/18 16:50	
Ethylbenzene	ug/L	ND	1.0	0.30	06/26/18 16:50	
m&p-Xylene	ug/L	ND	2.0	0.66	06/26/18 16:50	
Methyl-tert-butyl ether	ug/L	ND	1.0	0.21	06/26/18 16:50	
Naphthalene	ug/L	ND	1.0	0.24	06/26/18 16:50	
o-Xylene	ug/L	ND	1.0	0.23	06/26/18 16:50	
tert-Amyl Alcohol	ug/L	ND	100	50.0	06/26/18 16:50	
tert-Amylmethyl ether	ug/L	ND	10.0	0.10	06/26/18 16:50	
tert-Butyl Alcohol	ug/L	ND	100	3.6	06/26/18 16:50	
tert-Butyl Formate	ug/L	ND	50.0	1.9	06/26/18 16:50	
Toluene	ug/L	ND	1.0	0.26	06/26/18 16:50	
Xylene (Total)	ug/L	ND	1.0	1.0	06/26/18 16:50	
1,2-Dichloroethane-d4 (S)	%	103	70-130		06/26/18 16:50	
4-Bromofluorobenzene (S)	%	96	70-130		06/26/18 16:50	
Toluene-d8 (S)	%	101	70-130		06/26/18 16:50	

LABORATORY CONTROL SAMPLE: 2310781

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	46.5	93	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1020	102	70-130	
Benzene	ug/L	50	46.8	94	70-130	
Diisopropyl ether	ug/L	50	52.3	105	70-130	
Ethanol	ug/L	2000	2150	107	70-130	
Ethyl-tert-butyl ether	ug/L	100	96.5	97	70-130	
Ethylbenzene	ug/L	50	47.0	94	70-130	
m&p-Xylene	ug/L	100	96.5	96	70-130	
Methyl-tert-butyl ether	ug/L	50	47.4	95	70-130	
Naphthalene	ug/L	50	49.3	99	70-130	
o-Xylene	ug/L	50	47.7	95	70-130	
tert-Amyl Alcohol	ug/L	1000	1080	108	70-130	
tert-Amylmethyl ether	ug/L	100	96.6	97	70-130	
tert-Butyl Alcohol	ug/L	500	549	110	70-130	
tert-Butyl Formate	ug/L	400	410	103	70-130	
Toluene	ug/L	50	46.6	93	70-130	

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

LABORATORY CONTROL SAMPLE: 2310781

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	144	96	70-130	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 2310783

Parameter	Units	92389474003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	40	38.8	97	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	800	779	97	70-130	
Benzene	ug/L	ND	40	38.9	97	70-130	
Diisopropyl ether	ug/L	ND	40	43.9	110	70-130	
Ethanol	ug/L	ND	1600	1840	115	70-130	
Ethyl-tert-butyl ether	ug/L	ND	80	79.1	99	70-130	
Ethylbenzene	ug/L	ND	40	39.8	100	70-130	
m&p-Xylene	ug/L	ND	80	80.8	101	70-130	
Methyl-tert-butyl ether	ug/L	ND	40	38.3	96	70-130	
Naphthalene	ug/L	ND	40	37.8	94	70-130	
o-Xylene	ug/L	ND	40	40.1	100	70-130	
tert-Amyl Alcohol	ug/L	ND	800	827	103	70-130	
tert-Amylmethyl ether	ug/L	ND	80	78.2	98	70-130	
tert-Butyl Alcohol	ug/L	ND	400	619	155	70-130	M1
tert-Butyl Formate	ug/L	ND	320	6.3J	2	70-130	P5
Toluene	ug/L	ND	40	39.1	98	70-130	
Xylene (Total)	ug/L	ND	120	121	101	70-130	
1,2-Dichloroethane-d4 (S)	%				101	70-130	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 2310782

Parameter	Units	92389474002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

SAMPLE DUPLICATE: 2310782

Parameter	Units	92389474002 Result	Dup Result	RPD	Max RPD	Qualifiers
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	102	104	2		
4-Bromofluorobenzene (S)	%	98	99	1		
Toluene-d8 (S)	%	101	102	1		

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

QC Batch: 416840

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level SC

Associated Lab Samples: 92389197001, 92389197002

METHOD BLANK: 2311357

Matrix: Water

Associated Lab Samples: 92389197001, 92389197002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	1.0	0.24	06/27/18 07:49	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	50.0	06/27/18 07:49	
Benzene	ug/L	ND	1.0	0.25	06/27/18 07:49	
Diisopropyl ether	ug/L	ND	1.0	0.12	06/27/18 07:49	
Ethanol	ug/L	ND	200	131	06/27/18 07:49	
Ethyl-tert-butyl ether	ug/L	ND	10.0	0.070	06/27/18 07:49	
Ethylbenzene	ug/L	ND	1.0	0.30	06/27/18 07:49	
m&p-Xylene	ug/L	ND	2.0	0.66	06/27/18 07:49	
Methyl-tert-butyl ether	ug/L	ND	1.0	0.21	06/27/18 07:49	
Naphthalene	ug/L	ND	1.0	0.24	06/27/18 07:49	
o-Xylene	ug/L	ND	1.0	0.23	06/27/18 07:49	
tert-Amyl Alcohol	ug/L	ND	100	50.0	06/27/18 07:49	
tert-Amylmethyl ether	ug/L	ND	10.0	0.10	06/27/18 07:49	
tert-Butyl Alcohol	ug/L	ND	100	3.6	06/27/18 07:49	
tert-Butyl Formate	ug/L	ND	50.0	1.9	06/27/18 07:49	
Toluene	ug/L	ND	1.0	0.26	06/27/18 07:49	
Xylene (Total)	ug/L	ND	1.0	1.0	06/27/18 07:49	
1,2-Dichloroethane-d4 (S)	%	118	70-130		06/27/18 07:49	
4-Bromofluorobenzene (S)	%	105	70-130		06/27/18 07:49	
Toluene-d8 (S)	%	109	70-130		06/27/18 07:49	

LABORATORY CONTROL SAMPLE: 2311358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	49.1	98	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	976	98	70-130	
Benzene	ug/L	50	50.6	101	70-130	
Diisopropyl ether	ug/L	50	58.7	117	70-130	
Ethanol	ug/L	2000	2000	100	70-130	
Ethyl-tert-butyl ether	ug/L	100	107	107	70-130	
Ethylbenzene	ug/L	50	46.4	93	70-130	
m&p-Xylene	ug/L	100	91.6	92	70-130	
Methyl-tert-butyl ether	ug/L	50	52.5	105	70-130	
Naphthalene	ug/L	50	47.1	94	70-130	
o-Xylene	ug/L	50	46.2	92	70-130	
tert-Amyl Alcohol	ug/L	1000	988	99	70-130	
tert-Amylmethyl ether	ug/L	100	104	104	70-130	
tert-Butyl Alcohol	ug/L	500	530	106	70-130	
tert-Butyl Formate	ug/L	400	431	108	70-130	
Toluene	ug/L	50	46.7	93	70-130	

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

LABORATORY CONTROL SAMPLE: 2311358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	138	92	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2311360

Parameter	Units	92389197002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	23.2	116	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	445	111	70-130	
Benzene	ug/L	ND	20	24.2	121	70-130	
Diisopropyl ether	ug/L	ND	20	25.7	128	70-130	
Ethanol	ug/L	209	800	1550	168	70-130	M1
Ethyl-tert-butyl ether	ug/L	ND	40	45.3	113	70-130	
Ethylbenzene	ug/L	ND	20	20.9	104	70-130	
m&p-Xylene	ug/L	ND	40	41.7	104	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	23.7	119	70-130	
Naphthalene	ug/L	ND	20	18.9	95	70-130	
o-Xylene	ug/L	ND	20	20.8	104	70-130	
tert-Amyl Alcohol	ug/L	ND	400	480	120	70-130	
tert-Amylmethyl ether	ug/L	ND	40	44.9	112	70-130	
tert-Butyl Alcohol	ug/L	ND	200	305	153	70-130	M1
tert-Butyl Formate	ug/L	ND	160	101	63	70-130	P5
Toluene	ug/L	ND	20	21.6	108	70-130	
Xylene (Total)	ug/L	ND	60	62.5	104	70-130	
1,2-Dichloroethane-d4 (S)	%				109	70-130	
4-Bromofluorobenzene (S)	%				101	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 2311359

Parameter	Units	92389197001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	297	326	9	30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

SAMPLE DUPLICATE: 2311359

Parameter	Units	92389197001 Result	Dup Result	RPD	Max RPD	Qualifiers
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	110	118	7		
4-Bromofluorobenzene (S)	%	103	104	1		
Toluene-d8 (S)	%	111	111	0		

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

QC Batch: 416264

Analysis Method: EPA 8011

QC Batch Method: EPA 8011

Analysis Description: GCS 8011 EDB DBCP

Associated Lab Samples: 92389197001, 92389197002

METHOD BLANK: 2308269

Matrix: Water

Associated Lab Samples: 92389197001, 92389197002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	0.020	06/23/18 00:33	
1-Chloro-2-bromopropane (S)	%	105	60-140		06/23/18 00:33	

LABORATORY CONTROL SAMPLE & LCSD: 2308271

2308272

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.25	0.25	0.26	101	103	60-140	3	20	
1-Chloro-2-bromopropane (S)	%				113	107	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2308273

2308274

Parameter	Units	92389420036 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.25	.25	0.18	0.17	71	69	60-140	3	20	
1-Chloro-2-bromopropane (S)	%						67	66	60-140			

SAMPLE DUPLICATE: 2308275

Parameter	Units	92389259001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	105	100	5		

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QUALITY CONTROL DATA

Project: Hilton Head (Water)
Pace Project No.: 92389197

QC Batch: 416030 Analysis Method: EPA 8270
QC Batch Method: EPA 3510 Analysis Description: 8270 Water PAH MSSV SC
Associated Lab Samples: 92389197001, 92389197002

METHOD BLANK: 2307174 Matrix: Water
Associated Lab Samples: 92389197001, 92389197002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	ND	10.0	1.4	06/21/18 14:44	
2-Methylnaphthalene	ug/L	ND	10.0	1.4	06/21/18 14:44	
Acenaphthene	ug/L	ND	10.0	1.6	06/21/18 14:44	
Acenaphthylene	ug/L	ND	10.0	1.5	06/21/18 14:44	
Anthracene	ug/L	ND	10.0	1.7	06/21/18 14:44	
Benzo(a)anthracene	ug/L	ND	10.0	2.1	06/21/18 14:44	
Benzo(a)pyrene	ug/L	ND	10.0	2.2	06/21/18 14:44	
Benzo(b)fluoranthene	ug/L	ND	10.0	2.2	06/21/18 14:44	
Benzo(g,h,i)perylene	ug/L	ND	10.0	2.1	06/21/18 14:44	
Benzo(k)fluoranthene	ug/L	2.1J	10.0	2.0	06/21/18 14:44	
Chrysene	ug/L	ND	10.0	2.1	06/21/18 14:44	
Dibenz(a,h)anthracene	ug/L	ND	10.0	2.0	06/21/18 14:44	
Fluoranthene	ug/L	ND	10.0	2.2	06/21/18 14:44	
Fluorene	ug/L	ND	10.0	1.6	06/21/18 14:44	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	2.0	06/21/18 14:44	
Naphthalene	ug/L	ND	10.0	1.4	06/21/18 14:44	
Phenanthrene	ug/L	ND	10.0	1.6	06/21/18 14:44	
Pyrene	ug/L	ND	10.0	2.2	06/21/18 14:44	
2-Fluorobiphenyl (S)	%	76	27-110		06/21/18 14:44	
Nitrobenzene-d5 (S)	%	77	21-110		06/21/18 14:44	
Terphenyl-d14 (S)	%	48	31-107		06/21/18 14:44	

LABORATORY CONTROL SAMPLE & LCSD: 2307175

LABORATORY CONTROL SAMPLE & LCSD: 2307175			2307176							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1-Methylnaphthalene	ug/L	50	33.5	40.0	67	80	70-130	18	30	2g
2-Methylnaphthalene	ug/L	50	34.5	41.2	69	82	70-130	18	30	2g
Acenaphthene	ug/L	50	36.2	40.7	72	81	70-130	12	30	
Acenaphthylene	ug/L	50	37.9	42.6	76	85	70-130	12	30	
Anthracene	ug/L	50	40.2	43.0	80	86	70-130	7	30	
Benzo(a)anthracene	ug/L	50	39.7	42.4	79	85	70-130	7	30	
Benzo(a)pyrene	ug/L	50	39.1	41.8	78	84	70-130	7	30	
Benzo(b)fluoranthene	ug/L	50	41.3	42.9	83	86	70-130	4	30	
Benzo(g,h,i)perylene	ug/L	50	40.7	41.7	81	83	70-130	3	30	
Benzo(k)fluoranthene	ug/L	50	40.8	42.9	82	86	70-130	5	30	
Chrysene	ug/L	50	40.0	43.0	80	86	70-130	7	30	
Dibenz(a,h)anthracene	ug/L	50	40.0	40.7	80	81	70-130	2	30	
Fluoranthene	ug/L	50	39.5	42.7	79	85	70-130	8	30	
Fluorene	ug/L	50	36.3	40.0	73	80	70-130	10	30	
Indeno(1,2,3-cd)pyrene	ug/L	50	40.9	41.8	82	84	70-130	2	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Hilton Head (Water)

Pace Project No.: 92389197

LABORATORY CONTROL SAMPLE & LCSD: 2307175			2307176							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Naphthalene	ug/L	50	33.0	39.3	66	79	70-130	17	30	2g
Phenanthrene	ug/L	50	39.9	42.8	80	86	70-130	7	30	
Pyrene	ug/L	50	42.1	43.8	84	88	70-130	4	30	
2-Fluorobiphenyl (S)	%				73	84	27-110			
Nitrobenzene-d5 (S)	%				67	79	21-110			
Terphenyl-d14 (S)	%				52	56	31-107			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Hilton Head (Water)
Pace Project No.: 92389197

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

2g	Recovery did not meet 70-130% South Carolina required limits. Recovery meets method required in-house generated control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.
S0	Surrogate recovery outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Hilton Head (Water)

Pace Project No.: 92389197

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92389197001	11399-MW2	EPA 8011	416264	EPA 8011	416341
92389197002	11399-MW3	EPA 8011	416264	EPA 8011	416341
92389197001	11399-MW2	EPA 3010A	416541	EPA 6010	416581
92389197002	11399-MW3	EPA 3010A	416541	EPA 6010	416581
92389197001	11399-MW2	EPA 3510	416030	EPA 8270	416298
92389197002	11399-MW3	EPA 3510	416030	EPA 8270	416298
92389197001	11399-MW2	EPA 8260	416840		
92389197002	11399-MW3	EPA 8260	416840		
92389197003	11399-TB01	EPA 8260	416711		

REPORT OF LABORATORY ANALYSIS

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	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:

Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☒ Raleigh ☐ Mechanicsville ☐

Sample Condition
Upon Receipt

Client Name:

AFCOM

Project #

WO# : 92389197



Courier:

☐ Commercial

☐ Fed Ex

☒ Pace

☐ UPS

☐ USPS

☐ Other: _____

☐ Client

Custody Seal Present?

☐ Yes

☒ No

Seals Intact?

☐ Yes

☒ No

Date/Initials Person Examining Contents: MD 6/20/18

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other

Thermometer:

☒ IR Gun ID: 92T040

Type of Ice:

☒ Wet

☐ Blue

☐ None

Biological Tissue Frozen?

☐ Yes

☐ No

☒ N/A

Cooler Temp (°C): 1.8

Correction Factor: Add/Subtract (°C) +0.4

Cooler Temp Corrected (°C): 2.2

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

☐ Yes

☐ No

Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

		Comments/Discrepancy:
Chain of Custody Present?	☐ Yes ☐ No ☐ N/A	1.
Samples Arrived within Hold Time?	☒ Yes ☐ No ☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes ☒ No ☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes ☒ No ☐ N/A	4.
Sufficient Volume?	☒ Yes ☐ No ☐ N/A	5.
Correct Containers Used?	☒ Yes ☐ No ☐ N/A	6.
-Pace Containers Used?	☒ Yes ☐ No ☐ N/A	
Containers Intact?	☒ Yes ☐ No ☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes ☐ No ☒ N/A	8.
Sample Labels Match COC?	☒ Yes ☐ No ☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
Headspace in VOA Vials (>5-6mm)?	☒ Yes ☐ No ☐ N/A	10. <u>MWZ VOA</u>
Trip Blank Present?	☒ Yes ☐ No ☐ N/A	11.
Trip Blank Custody Seals Present?	☒ Yes ☐ No ☐ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☒ No

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____

Date/Time: _____

Project Manager SCURF Review: WEP

Date: 06/20/18

Project Manager SRF Review: NMG

Date: 6/21/18

	Document Name:	Document Revised: February 7, 2018
	Sample Condition Upon Receipt(SCUR)	Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project

WO# : 92389197

PM: NMG

Due Date: 06/29/18

CLIENT: 92-AECOM-SC

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-503S kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1										2						6												
2										2						6												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples						
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, Incorrect preservative, out of temp, Incorrect containers.

APPENDIX B

BORING LOGS

Soil Boring Report

BORING NO. SB-01

PAGE 1 OF 1

PROJECT:	<u>Hilton Head Public Service District</u>
CLIENT:	<u>Hilton Head Public Service District</u>
CONTRACTOR:	<u>Elite Techniques</u>
EQUIPMENT:	<u>Hand Auger, Geoprobe</u>

PROJECT NO:	60567861
LOCATION:	Hilton Head, SC
ELEVATION:	
NORTHING:	
EASTING:	
DATE START:	6/14/2018
DATE FINISH:	6/14/2018
DRILLER:	Tyler Felder
OVERSIGHT:	E. Harrington

GROUNDWATER			DRILLING INFORMATION							EASTING:	
DATE	HRS	WATER	METHOD			CASING		TEMP / PERM		DATE START:	6/14/2018
			HOLE DIA.			CASING DIA.		CASING TYPE		DATE FINISH:	6/14/2018
			DEPTH			CASING DEPTH		GROUT TYPE		DRILLER:	Tyler Felder
			SAMPLING			HAMMER WT		HAMMER FALL		OVERSIGHT:	E. Harrington

[illegible]

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						



Soil Boring Report

BORING NO. SB-02/MW-01PAGE 1 OF 1

PROJECT: Hilton Head Public Service District
CLIENT: Hilton Head Public Service District
CONTRACTOR: Elite Techniques
EQUIPMENT: Hand Auger, Geoprobe

PROJECT NO: 60567861
LOCATION: Hilton Head, SC
ELEVATION: _____
NORTHING: _____
EASTING: _____
DATE START: 6/14/2018
DATE FINISH: 6/14/2018
DRILLER: Aaron Bowen
OVERSIGHT: E. Harrington

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				
5.0	10.9				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1)				
	480.2				Mostly medium grained, with some fine grained brown sand (7.5YR 6/2)				
	996.7				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1) (Soil sample collected) Saturated				
	81.3								
	103.6								
10.0	10.9				Mostly gravel with some brown sands (7.5YR 6/2)				
	11.4				Fine grained, with some medium grained brown sand (7.5 YR 2.5/1) (Grain size analysis sample collected)				
	8.3								
	1376								
	191.2								
15.0					Trace of silt				
					Total depth				
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					



BORING NO. SB-03

PAGE 1 OF 1

PROJECT NO:	60567861
LOCATION:	Hilton Head, SC
ELEVATION:	
NORTHING:	
EASTING:	
DATE START:	6/14/2018
DATE FINISH:	6/14/2018
DRILLER:	Tyler Felder
OVERSIGHT:	E. Harrington

GROUNDWATER			DRILLING INFORMATION							EASTING:	
DATE	HRS	WATER	METHOD			CASING		TEMP / PERM		DATE START:	6/14/2018
			HOLE DIA.			CASING DIA.		CASING TYPE		DATE FINISH:	6/14/2018
			DEPTH			CASING DEPTH		GROUT TYPE		DRILLER:	Tyler Felder
			SAMPLING			HAMMER WT		HAMMER FALL		OVERSIGHT:	E. Harrington
DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS						
	SOIL CLASSIFICATION:							USCS			
5.0	5.8				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1)						
	5.8				Mostly medium grained, with some fine grained brown sand (7.5YR 6/2)						
	173.1				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1)						
	837.3				(Soil sample collected)						
					Saturated Total depth						
10.0											
15.0											
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								



Soil Boring Report

BORING NO. SB-04
PAGE 1 OF 1

PROJECT: Hilton Head Public Service District
CLIENT: Hilton Head Public Service District
CONTRACTOR: Elite Techniques
EQUIPMENT: Hand Auger, Geoprobe

PROJECT NO: 60567861
LOCATION: Hilton Head, SC
ELEVATION: _____
NORTHING: _____
EASTING: _____
DATE START: 6/14/2018
DATE FINISH: 6/14/2018
DRILLER: Tyler Felder
OVERSIGHT: E. Harrington

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
5.0	9.5				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1) (Soil sample collected)
	5.6				Mostly medium grained, with some fine grained brown sand (7.5YR 6/2)
	7.5				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1)
	5.4				
10.0					Saturated. Total depth.
15.0					
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						



Soil Boring Report

BORING NO. MW-02
PAGE 1 OF 1

PROJECT: Hilton Head Public Service District
CLIENT: Hilton Head Public Service District
CONTRACTOR: Elite Techniques
EQUIPMENT: Hand Auger, Geoprobe

PROJECT NO: 60567861
LOCATION: Hilton Head, SC
ELEVATION: _____
NORTHING: _____
EASTING: _____
DATE START: 6/14/2018
DATE FINISH: 6/14/2018
DRILLER: Aaron Bowen
OVERSIGHT: E. Harrington

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				
5.0	2.4				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1)				
	4.2				Mostly medium grained, with some fine grained brown sand (7.5YR 6/2)				
	4.2								
	3.8								
	4.9				Mostly gravel with some medium grained sand (7.5YR 6.2). (Soil sample collected)				
10.0	8.5				Saturated medium grained, with some fine grained brown sand (7.5YR 2.5/1)				
	40.8				Medium grained, with some fine grained brown sand (7.5YR 6/2)				
15.0	12.3				Medium grained, with some fine grained brown sand (7.5YR 4/6)				
20.0					Total depth.				

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					



Soil Boring Report

BORING NO. MW-03

PAGE 1 OF 1

PROJECT: Hilton Head Public Service District

CLIENT: Hilton Head Public Service District

CONTRACTOR: Elite Techniques

EQUIPMENT: Hand Auger, Geoprobe

PROJECT NO: 60567861

LOCATION: Hilton Head, SC

ELEVATION:

NORTHING:

EASTING:

DATE START: 6/14/2018

DATE FINISH: 6/14/2018

DRILLER: Aaron Bowen

OVERSIGHT: E. Harrington

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
	1				Mostly medium grained, with some fine grained brown sand (7.5YR 2.5/1)
	5.4				Mostly medium grained, with some fine grained brown sand (7.5YR 6/2)
	8.4				(soil sample collected)
	3.6				
	7.8				Mostly gravel with some medium grained sand (7.5YR 6.2)
5.0					Medium grained, with some fine grained brown sand (7.5YR 2.5/1). Saturated.
	26.7				Medium grained, with some fine grained brown sand (7.5YR 6/2)
10.0					Medium grained, with some fine grained brown sand (7.5YR 4/6)
	17.6				
15.0					Total depth.
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			

APPENDIX C

WELL CONSTRUCTION DIAGRAMS



Shallow Monitoring Well Construction Details

PROJECT: HHPSD Tier I Assessment
LOCATION: Hilton Head, South Carolina
CLIENT: Hilton Head Public Service District
CONTRACTOR: Elite Techniques
DRILLER: Aaron Bowen
FIELD REPRESENTATIVE: Elliott Harrington

WELL NUMBER: MW-01
JOB NUMBER: 60567861
TYPE OF INSTALLATION: Hollow Stem Auger
LOCATION: Hilton Head, South Carolina
INSTALLATION DATE: 06/15/18

SURVEY DATUM: SC State Plane, NAVD 88 (Vertical)
NAD 83 (Horizontal)

NORTHING: _____

TOP OF CASING ELEVATION: 12.80 ft

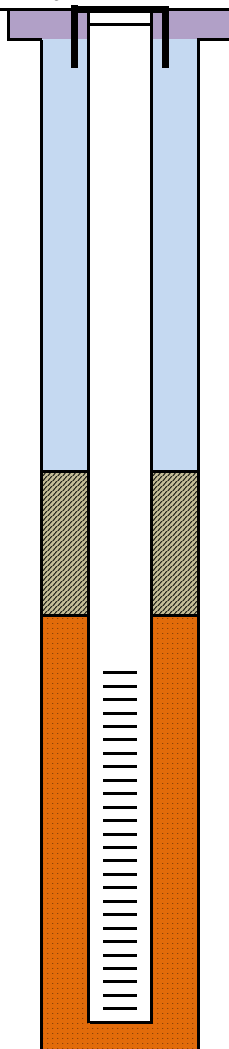
EASTING: _____

GROUND SURFACE ELEVATION: _____

ft

CASING STICKUP: _____

COMMENTS:



TYPE OF ANNULAR SEAL Grout

TYPE OF WELL CASING OR RISER Sch. 40 PVC
INSIDE DIAMETER 2.0 inch

NOMINAL BOREHOLE DIAMETER 8.0 inch

TOP OF WELL SEAL 6.0 inch

TYPE OF SEAL Bentonite

TOP OF SAND FILTER PACK 1.0 feet

TOP OF SCREENED INTERVAL 2.0 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 12.0 feet

BOTTOM OF BOREHOLE 12.0 feet

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



Shallow Monitoring Well Construction Details

PROJECT: HHPSD Tier I Assessment
LOCATION: Hilton Head, South Carolina
CLIENT: Hilton Head Public Service District
CONTRACTOR: Elite Techniques
DRILLER: Aaron Bowen
FIELD REPRESENTATIVE: Elliott Harrington

WELL NUMBER: MW-02
JOB NUMBER: 60567861
TYPE OF INSTALLATION: Hollow Stem Auger
LOCATION: Hilton Head, South Carolina
INSTALLATION DATE: 06/15/18

SURVEY DATUM: SC State Plane, NAVD 88 (Vertical)
NAD 83 (Horizontal)

NORTHING: _____

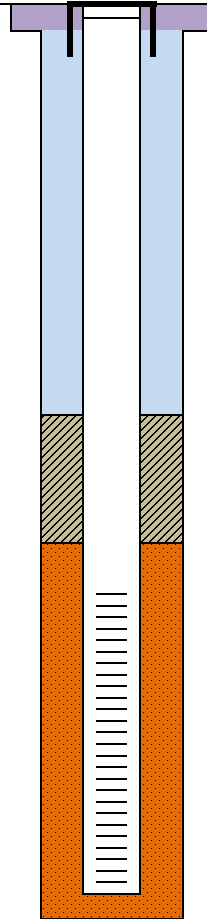
TOP OF CASING ELEVATION: 14.29 ft

EASTING: _____

GROUND SURFACE ELEVATION: _____ ft

CASING STICKUP: _____

COMMENTS:



TYPE OF ANNULAR SEAL Grout

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 inch

TYPE OF SEAL Bentonite Chips

TOP OF SAND FILTER PACK 3.0 feet

TOP OF SCREENED INTERVAL 4.0 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 14.0 feet

BOTTOM OF BOREHOLE 14.0 feet

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



Shallow Monitoring Well Construction Details

PROJECT: HHPSD Tier I Assessment
LOCATION: Hilton Head, South Carolina
CLIENT: Hilton Head Public Service District
CONTRACTOR: Elite Techniques
DRILLER: Aaron Bowen
FIELD REPRESENTATIVE: Elliott Harrington

WELL NUMBER: MW-03
JOB NUMBER: 60567861
TYPE OF INSTALLATION: Hollow Stem Auger
LOCATION: Hilton Head, South Carolina
INSTALLATION DATE: 06/15/18

SURVEY DATUM: SC State Plane, NAVD 88 (Vertical)
NAD 83 (Horizontal)

NORTHING: _____

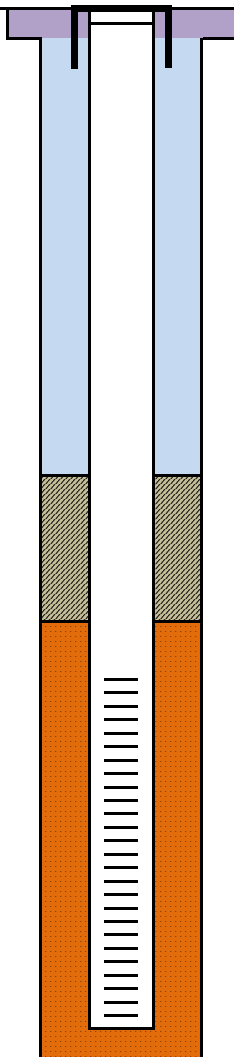
TOP OF CASING ELEVATION: 14.13 ft

EASTING: _____

GROUND SURFACE ELEVATION: _____ ft

CASING STICKUP: _____

COMMENTS:



TYPE OF ANNULAR SEAL Grout

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 inch

TYPE OF SEAL Bentonite Chips

TOP OF SAND FILTER PACK 3.0 feet

TOP OF SCREENED INTERVAL 4.0 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 14.0 feet

BOTTOM OF BOREHOLE 14.0 feet

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

APPENDIX D

GROUNDWATER SAMPLING DATA SHEETS

Low Flow Ground Water Sample Collection Record

Client: HPS Date: 6/18/18 Time: Start 1330 am/pm
 Project No: 60567861 Finish 1405 am/pm
 Site Location: Ilkerton Head SC
 Weather Conds: Sunny Collector(s): E. Harrington

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

a. Total Well Length 6.09 c. Length of Water Column 2.91 (a-b) Casing Diameter/Material 2 in / PVC
 b. Water Table Depth 14 d. Calculated System Volume (see back) 1.25 x 3 = 3.8

2. WELL PURGE DATA

a. Purge Method: Boiler

b. Acceptance Criteria defined (see workplan)

- Temperature 3% -D.O. 10%
 - pH ± 1.0 unit - ORP ± 10 mV
 - Sp. Cond. 3% - Drawdown $< 0.3'$

c. Field Testing Equipment used: Make YSI Model 556 Serial Number 118100643

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
1330	0	28.54	6.68	720	1.26	-48.3	-	-	-	Brown
1335	1.3	25.61	6.59	630	1.21	-70.3	-	-	-	Brown
1340	3.5	24.72	6.52	621	0.91	-84.7	-	-	-	Brown
1345	5.0	24.19	6.55	616	1.30	-81.6	-	-	-	Brown

d. Acceptance criteria pass/fail (continued on back)

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

If no or N/A - Explain below.

3. SAMPLE COLLECTION: Method: Boiler

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
11395-MW2	250 mL	1		Pb lead	1355
	Vonambe	3	HCL	BTEX	
	Vonambe	3	HCL	W-FDB	
	IL	2	None	PAHs	

Comments

Signature [Signature] Date 6/18/18

Low Flow Ground Water Sample Collection Record

Client: HPSD Date: 6/18/18 Time: Start 1447 am/pm
 Project No: 60567861 Finish 1525 am/pm
 Site Location: Hilton Head
 Weather Conds: Sunny Collector(s): E. Harris

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

a. Total Well Length 14 c. Length of Water Column 7.91 (a-b) Casing Diameter/Material 2 in / PVC
 b. Water Table Depth 6.09 d. Calculated System Volume (see back) 1.28 x 3 = 3.8

2. WELL PURGE DATA

a. Purge Method: Bailer

b. Acceptance Criteria defined (see workplan)

- Temperature 3% -D.O. 10%
 - pH ± 1.0 unit - ORP ± 10 mV
 - Sp. Cond. 3% - Drawdown $< 0.3'$

c. Field Testing Equipment used: Make YSI Model 556 Serial Number 11B100643

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
1447	0	26.2	5.28	400	0.78	-34.7	-	-	-	Brown
1452	2.5	25.2	5.63	356	1.65	2.3	-	-	-	"
1457	4.0	24.54	5.61	413	1.49	-2.2	-	-	-	"
1502	6.0	24.54	5.24	420	1.29	-19.3	-	-	-	"
1507	7.5	24.23	5.27	429	1.31	-28.3	-	-	-	"

d. Acceptance criteria pass/fail Yes No N/A (continued on back)
 Has required volume been removed ☒ ☐ ☐
 Has required turbidity been reached ☐ ☐ ☒
 Have parameters stabilized ☒ ☐ ☐
 If no or N/A - Explain below.

3. SAMPLE COLLECTION:

Method: Bailer

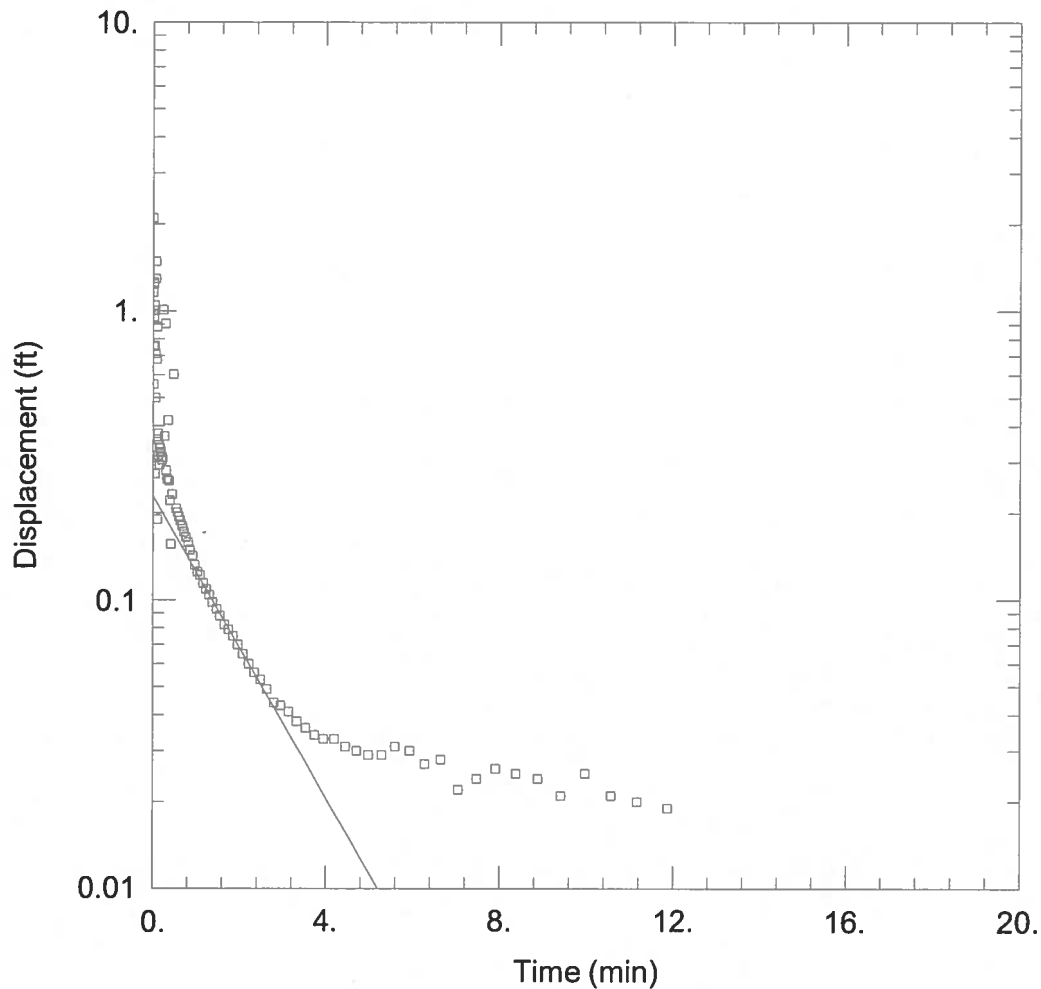
Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
11395-mw3	250mL	1		Pb level	1515
	100 mL amber	3	HCL	Pb/Cr	
	100 mL amber	3	HCL	FDB	
	1L	2	None	PAH	

Comments _____

Signature [Signature] Date 06/18/18

APPENDIX E

SLUG TEST DATA



MW-02 FALLING HEAD TEST

Data Set: E:\MW-2 Falling Head.aqt

Date: 09/17/18

Time: 09:00:15

PROJECT INFORMATION

Company: AECOM

Project: Test

Test Well: MW-2

Test Date: 06-25-18

AQUIFER DATA

Saturated Thickness: 7.91 ft

Anisotropy Ratio (K_z/K_r): 1

WELL DATA (MW-02)

Initial Displacement: 2.096 ft

Static Water Column Height: 7.91 ft

Total Well Penetration Depth: 7.91 ft

Screen Length: 7.91 ft

Casing Radius: 0.083 ft

Well Radius: 0.083 ft

Gravel Pack Porosity: 0.25

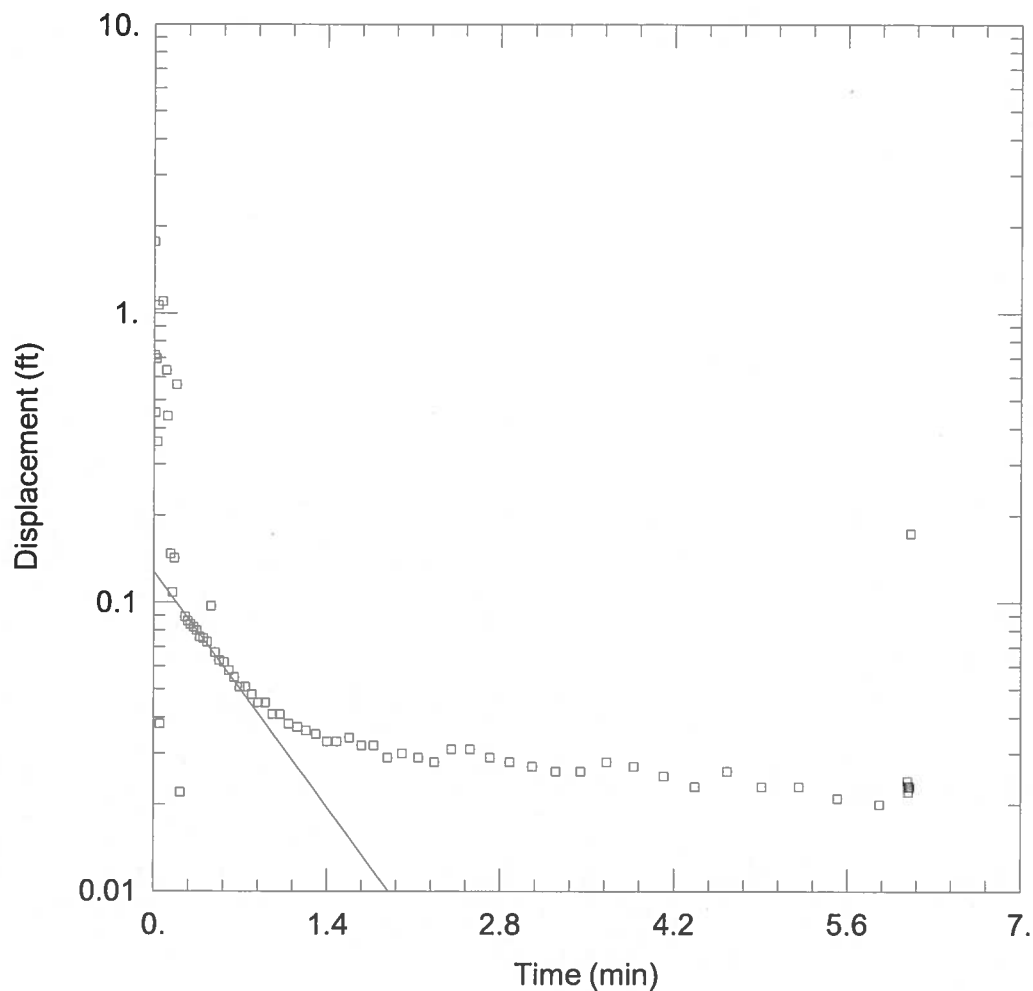
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 1.322$ ft/day

$y_0 = 0.228$ ft



MW-03 FALLING HEAD TEST

Data Set: E:\MW-03 Falling Head.aqt

Date: 09/13/18

Time: 14:00:49

PROJECT INFORMATION

Company: AECOM

Client: Test

Project: 60567861

Location: Hilton Head

Test Well: MW-03

Test Date: 06-16-2018

AQUIFER DATA

Saturated Thickness: 7.91 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW-03)

Initial Displacement: 1.766 ft

Static Water Column Height: 7.91 ft

Total Well Penetration Depth: 7.91 ft

Screen Length: 7.91 ft

Casing Radius: 0.083 ft

Well Radius: 0.083 ft

Gravel Pack Porosity: 0.25

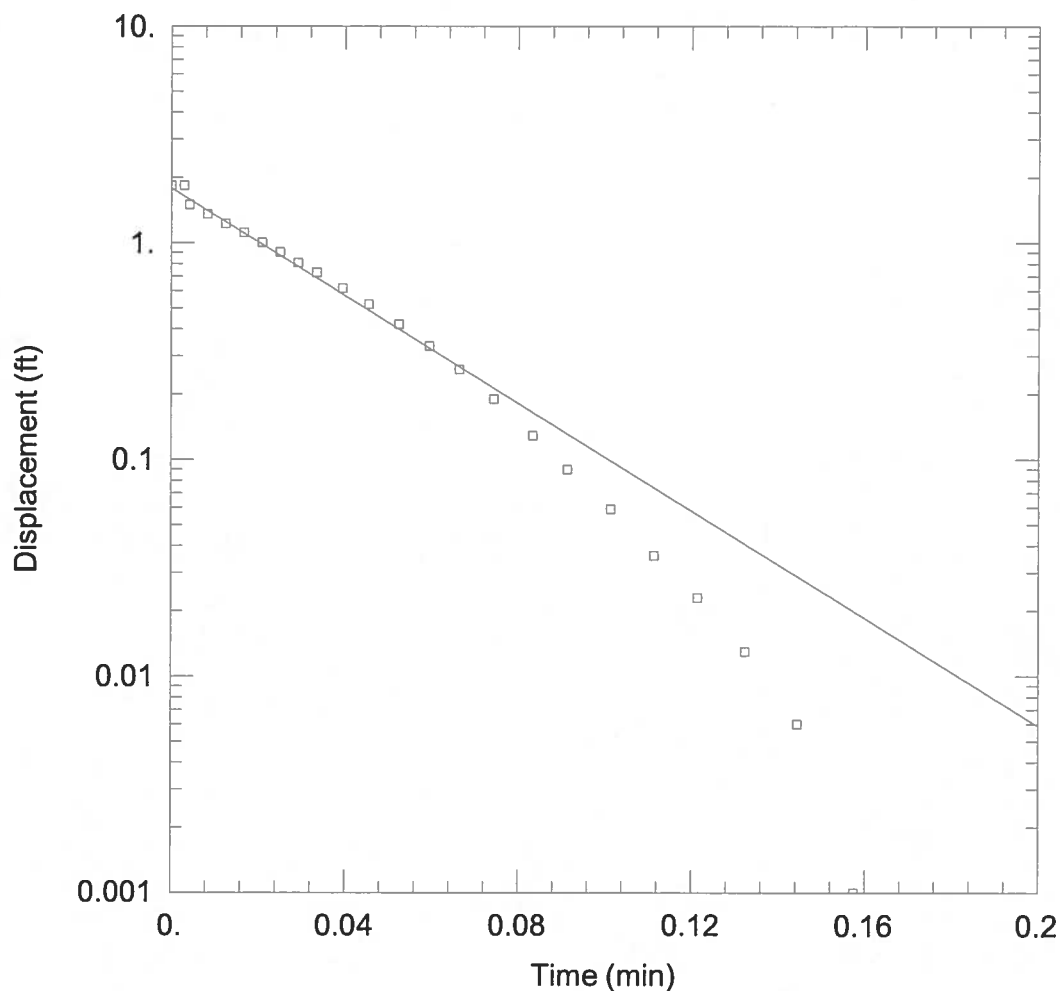
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 2.946$ ft/day

$y_0 = 0.1269$ ft



MW-03 RISING HEAD TEST

Data Set: E:\MW-03 Rising Head.aqt

Date: 09/13/18

Time: 11:45:24

PROJECT INFORMATION

Company: AECOM

Client: Test

Project: 60567861

Location: Hilton Head

Test Well: MW-03

Test Date: 06-16-2018

AQUIFER DATA

Saturated Thickness: 7.91 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW-03)

Initial Displacement: 1.838 ft

Static Water Column Height: 7.91 ft

Total Well Penetration Depth: 7.91 ft

Screen Length: 7.91 ft

Casing Radius: 0.083 ft

Well Radius: 0.083 ft

Gravel Pack Porosity: 0.25

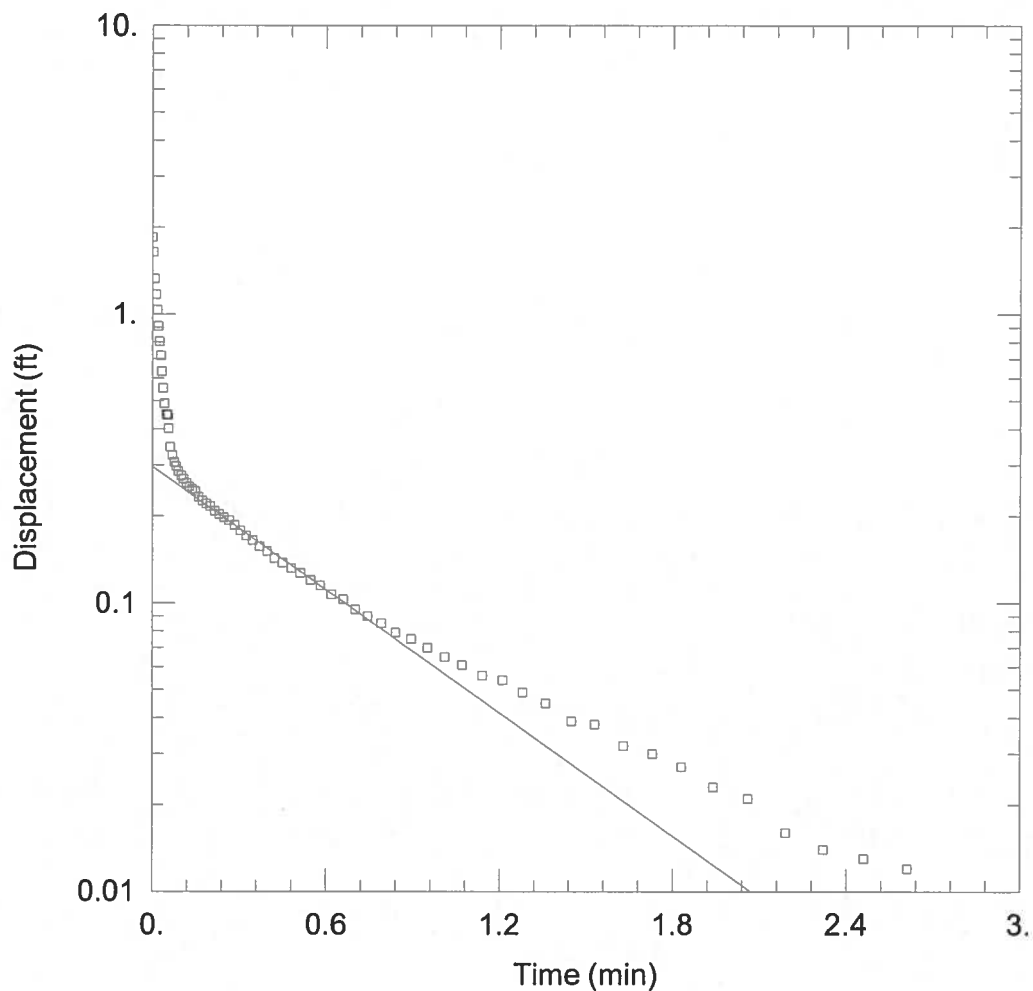
SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 62.83$ ft/day

$y_0 = 1.783$ ft



MW-2 RISING HEAD TEST

Data Set: E:\MW-02RisingHead.aqt

Date: 09/17/18

Time: 09:01:57

PROJECT INFORMATION

Company: AECOM

Client: HPSD

Project: 60567861

Location: Hilton Head SC

Test Well: MW-02

Test Date: 6/18/2018

AQUIFER DATA

Saturated Thickness: 7.91 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (New Well)

Initial Displacement: 1.847 ft

Static Water Column Height: 7.91 ft

Total Well Penetration Depth: 7.91 ft

Screen Length: 7.91 ft

Casing Radius: 0.083 ft

Well Radius: 0.083 ft

Gravel Pack Porosity: 0.25

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 3.6$ ft/day

$y_0 = 0.2963$ ft

APPENDIX F

PROPERTY OWNERSHIP INFORMATION



APPENDIX G

DISPOSAL MANIFEST

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number VSQG		2. Page 1 of		3. Emergency Response Phone 803-957-0175		4. Waste Tracking Number 18100153-01	
		5. Generator's Name and Mailing Address Hilton Head Public Service District 21 Oak Park Drive Hilton Head Island, SC 29925 USA							
GENERATOR		6. Transporter 1 Company Name A&D ENVIRONMENTAL SERVICES (SC), LLC						U.S. EPA ID Number SCD887598331	
		7. Transporter 2 Company Name						U.S. EPA ID Number	
DESIGNATED FACILITY		8. Designated Facility Name and Site Address A&D ENVIRONMENTAL SERVICES (GA) LLC 100 WASTE RESEARCH DRIVE MACON, GA 31206						U.S. EPA ID Number GAR000007484	
		478-788-8899 Facility's Phone:							
TRANSPORTER		9. Waste Shipping Name and Description				10. Containers		11. Total Quantity	12. Unit Wt./Vol.
						No.	Type		
		1. NON HAZARDOUS NON RCRA REGULATED MATERIAL SOIL				002	DM	1200	P
		2. NON HAZARDOUS NON RCRA REGULATED MATERIAL WATER				003	DM	165	G
		3.							
4.									
DESIGNATED FACILITY		13. Special Handling Instructions and Additional Information Project # 00567861							
		14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.							
TRANSPORTER		Generator's/Officer's Printed/Typed Name Jeremy Grant as agent for HHPSD						Signature <i>Jeremy Grant</i>	
		15. International Shipments ☐ Import to U.S. ☐ Export from U.S.						Month Day Year 10 03 18	
TRANSPORTER		Transporter Signature (for exports only):						Port of entry/exit: Date leaving U.S.:	
		16. Transporter Acknowledgment of Receipt of Materials							
TRANSPORTER		Transporter 1 Printed/Typed Name Taji Cuyler						Signature <i>Taji Cuyler</i>	
		Transporter 2 Printed/Typed Name						Month Day Year 10 03 18	
DESIGNATED FACILITY		17. Discrepancy							
		17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection							
DESIGNATED FACILITY		17b. Alternate Facility (or Generator)						Manifest Reference Number: U.S. EPA ID Number	
		Facility's Phone:							
DESIGNATED FACILITY		17c. Signature of Alternate Facility (or Generator)						Month Day Year	
DESIGNATED FACILITY		18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a							
		Printed/Typed Name Marc R Kurz						Signature <i>Marc R Kurz</i>	
DESIGNATED FACILITY								Month Day Year 10 30 18	

APPENDIX H

SURVEY MAP



MR VINCE MAPLHRUS
HILTON HEAD PUBLIC SERVICE DISTRICT
PO BOX 21264
HILTON HEAD ISLAND SC 29925-1264

FEB 13 2019

Re: **Site-Specific Work Plan Request for Tier II Assessment**
Hilton Head Public Service District, 21 Oak Park Drive, Hilton Head Island, SC
UST Permit #11399
Release #2 reported July 27, 2017
Tier I Assessment Report received December 19, 2018
Beaufort County

Dear Mr. Malphrus:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed the referenced report submitted by AECOM Technical Services, Inc. The report documents the presence of free phase petroleum (FP) in MW-1.

To determine what risk the referenced release may pose to human health and the environment, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of a Tier II assessment is necessary. The Tier II assessment must be conducted in accordance with the most recent revision of the UST Quality Assurance Program Plan (QAPP) and in compliance with all applicable regulations. A copy of the UST QAPP is available at <http://www.scdhec.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/>.

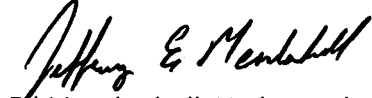
The Site-Specific Work Plan (SSWP) and Cost Proposal must be submitted within 30 days from the date of this letter. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that approval from DHEC must be issued before work begins.**

According to Division records, the release at the facility was reported to DHEC on July 27, 2017. In accordance with Section 44-2-40(D) of the State Underground Petroleum Environmental Response Bank (SUPERB) Act, you are responsible for the first \$25,000 of site rehabilitation costs. To ensure that costs made toward the Tier II apply to the \$25,000 deductible, costs need to be preapproved and a cost agreement provided once the QAPPA or SSWP is approved.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

On all correspondence regarding this site, please reference UST Permit #11399. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 898-7542, fax me at (803) 898-0673, or e-mail me at mendenje@dhec.sc.gov.

Sincerely,



Ed Mendenhall, Hydrogeologist
Assessment & Unregulated Petroleum Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: AECOM, 4016 Salt Pointe Parkway, Suite 200, Charleston, SC 29405-8419
AECOM Technical Services, 101 Research Drive, Columbia, SC 29203
Technical File

**RECEIVED**

MAR 12 2019

**Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division**

MAR 12 2019

PROGRAM

SC Department of
Health & Environmental Control

To: Ed Mendenhall (SCDHEC Project Manager)
From: Jeremy Grant (Contractor Project Manager)
Contractor: AECOM UST Contractor Certification Number: UCC 0035

Facility Name: Hilton Head Public Service District UST Permit #: 11399Facility Address: 21 Oak Park Dr. Hilton Head Island, SC 29926Responsible Party: Hilton Head Public Service DistrictPhone: (843) 681-5525RP Address: 21 Oak Park Dr. Hilton Head Island, SC 29926

Property Owner (if different): _____

Property Owner Address: _____

Current Use of Property: Hilton Head Public Service District office, fueling center and wastewater treatment plant**Scope of Work** (Please check all that apply)☐ IGWA☒ Tier II☐ Groundwater Sampling☐ GAC☐ Tier I☐ Monitoring Well Installation☐ Other _____**Analyses** (Please check all that apply)

Groundwater/Surface Water:

☒ BTEXNMDCA (8260B)☐ Lead☐ BOD☐ Methane☒ Oxygenates (8260B)☐ 8 RCRA Metals☐ Nitrate☐ Ethanol☐ EDB (8011)☐ TPH☐ Sulfate☒ Dissolved Iron☐ PAH (8270D)☐ pH☐ Other _____

Health & Environmental Control

Drinking Water Supply Wells:

☐ BTEXNMDCA (524.2)☐ Mercury (200.8 245.1 or 245.2)☐ EDB (504.1)☐ Oxygenates & Ethanol (8260B)☐ RCRA Metals (200.8)

Soil:

☐ BTEXNM☐ Lead☐ RCRA Metals☐ TPH-DRO (3550B/8015B)☐ Grain Size☐ PAH☐ Oil & Grease (9071)☐ TPH-GRO (5030B/8015B)☐ TOC

Air:

☐ BTEXN**RECEIVED**

MAR 12 2019

☐ Ethanol☒ Dissolved Iron**Sample Collection** (Estimate the number of samples of each matrix that are expected to be collected.)

_____ Soil	_____ Water Supply Wells	_____ Air	1 _____ Field Blank
12 _____ Monitoring Wells	_____ Surface Water	1 _____ Duplicate	1 _____ Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

of shallow points proposed: 15 Estimated Footage: 10 feet per point# of deep points proposed: 1 Estimated Footage: 30 feet per pointField Screening Methodology: Direct push with OVA screening**Permanent Monitoring Wells**

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

of shallow wells: 8 Estimated Footage: 12 feet per point# of deep wells: 1 Estimated Footage: 45 feet per point

of recovery wells: _____ Estimated Footage: _____ feet per point

Comments, if warranted: _____

UST Permit #: 11399 Facility Name: Hilton Head Public Service District

Implementation Schedule (Number of calendar days from approval)

Field Work Start-Up: 5/8/19 Field Work Completion: 8/8/19

Report Submittal: 9/8/19 # of Copies Provided to Property Owners: 1

Aquifer Characterization

Pump Test: ☐ Slug Test: ☒ (Check one and provide explanation below for choice)

One slug test in the telescoping well and two slug tests within the groundwater plume.

Investigation Derived Waste Disposal

Soil: 8 Tons Purge Water: 550 Gallons

Drilling Fluids: 200 Gallons Free-Phase Product: _____ Gallons

Additional Details For This Scope of Work

For example, list wells to be sampled, wells to be abandoned/repared, well pads/bolts/caps to replace, details of AFVR event, etc.

The entire monitoring well network will be sampled, with the exception of the well(s) that contain free phase product.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)

No Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.

Name of Laboratory: Pace Analytical Services

SCDHEC Certification Number: SC99006001

Name of Laboratory Director: Jeff Graham

Yes Well Driller as indicated in ACQAP? (Yes/No) If no, indicate driller information below.

Name of Well Driller: Elite Techniques

SCLLR Certification Number: SCWD# SC 1461A

____ Other variations from ACQAP. Please describe below.

Attachments

1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.

2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:

North Arrow

Location of property lines

Location of buildings

Previous soil sampling locations

Previous monitoring well locations

Proposed soil boring locations

Proposed monitoring well locations

Legend with facility name and address, UST permit number, and bar scale

Streets or highways (indicate names and numbers)

Location of all present and former ASTs and USTs

Location of all potential receptors

3. Assessment Component Cost Agreement, SCDHEC Form D-3664



AECOM

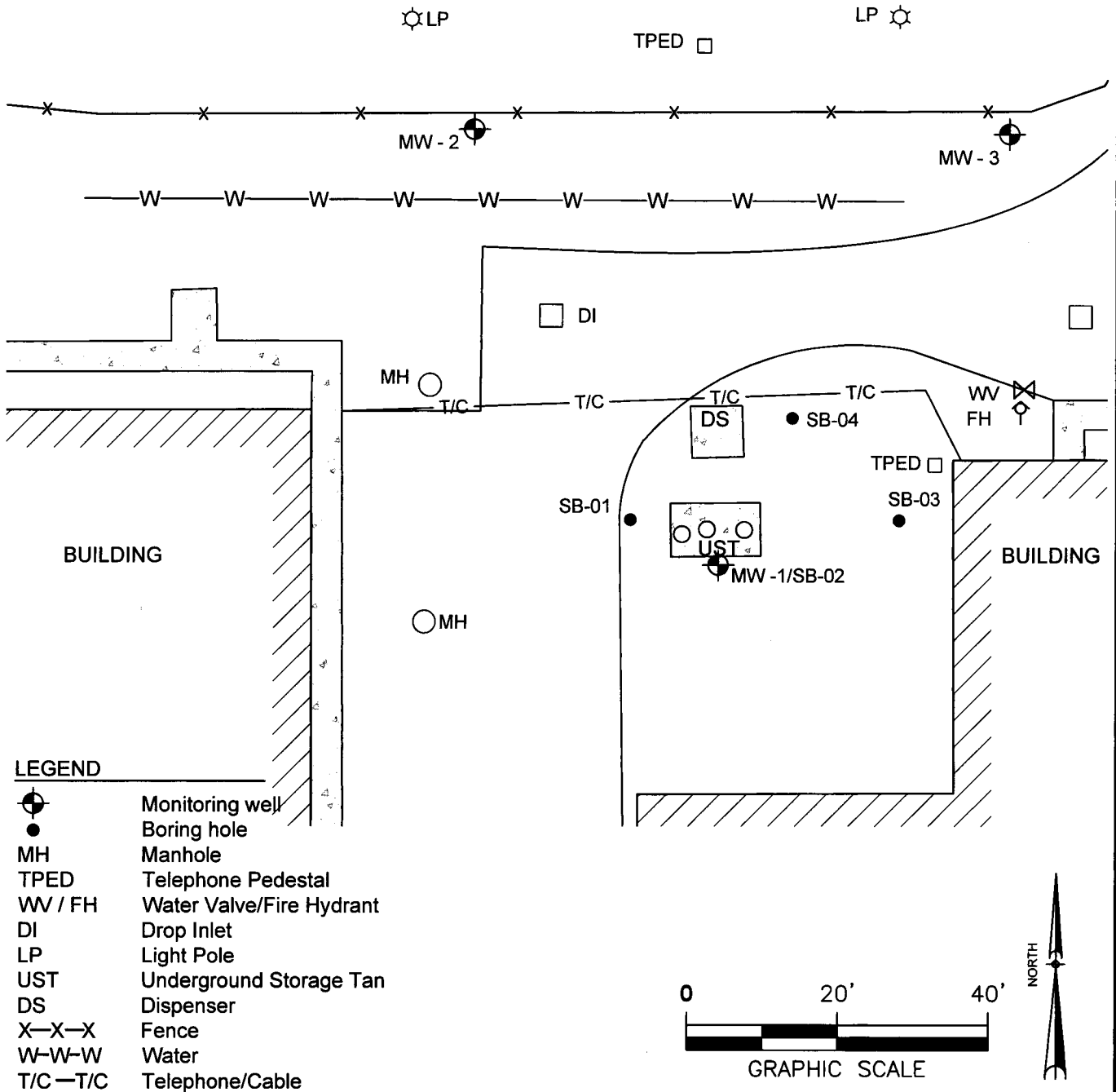
101 Research Drive
Columbia, SC 29203
Telephone: (803) 254-4400, Fax: (803) 771-6676
www.AECOM.com

Site Topographic Map
Tier 1 Assessment Report
Hilton Head Public Service District
21 Oak Park Drive
Hilton Head Island, South Carolina



Date: October 2018

N:\PROJECTS\60567861_HH TIER I UST ASSISTANCE\900-WORK\910-DRAWINGS\60567861_SITE LOC MAP.DWG 12/12/2018 2:30:15 PM



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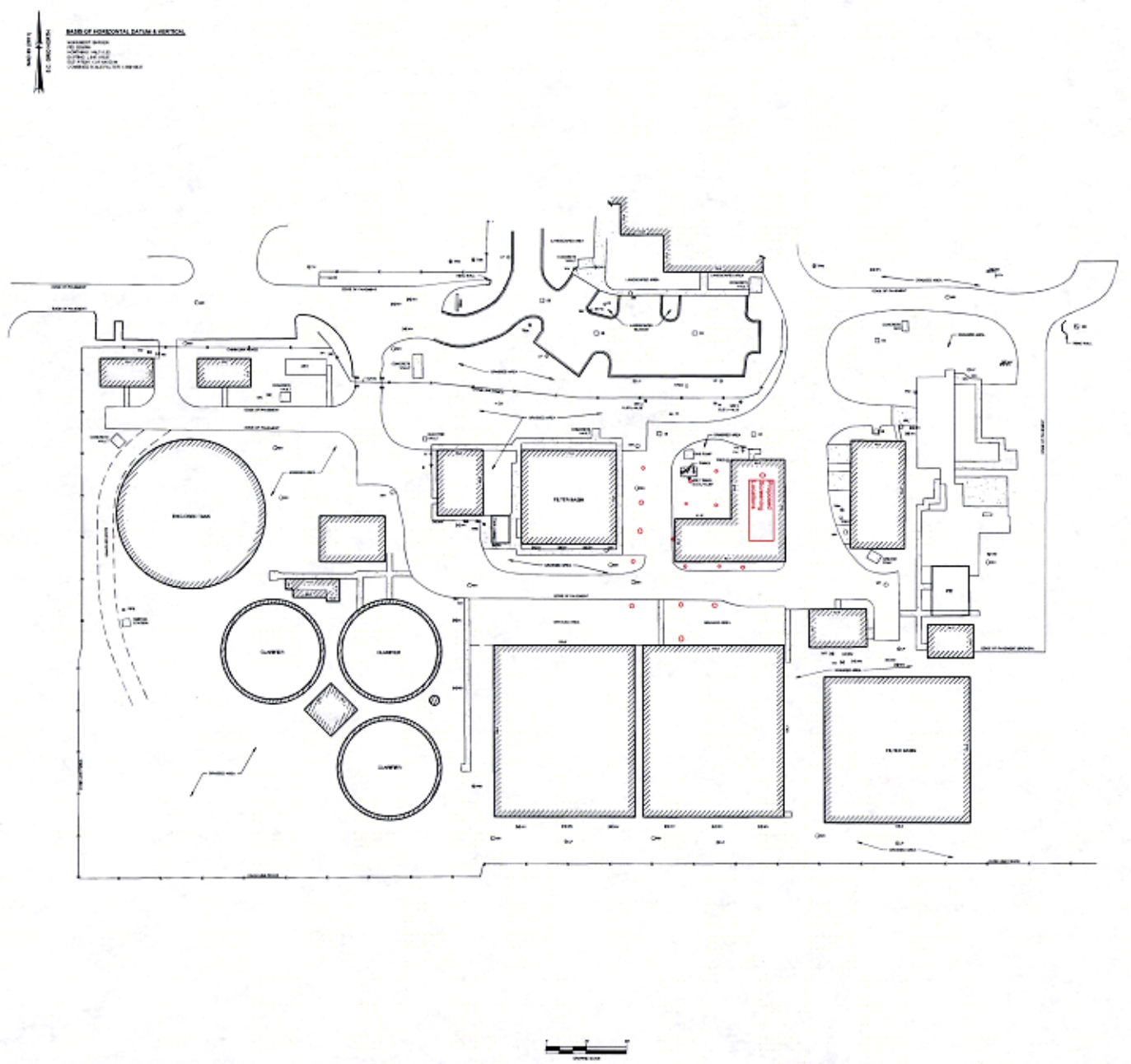
SITE MAP

TIER I ASSESSMENT REPORT

HILTON HEAD PUBLIC SERVICE DISTRICT
21 OAK PARK DRIVE
HILTON HEAD ISLAND, SOUTH CAROLINA

DATE: SEPTEMBER 2018

FIGURE 2



NOTES

1. THE UNDERSIGNED HAS BEEN ADVISED THAT THE INFORMATION CONTAINED HEREIN IS FOR THE USE OF THE CLIENT AND IS NOT TO BE USED FOR ANY OTHER PURPOSE. THE UNDERSIGNED HAS BEEN ADVISED THAT THE INFORMATION CONTAINED HEREIN IS NOT TO BE USED FOR ANY OTHER PURPOSE.
2. THE DATE OF FIELD SURVEY COMPLETION: JULY 1, 2010.



PROJECT
HILTON HEAD PUBLIC
SERVICE DISTRICT

TIER I UST ASSISTANCE

21 OAK PARK DRIVE
HILTON HEAD ISLAND
SOUTH CAROLINA, 29926

CONSULTANT
AECOM
111 Research Blvd.
Folsom, CA 95630
916.244.4400 ext. 805.771.8670 fax
www.aecom.com

REGISTRATION



DISCRESSION

NO.	DATE	DESCRIPTION
1	2010-07-01	Initial Survey

KEY PLAN

SHEET SCALE: 1" = 10'

PROJECT & FILE NUMBER
PROJECT NUMBER: 100101
FILE NUMBER: 100101
FILE NUMBER: 100101

SHEET TITLE
PARTIAL SITE
SURVEY

SHEET NUMBER
1 OF 1



Healthy People. Healthy Communities.

ASSESSMENT COMPONENT COST AGREEMENT

SOUTH CAROLINA

Department of Health and Environmental Control

Underground Storage Tank Management Division

State Underground Petroleum Environmental Response Bank Account

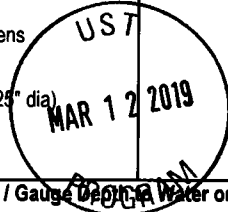
June 15, 2017

Facility Name: Hilton Head Public Service District

UST Permit #: 11399

Cost Agreement #: _____

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. Plan Preparation				
A1. Site-specific Work Plan		each	\$150.00	\$0.00
B1. Tax Map		each	\$70.00	\$0.00
C1. Tier II or Comp. Plan /QAPP Appendix B	1	each	\$250.00	\$250.00
2. A1. Receptor Survey *		each	\$551.00	\$0.00
3. Survey (500 ft x 500 ft)				
A1. Comprehensive Survey		each	\$1,040.00	\$0.00
B. Subsurface Geophysical Survey				
1B. < 10 meters below grade	1	each	\$1,300.00	\$1,300.00
2B. > 10 meters below grade		each	\$2,310.00	\$0.00
C1. Geophysical UST or Drum Survey		each	\$910.00	\$0.00
4. Mob/Demob				
A1. Equipment	2	each	\$1,020.00	\$2,040.00
B1. Personnel	5	each	\$423.00	\$2,115.00
C1. Adverse Terrain Vehicle		each	\$500.00	\$0.00
5. A1. Soil Borings (hand auger)*		foot	\$5.00	\$0.00
6. Soil Borings (requiring equipment, push technology, etc)* or Field Screening (including water sample, soil sample, soil gas sample, etc.)*				
AA. Standard	180	per foot	\$15.00	\$2,700.00
C1. Fractured Rock		per foot	\$20.20	\$0.00
7. A1. Soil Leachability Model		each	\$60.00	\$0.00
8. Abandonment (per foot)*				
A1. 2" diameter or less	180	per foot	\$3.10	\$558.00
B1. Greater than 2" to 6" diameter		per foot	\$4.50	\$0.00
C1. Dug/Bored well (up to 6 feet diameter)		per foot	\$15.00	\$0.00
9. Well Installation (per foot)*				
A1. Water Table (hand augered)		per foot	\$10.60	\$0.00
B1. Water Table (drill rig)	100	per foot	\$38.00	\$3,800.00
CC. Telescoping	45	per foot	\$50.00	\$2,250.00
DD. Rock Drilling		per foot	\$58.00	\$0.00
E1. 2" Rock Coring		per foot	\$30.90	\$0.00
G1. Rock Multi-sampling ports/screens		per foot	\$33.40	\$0.00
HH. Recovery Well (4" diameter)		per foot	\$45.00	\$0.00
II. Pushed Pre-packed screen (1.25" dia)		per foot	\$15.00	\$0.00
J1. Rotasonic (2" diameter)		per foot	\$44.00	\$0.00
K. Re-develop Existing Well		per foot	\$11.00	\$0.00
10. Groundwater Sample Collection / Gauge Data Water or Product *				
A1. Groundwater Purge	1	per well/receptor	\$60.00	\$60.00
B1. Air or Vapors		per receptor	\$12.00	\$0.00
C1. Water Supply		per well/receptor	\$22.00	\$0.00
D1. Groundwater No Purge or Duplicate	10	per well/receptor	\$28.00	\$280.00
E1. Gauge Well only		per well	\$7.00	\$0.00
F1. Sample Below Product		per well	\$12.00	\$0.00
G1. Passive Diffusion Bag		each	\$26.00	\$0.00
H1. Field Blank		each	\$24.60	\$0.00
I. Groundwater (low flow purge)		per well/receptor	\$91.00	\$0.00



11. Laboratory Analyses-Groundwater					
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(8260B)	15	per sample	\$122.00		\$1,830.00
AA1. Lead, Filtered		per sample	\$13.80		\$0.00
B2. Rush EPA Method 8260B (All of item A.)		per sample	\$153.60		\$0.00
C2. Trimethal, Butyl, and Isopropyl Benzenes		per sample	\$36.40		\$0.00
D1. PAH's		per sample	\$60.60		\$0.00
E1. Lead		per sample	\$16.00		\$0.00
F1. EDB by EPA 8011		per sample	\$45.20		\$0.00
FF1. EDB by EPA Method 8011 Rush		per sample	\$68.20		\$0.00
G1. 8 RCRA Metals		per sample	\$63.40		\$0.00
H1. TPH (9070)		per sample	\$41.00		\$0.00
II. pH		per sample	\$5.20		\$0.00
J1. BOD		per sample	\$20.00		\$0.00
PP. Ethanol		per sample	\$14.80		\$0.00
11. Analyses-Drinking Water					
L. BTEXNM+1,2 DCA (524.2)		per sample	\$124.05		\$0.00
M. 7-OXYGENATES & ETHANOL (8260B)		per sample	\$91.75		\$0.00
N. EDB (504.1)		per sample	\$79.50		\$0.00
O. RCRA METALS (200.8)		per sample	\$100.00		\$0.00
11. Analyses-Soil					
Q1. BTEX + Naphth.		per sample	\$64.00		\$0.00
R1. PAH's		per sample	\$64.04		\$0.00
S1. 8 RCRA Metals		per sample	\$56.40		\$0.00
U1. TPH-DRO (3550C/8015C)		per sample	\$40.00		\$0.00
V1. TPH- GRO (5030B/8015C)		per sample	\$35.96		\$0.00
W1. Grain size/hydrometer		per sample	\$104.00		\$0.00
X1. Total Organic Carbon		per sample	\$30.60		\$0.00
11. Analyses-Air					
Y1. BTEX + Naphthalene		per sample	\$216.00		\$0.00
11. Analyses-Free Phase Product					
Z1. Hydrocarbon Fuel Identification		per sample	\$357.00		\$0.00
12. Aquifer Characterization					
A1. Pumping Test*	3	per hour	\$23.00		\$0.00
B1. Slug Test*		per test	\$191.00		\$573.00
C1. Fractured Rock		per test	\$100.00		\$0.00
13. A1. Free Product Recovery Rate Test*		each	\$38.00		\$0.00
14. Fate/Transport Modeling					
A1. Mathematical Model		each	\$100.00		\$0.00
B1. Computer Model		each	\$100.00		\$0.00
15. Risk Evaluation					
A. Tier I Risk Evaluation	1	each	\$300.00		\$0.00
B1. Tier II Risk Evaluation		each	\$100.00		\$100.00
16. A1. Subsequent Survey*		each	\$260.00		\$0.00
17. Disposal (gallons or tons)*					
AA. Wastewater	550	gallon	\$0.56		\$308.00
BB. Free Product		gallon	\$0.50		\$0.00
C1. Soil Treatment/Disposal	8	ton	\$60.00		\$480.00
D1. Drilling fluids	200	gallon	\$0.42		\$84.00
18. Miscellaneous (attach receipts)					
		each	\$0.00		\$0.00
		each	\$0.00		\$0.00
		each	\$0.00		\$0.00
20. Tier I Assessment (Use DHEC 3665 form)		standard			\$0.00
21. IGWA (Use DHEC 3666 form)		standard			\$0.00
22. Corrective Action (Use DHEC 3667 form)		PFP Bid			\$0.00

23. Aggressive Fluid & Vapor Recovery (AFVR)					
A1. 8-hour Event*		each	\$1,375.00		\$0.00
AA. 24-hour Event*		each	\$3,825.00		\$0.00
A3. 48-hour Event*		each	\$6,265.00		\$0.00
A4. 96-hour Event*		each	\$12,567.50		\$0.00
C1. Off-gas Treatment 8 hour		per event	\$122.50		\$0.00
C2. Off-gas Treatment 24 hour		per event	\$241.50		\$0.00
C3. Off-gas Treatment 48 hour		per event	\$327.00		\$0.00
C4. Off-gas Treatment 96 hour		per event	\$780.00		\$0.00
D. Site Reconnaissance		each	\$203.25		\$0.00
E1. Additional Hook-ups		each	\$25.75		\$0.00
F1. Effluent Disposal		gallon	\$0.44		\$0.00
G. AFVR Mobilization/Demobilization		each	\$391.50		\$0.00
24. Granulated Activated Carbon (GAC) filter system installation & service:					
A1. New GAC System Installation*		each	\$1,900.00		\$0.00
BB. Refurbished GAC Sys. Install*		each	\$900.00		\$0.00
C1. Filter replacement/removal*		each	\$350.00		\$0.00
DD. GAC System removal, cleaning, & refurbishment*		each	\$275.00		\$0.00
E1. GAC System housing*		each	\$250.00		\$0.00
F. In-line particulate filter		each	\$150.00		\$0.00
G1. Additional piping & fittings		foot	\$1.50		\$0.00
25. Well Repair					
A1. Additional Copies of the Report Delivered		each	\$50.00		\$0.00
B1. Repair 2x2 MW pad*		each	\$50.00		\$0.00
C1. Repair 4x4 MW pad*		each	\$88.00		\$0.00
D1. Repair well vault*		each	\$118.00		\$0.00
F1. Replace well cover bolts		each	\$2.60		\$0.00
G. Replace locking well cap & lock		each	\$15.00		\$0.00
H1. Replace/Repair stick-up*		each	\$134.00		\$0.00
II. Convert Flush-mount to Stick-up*		each	\$150.00		\$0.00
J1. Convert Stick-up to Flush-mount*		each	\$130.00		\$0.00
K1. Replace missing/illegible well ID plate		each	\$12.00		\$0.00
Report Prep & Project Management	12%	percent	\$18,728.00		\$2,247.36
TOTAL					\$20,975.36

DHEC 2495 6-2017 *The appropriate mobilization cost can be added to complete these tasks, as necessary



MR VINCE MAPLHRUS
HILTON HEAD PUBLIC SERVICE DISTRICT
PO BOX 21264
HILTON HEAD ISLAND SC 29925-1264

APR 10 2019



Re: Tier II Assessment Notice to Proceed

Hilton Head Public Service District, 21 Oak Park Drive, Hilton Head Island, SC
UST Permit #11399; CA #58925; MWA #UMW-27498
Release #2 Reported July 27, 2017
Site-Specific Work Plan received March 12, 2019
Beaufort County

Dear Mr. Maplhrus:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (DHEC) has reviewed and approved the referenced Site-Specific Work Plan (SSWP) submitted by AECOM. All work should be conducted in accordance with the most recent revision of the UST Quality Assurance Program Plan (QAPP), AECOM's approved SSWP and Annual Contractor Quality Assurance Plan (ACQAP), and in compliance with all applicable regulations. A copy of the current revision of the UST QAPP is available at <http://www.scdhec.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/>

The Tier II Assessment should begin immediately upon receipt of this letter. A monitoring well approval has been enclosed for the monitoring well installation. Cost agreement #58925 has been approved for the amount shown on the enclosed cost agreement form. Please note the following changes to the cost agreement and SSWP:

- Item 1A Site-Specific Work Plan has been increased from 0 to 1 for the submitted SSWP.
- Item 1C Tier II or Comp. Plan/QAPP Appendix B has been removed. A SSWP was submitted for this scope of work not a Quality Assurance Program Plan Appendix B.
- Item 10A Groundwater Purge sample collection has been increased from 1 to 9 for the sampling of all the newly installed monitoring wells.
- Item 10D Groundwater No Purge or Duplicate Sample Collection has been reduced from 10 to 4, the three existing monitoring wells and 1 duplicate sample.
- Item 10H Field Blank Sample Collection has been increased from 0 to 1.
- Item 11W Grain Size/Hydrometer has been increased from 0 to 1 for the telescoping monitoring well.
- Item 15B Tier II Risk Evaluation has been removed. The Risk Evaluation is not required for this scope of work.
- Item 16A Subsequent Survey has been added for the newly installed monitoring wells.

Please be aware that the June 15, 2017 State Underground Petroleum Environmental Response Bank (SUPERB) Allowable Costs sheet states that "If the vertical and horizontal extent of chemicals of concern is not fully defined by the tier report, the Division may not approve additional future mobilizations for additional screening or well installation." Any screening point that is converted to a permanent monitoring well will be reimbursed at the approved well installation rate. **Please contact the Division prior to well installation for concurrence regarding the final well locations. Please note that you and/or your contractor are responsible for obtaining all off-site access agreements and/or encroachment permits necessary for this scope of work.**

The Contractor must provide the UST Project Manager with a Project Status Report on a weekly basis via e-mail or notify the UST Project Manager via email 4 days prior to initiation of any site rehabilitation activities. If there are any changes or conflicts with the date(s) of site activities, the UST Project Manager must be contacted within 24 hours of those changes.

The Tier II report, contractor checklist (QAPP Appendix K), and invoice should be submitted to the Division within ninety (90) days of the date of this correspondence. The report submitted at the completion of these activities should include the required information outlined in the UST QAPP.

According to Division records, the release at the facility was reported to DHEC on July 27, 2017. In accordance with Section 44-2-40(D) of the State Underground Petroleum Environmental Response Bank (SUPERB) Account, you are responsible for the first \$25,000 of site rehabilitation costs. Please be sure to provide proof of costs that will be applied to the deductible with the invoice. Acceptable proof of payment of deductible costs include a copy of the cancelled check (front and back) that made payment to your contractor or a signed notarized statement by your site rehabilitation contractor for the amount that was paid directly to your contractor.

AECOM, can submit an invoice for direct payment from the State Underground Petroleum Environmental Response Bank (SUPERB) Account for preapproved costs that exceed the \$25,000 deductible. An interim well drilling invoice may not be submitted for this scope of work as the deductible has not been met. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. Any site rehabilitation activity associated with the UST release must be performed by a DHEC-certified site rehabilitation contractor as required by R.61-98.

The Division grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the Chemical of Concern (CoC) concentrations based on laboratory analysis is below Risk-Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on-site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit #11399. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 898-7542, fax me at (803) 898-0673, or e-mail me at mendenje@dhec.sc.gov.

Sincerely,



Ed Mendenhall, Hydrogeologist
Assessment & Unregulated Petroleum Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement (ACA)
Monitoring Well Approval (MWA)

cc: AECOM, 4016 Salt Pointe Parkway, Suite 200, Charleston, SC 29405-8419 (w/enc)
AECOM Technical Services, 101 Research Drive, Columbia, SC 29203 (w/enc)
Technical File (w/enc)



Monitoring Well Approval Form

Approval is hereby granted to: AECOM
(on behalf of): Hilton Head Public Service District
Facility: Hilton Head Public Service District, 21 Oak Park Drive,
Hilton Head Island, SC
UST Permit Number: 11399
County: Beaufort

This approval is for the installation of 16 temporary, 8 shallow, 1 telescoping permanent monitoring wells. The monitoring wells are to be installed in the approved locations following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

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

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the DHEC shall be completed and submitted to the DHEC within 30 days after well completion or abandonment unless another schedule has been approved by the DHEC. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the DHEC within 30 days of receipt of laboratory results unless another schedule has been approved by the DHEC as required by R.61-71.H.1.d.
5. If any of the information provided to the DHEC changes, notification to Ed Mendenhall (tel: (803) 898-7542 or e-mail: mendenje@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. DHEC approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina well standards and regulations, dated May 27, 2016. A copy of this approval should be on the site during well installation.

Date of Issuance: April 1, 2019

Approval #: UMW-27498

Ed Mendenhall, Hydrogeologist
Assessment & Unregulated Petroleum Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Approved Cost Agreement 58925

Facility: 11399 HILTON HEAD PUBLIC SERVICE DISTRICT

MENDENJE

PO Number:

<u>Task / Description</u>	<u>Categories</u>	<u>Item Description</u>	<u>Qty / Pct</u>	<u>Unit Price</u>	<u>Amount</u>
01 PLAN		A1 SITE SPECIFIC WORK PLAN	1.0000	\$150.000	150.00
03 COMPREHENSIVE SURVEY		1B GEOPHYSICAL SURVEY <10 BELOW	1.0000	\$1,300.000	1,300.00
04 MOB/DEMOB		A1 EQUIPMENT	2.0000	\$1,020.000	2,040.00
		B1 PERSONNEL	5.0000	\$423.000	2,115.00
06 SOIL BORINGS (DRILLED)		AA SOIL BORING/FLD SCR. STANDARD	180.0000	\$15.000	2,700.00
08 ABANDONMENT		A1 ABANDONMENT 2" DIA OR LESS	180.0000	\$3.100	558.00
09 WELL INSTALLATION		B1 WATER TABLE (DRILL RIG)	100.0000	\$38.000	3,800.00
		CC TELESCOPING	45.0000	\$50.000	2,250.00
10 SAMPLE COLLECTION		A1 GROUNDWATER (PURGE)	9.0000	\$60.000	540.00
		D1 GROUNDWATER NO PURGE/DUPLICATE	4.0000	\$28.000	112.00
		H1 FIELD BLANK	1.0000	\$24.600	24.60
11 ANALYSES					
	GW GROUNDWATER	A2 BTEXNM+OXYGS+1,2-DCA+ETH-8260B	15.0000	\$122.000	1,830.00
	SOIL SOIL	W1 GRAIN SIZE / HYDROMETER	1.0000	\$104.000	104.00
12 AQUIFER CHARACTERIZATION		B1 SLUG TEST	3.0000	\$191.000	573.00
16 SUBSEQUENT SURVEY		A1 SUBSEQUENT SURVEY	1.0000	\$260.000	260.00
17 DISPOSAL		AA WASTEWATER	550.0000	\$0.560	308.00
		C1 SOIL TREATMENT DISPOSAL	8.0000	\$60.000	480.00
		D1 DRILLING FLUIDS	200.0000	\$0.420	84.00
19 RPT/PROJECT MNGT & COORDINATIO		PRT REPORT PREPARATION	0.1200	\$19,228.600	2,307.43
Total Amount					21,536.03

HHPSD 11399

Grant, Jeremy <jeremy.grant@aecom.com>

Mon 10/19/2020 11:09 AM

To: Gonzalez, Hugo R. <gonzalhr@dhec.sc.gov>

3 attachments (3 MB)

HHPSD - Tier 2 Phase 1 - Soil Borings.pdf; V805053_Report.pdf; HHPSD 11399_Proposed MW Locations.pdf;

*** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***

Hugo,

Attached are the boring logs from the groundwater screening, the groundwater analytical results from select screening locations, and a figure showing the boring locations and proposed permanent monitoring well locations for the Hilton Head Public Service District (HHPSD) site (UST Permit #11399). Once you've had a chance to review this information, please let me know when you are available to discuss the proposed permanent well locations. I will in the office for most of the week with the exception of Friday. I'm sorry that it took me so long after we spoke to get this information to you.

Jeremy Grant, PG, STS

Remediation Services Lead/Project Manager, Environment, Southeast Region

D +1-803-400-0090

M +1-803-422-2910

jeremy.grant@aecom.com**AECOM**

101 Research Drive

Columbia, South Carolina 29203-9389, USA

T +1-803-254-4400

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TEST BORING REPORT

BORING NO.: SB-06

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)				JOB NO.: 60617359 (TASK 2)			
CLIENT: HHPSD				PAGE NO.: 1 of 1			
CONTRACTOR: Elite Tech.				LOCATION:			
EQUIPMENT USED: Hand Auger, Geoprobe 7B22 DS				ELEVATION:			
GROUNDWATER		DEPTH NO:		CASING		SAMPLER	
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE		
					SIZE ID		
					HAMMER	NA	NA
					WT	NA	NA
					FALL	NA	NA
				DATE START: 01/03/2020			
				DATE FINISH: 02/03/2020			
				DRILLER: David Catmeer			
				PREPARED BY: Brian Reibling			

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	PID (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0-2			0.0		SM. Fine to medium grained SAND w/ little SILT. 7.5 YR 2.5/1. Dig. Loose to medium dense SAA. Moist 7.5 YR G/2. SAA. wet
2-4			0.0		
4-5			0.0		
5-7			4.5		(5/5 Recovery) SAA. Increasing medium-grained SAND. Saturated Slight petroleum odor.
7-9			12.6		SAA.
9-10			9.2		SAA.
10-15					Installed screen point sampler @ 10' bgs ~0.5' West of SB-06. UPDATE → DNS.
15-20					

BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY	SAMPLE ID	COMPONENT %	GROUNDWATER ABBREV.
0-4	VERY LOOSE	0-2	VERY SOFT	S - SPLIT SPOON	MOSTLY: 50-100%	WD - WHILE DRILLING
5-10	LOOSE	3-4	SOFT	T - TUBE	SOME: 30-45%	NE - NOT ENCOUNTERED
11-20	MEDIUM DENSE	5-8	MEDIUM STIFF	U - UNDISTURBED PISTON	LITTLE: 15-25%	UR - NOT READ
21-30	DENSE	9-15	STIFF	G - GRAB SAMPLE	FEW: 5-10%	
31-50	VERY DENSE	16-30	VERY STIFF	X - OTHER	TRACE: <5%	
51+		31+	HARD	NR - NO RECOVERY		

BORING NO. SB-06

TEST BORING REPORT

BORING NO.: SB-07

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

CLIENT: HHPSD

CONTRACTOR: Elite Tech.

EQUIPMENT USED: HA, Geoprobe 7822 DT.

JOB NO.: 60617359 (TASK 2)

PAGE NO.: 1 of 3

LOCATION:

ELEVATION:

DATE START: 02/02/2020

DATE FINISH: 02/02/2020

DRILLER:

PREPARED BY: David Latimore

Brian Reibling

GROUNDWATER		DEPTH TO:		CASING		SAMPLER		CORE BARREL	
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE				
					SIZE ID				
					HAMMER	NA	NA	NA	
					WT	NA	NA	NA	
					FALL	NA	NA	NA	

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	PID (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0-2			0.0		SM. Fine to medium-grained SAND w/ little SILT. 7.5YR 2.5/1. Loose to medium dense
2-4			0.0		SP. Medium-grained SAND w/ little fine-grained SAND and trace SILT. Brown. 7.5YR 6/2
4-5			0.0		SAA - Wet.
5-7			0.0		SP. Medium-grained SAND w/ little fine-grained SAND. Saturated. Medium dense.
7-10			0.0		SAA. Increasing fine-grained SAND.
10					
15					
20					

BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY	SAMPLE ID	COMPONENT %	GROUNDWATER ABBREV.
0-4	VERY LOOSE	0-2	VERY SOFT	S - SPLIT SPOON	MOSTLY: 60-100%	WD - WHILE DRILLING
5-10	LOOSE	3-4	SOFT	T - TUBE	SOME: 30-65%	NE - NOT ENCOUNTERED
11-20	MEDIUM DENSE	5-8	MEDIUM STIFF	U - UNDISTURBED PISTON	LITTLE: 15-25%	UR - NOT READ
21-30	DENSE	9-15	STIFF	G - GRAB SAMPLE	FEW: 5-10%	
31+	VERY DENSE	16-30	VERY STIFF	X - OTHER	TRACE: <5%	
		31+	HARD	NR - NO RECOVERY		

BORING NO. SB-07

CDM - AECOM		TEST BORING REPORT		BORING NO.: SB-09 (Potential telescoping well location)	
Multimedia Joint Venture					
PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)					
CLIENT: HHPSD					
CONTRACTOR: Elite Tech.					
EQUIPMENT USED: HA Geo Probe 7872 DT					
GROUNDWATER		DEPTH TO:		CASING SAMPLER CORE BARREL	
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE
					SIZE ID
					HAMMER
					WT
					FALL
					NA
					NA
					NA
DATE START: 02/03/2020					
DATE FINISH: 02/11/2020					
DRILLER: David Latimore					
PREPARED BY: Brian Rebling					
DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	PID (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0-2			0.0		SM. Fine to medium-grained SAND w/ trace to little SILT. 7.5 yr 2.5/1. Dry - loose to Medium dense
2-4			29.6		SAA. 7.5 yr 6/2. Moist. Petroleum odor + staining
4-5			45.9		SAA. Wet.
5					
5-7			NA		(3/5' Recovery)
7-9			180.6		SP. Fine to medium-grained SAND w/ little SILT. Loose to med. dense, wet, petroleum odor 7.5 yr 6/2.
9-10			120.5		SAA. Reduced odor.
10					
10-12			9.5		SAA.
12-14			6.2		SAA. Shell fragments ~ 14' bgs.
14-15			1.2		SW. Fine to medium-grained SAND w/ little SILT. Wet, medium dense. Brown.
15					
15-20			0.0		SAA. No odor
20					Install screen point to 20' and retract 3' to expose screen.
20					
BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY	SAMPLE ID	COMPONENT %
0-4	VERY LOOSE	0-2	VERY SOFT	S - SPLIT SPOON	MOSTLY: 50-100%
5-10	LOOSE	3-4	SOFT	T - TUBE	SOME: 50-65%
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	U - UNDISTURBED PISTON	LITTLE: 15-25%
31-60	DENSE	9-15	STIFF	G - GRAB SAMPLE	FEW: 5-10%
61+	VERY DENSE	16-30	VERY STIFF	X - OTHER	TRACE: <5%
		31+	HARD	NR - NO RECOVERY	
					GROUNDWATER ABBREV.
					WD - WHILE DRILLING
					NE - NOT ENCOUNTERED
					UR - NOT READ
					BORING NO. SB-09

CDM - AECOM

Multimedia Joint Venture

TEST BORING REPORT

BORING NO.:

SB-11

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

CLIENT: HHPSD

CONTRACTOR: Elite Tech.

EQUIPMENT USED: HA, GeoProbe 7822 DT

JOB NO.: 60617359 (TASK 2)

PAGE NO.: 1 of 1

LOCATION:

ELEVATION:

GROUNDWATER

DEPTH TO:

CASING

SAMPLER

CORE

DATE START: 02/04/2020

DATE

HRS

AFTER

COMP

WATER

BOTTOM

OF

CASING

BOTTOM

OF

HOLE

TYPE

SIZE ID

HAMMER

WT

HAMMER

FALL

NA

NA

NA

DATE FINISH: 02/04/2020

DRILLER:

PREPARED BY:

David Latimore

Bryan Kibling

DEPTH

IN

FEET

CASING

BLOWS

PER

FOOT

SAMPLER

BLOWS

PER

INCHES

PID (ppm)

SAMPLE

DEPTH

RANGE

FIELD CLASSIFICATION AND REMARKS

0-2

2.5

SM. Fine to medium-grained SAND w/ little
SILT. 7.5 yf 2.5/1. Loose. Dry.

2-4

50.9

SAA. Moist. Medium dense. 7.5 yf 6/2.
Petroleum odor

4-5

92.6

SAA. Petroleum odor & staining. wet

5

5-7

110.5

SAA. Increasing fines. Very strong petroleum
odor. Saturated.

7-9

136.2

SAA.

9-10

125.9

SAA.

10

15

20

BLOWS/FT

DENSITY

BLOWS/FT

CONSISTENCY

SAMPLE ID

COMPONENT %

GROUNDWATER ABBREV.

0-4

VERY LOOSE

0-2

VERY SOFT

S - SPLIT SPOON

MOSTLY: 80-100%

WD - WHILE DRILLING

5-10

LOOSE

3-4

SOFT

T - TUBE

SOME: 30-45%

NE - NOT ENCOUNTERED

11-20

MEDIUM DENSE

5-8

MEDIUM STIFF

U - UNDISTURBED PISTON

LITTLE: 15-25%

UR - NOT READ

21-30

DENSE

9-15

STIFF

G - GRAB SAMPLE

FEW: 5-10%

31-50

VERY DENSE

16-30

VERY STIFF

X - OTHER

TRACE: <5%

51+

VERY DENSE

31+

HARD

NR - NO RECOVERY

BORING NO. SB-11

TEST BORING REPORT

BORING NO.:

SB-12

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

CLIENT: HHPSD

CONTRACTOR: Elite Tech.

EQUIPMENT USED: HA, Geoprobe TB22DT.

JOB NO.: 60617359 (TASK 2)

PAGE NO.: 1 of 1

LOCATION:

ELEVATION:

DATE START: 02/04/2020

DATE FINISH: 02/04/2020

DRILLER: David Latimore

PREPARED BY:

Brian Ribling

GROUNDWATER		DEPTH TO:		CASING		SAMPLER		CORE		DATE START: 02/04/2020	
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE					DATE FINISH: 02/04/2020	DRILLER: David Latimore
					SIZE ID						PREPARED BY: Brian Ribling
					HAMMER	NA	NA	NA			
					WT						
					FALL	NA	NA	NA			
DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	PID (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS						
0-2			0.0		SM. Fine to medium-grained SAND w/ little silt. Loose. 7.5 yr 2.5/1. Dry.						
2-4			0.0		SAA. Medium dense. 7.5 yr 2. Moist						
4-5			0.0		SAA. Wet						
5-6			NA		(4/5' Recovery)						
6-8			0.9		SAA. Trace clay. Slight sewage odor. Loose. Wet.						
8-10			1.2		SP. Fine to medium-grained SAND. Light gray, wet, medium dense.						
10											
15											
20											
BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY	SAMPLE ID	COMPONENT %	GROUNDWATER ABBREV.					
0-4	VERY LOOSE	0-2	VERY SOFT	S - SPLIT SPOON	MOSTLY: 50-100%	WD - WHILE DRILLING					
5-10	LOOSE	3-4	SOFT	T - TUBE	SOME: 30-45%	NE - NOT ENCOUNTERED					
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	U - UNDISTURBED PISTON	LITTLE: 15-25%	UR - NOT READ					
31-50	DENSE	9-15	STIFF	G - GRAB SAMPLE	FEW: 5-10%						
51+	VERY DENSE	16-30	VERY STIFF	X - OTHER	TRACE: <5%						
		31+	HARD	NR - NO RECOVERY		BORING NO. SB-12					

TEST BORING REPORT

BORING NO.:

SB-13

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

JOB NO.: 60617359 (TASK 2)

CLIENT: HHPSD

PAGE NO.: 1 of 1

CONTRACTOR: Elite Tech

LOCATION:

EQUIPMENT USED: HA, GeoProbe 7822 BT

ELEVATION:

GROUNDWATER

DEPTH TO:

CASING

SAMPLER

CORE

DATE START: 02/04/2020

DATE

HRS

AFTER

COMP

WATER

BOTTOM

OF

CASING

BOTTOM

OF

HOLE

TYPE

SIZE ID

HAMMER

WT

NA

NA

NA

DATE FINISH: 02/04/2020

DRILLER:

David Latimore

PREPARED BY:

Brian Kibling

DEPTH

IN

FEET

CASING

BLOWS

PER

FOOT

SAMPLER

BLOWS

PER

6

INCHES

PID (ppm)

SAMPLE

DEPTH

RANGE

FIELD CLASSIFICATION AND REMARKS

0-2

2-4

4-6

6

5-8

8-10

10

15

20

0.0

0.0

0.0

0.0

NA

0.0

SM: Fine to medium grained SAND w/ trace
SILT. 7.5 yr 2.5/1. Dry. loose
SAA: Moist
SAA: Medium dense. 7.5 yr 6/2. Wet.

(2/5' Recovery)

SAA: increasing fines. Saturated

BLOWS/FT

DENSITY

BLOWS/FT

CONSISTENCY

SAMPLE ID

COMPONENT %

GROUNDWATER ABBREV.

0-4

VERY LOOSE

0-2

VERY SOFT

S - SPLIT SPOON

MOSTLY: 60-100%

WD - WHILE DRILLING

5-10

LOOSE

3-4

SOFT

T - TUBE

SOME: 30-45%

NE - NOT ENCOUNTERED

11-30

MEDIUM DENSE

5-8

MEDIUM STIFF

U - UNDISTURBED PISTON

LITTLE: 15-25%

UR - NOT READ

31-50

DENSE

9-15

STIFF

G - GRAB SAMPLE

FEW: 5-10%

51+

VERY DENSE

16-30

VERY STIFF

X - OTHER

TRACE: <5%

BORING NO. SB-13

31+

HARD

NR - NO RECOVERY

TEST BORING REPORT

BORING NO.:

SB-14

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

JOB NO.: 60617359 (TASK 2)

CLIENT: HHPSD

PAGE NO.: 1 of 1

CONTRACTOR: Elite Tech

LOCATION:

EQUIPMENT USED: HA, Geoprobe 7822-IT

ELEVATION:

GROUNDWATER

DEPTH TO:

CASING

SAMPLER

CORE

DATE START: 02/04/2020

DATE

HRS

AFTER

COMP

WATER

BOTTOM

OF CASING

BOTTOM

OF HOLE

TYPE

SIZE ID

HAMMER

WT

HAMMER

FALL

NA

NA

NA

DATE FINISH: 02/04/2020

DRILLER: David Cutmore

PREPARED BY: Brian Ribbing

DEPTH

IN

FEET

CASING

BLOWS

PER

FOOT

SAMPLER

BLOWS

PER

6

INCHES

PID (ppm)

SAMPLE

DEPTH

RANGE

FIELD CLASSIFICATION AND REMARKS

0-0.5

0.5-2

2-4

4-5

5

5-6

6-8

8-10

10

15

20

0.0

NA

Asphalt.

SM. Fine to medium-grained SAND. Trace SILT.

loose to medium dense. 7.5 YR 2.5/1. Dry

SAA. Medium dense. 7.5 YR 6/2. Moist

SAA. wet

(4/5' Recovery)

SAA. Slight sewage odor. Saturated

SAA. Increasing fines.

BLOWS/FT

DENSITY

BLOWS/FT

CONSISTENCY

SAMPLE ID

COMPONENT %

GROUNDWATER ABBREV.

0-4

5-10

11-30

31-50

51+

VERY LOOSE

LOOSE

MEDIUM DENSE

DENSE

VERY DENSE

0-2

3-4

5-8

9-15

16-30

31+

VERY SOFT

SOFT

MEDIUM STIFF

STIFF

VERY STIFF

HARD

S - SPLIT SPOON

T - TUBE

U - UNDISTURBED PISTON

G - GRAIN SAMPLE

X - OTHER

NR - NO RECOVERY

MOSTLY: 50-100%

SOME: 30-45%

LITTLE: 15-25%

FEW: 5-10%

TRACE: <5%

WD - WHILE DRILLING

NE - NOT ENCOUNTERED

UR - NOT READ

BORING NO. SB-14

TEST BORING REPORT

BORING NO.:

SB-15

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

JOB NO.: 60617359 (TASK 2)

CLIENT: HHPSD

PAGE NO.: 1 of 1

CONTRACTOR: Elite Tech.

LOCATION:

EQUIPMENT USED: H.A. Geo Probe 7822 BT

ELEVATION:

GROUNDWATER		DEPTH TO:		CASING		SAMPLER		CORE BARREL		DATE START:
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE					02/04/2020
					SIZE ID					DATE FINISH:
					HAMMER	NA	NA	NA		02/04/2020
					WT					DRILLER:
					HAMMER	NA	NA	NA		David Lattimore
					FALL					PREPARED BY:
										Brian Reibling

DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	PID (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
0-0.5			NA		Asphalt.
0.5-2					
2-4			0.0		Sm. Fine to medium-grained sand w/ little silt. Loose to med. dense. Dry to moist.
4-5					SAA. moist
5-6			NA		(4/5' Recovery)
6-10			0.0		SAA. saturated. Increasing fines.
10					
15					
20					

BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY	SAMPLE ID	COMPONENT %	GROUNDWATER ABBREV.
0-4	VERY LOOSE	0-2	VERY SOFT	S - SPLIT SPOON	MOSTLY: 80-100%	WD - WHILE DRILLING
5-10	LOOSE	3-4	SOFT	T - TUBE	SOME: 30-45%	NE - NOT ENCOUNTERED
11-20	MEDIUM DENSE	5-8	MEDIUM STIFF	U - UNDISTURBED PISTON	LITTLE: 15-25%	UR - NOT READ
21-30	DENSE	9-15	STIFF	G - GRAB SAMPLE	FEW: 5-10%	
31+	VERY DENSE	16-30	VERY STIFF	X - OTHER	TRACE: <5%	
		31+	HARD	NR - NO RECOVERY		BORING NO. SB-15

CDM - AECOM

Multimedia Joint Venture

TEST BORING REPORT

BORING NO.:

SB-16

PROJECT: HHPSD (21 Oak Park Drive, Hilton Head, SC 29926)

CLIENT: HHPSD

CONTRACTOR: ETC T&C

EQUIPMENT USED: H.A. Gas Pile 7822DT

JOB NO.: 80617359 (TASK 2)

PAGE NO.: 1 of 1

LOCATION:

ELEVATION:

DATE START: 02/04/2020

DATE FINISH: 02/04/2020

DRILLER: David Letimer

PREPARED BY:

Brian Rebling

GROUNDWATER		DEPTH TO:		CASING	SAMPLER	CORE BARREL
DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE	
DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLER BLOWS PER 6 INCHES	PID (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS	
0-0.5			NA		Asphalt.	
0.5-2					SM. Fine to medium-grained sand w/ trace silt.	
2-4					Trace GRAVEL. loose to med. dense, T.S. 25%.	
4-5					D.Y.	
5					SAA. Moist	
					SAA. Wet	
5-6			NA		(4/5' Recovery)	
6-10					SAA.	
10						
15						
20						

BLOWS/FT	DENSITY	BLOWS/FT	CONSISTENCY	SAMPLE ID	COMPONENT %	GROUNDWATER ABBREV.
0-4	VERY LOOSE	0-2	VERY SOFT	S - SPLIT SPOON	MOSTLY: 60-100%	WD - WHILE DRILLING
5-10	LOOSE	3-4	SOFT	T - TUBE	SOME: 30-45%	NE - NOT ENCOUNTERED
11-20	MEDIUM DENSE	5-8	MEDIUM STIFF	U - UNDISTURBED PISTON	LITTLE: 15-20%	UR - NOT READ
21-30	DENSE	9-15	STIFF	G - GRAB SAMPLE	FEW: 5-10%	
31-40	VERY DENSE	16-30	VERY STIFF	X - OTHER	TRACE: <5%	
41+		31+	HARD	NR - NO RECOVERY		

BORING NO.

SB-16

PACE ANALYTICAL SERVICES, LLC

Sample Summary

AECOM

Lot Number: VB05053

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	TW01-20200204	Aqueous	02/04/2020 1200	02/05/2020
002	TW01-20200204-DUP	Aqueous	02/04/2020 1200	02/05/2020
003	TW01-20200204-TB	Aqueous	02/04/2020 1200	02/05/2020
004	TW02-20200204	Aqueous	02/04/2020 1220	02/05/2020
005	TW03-20200204	Aqueous	02/04/2020 1530	02/05/2020

(5 samples)

PACE ANALYTICAL SERVICES, LLC

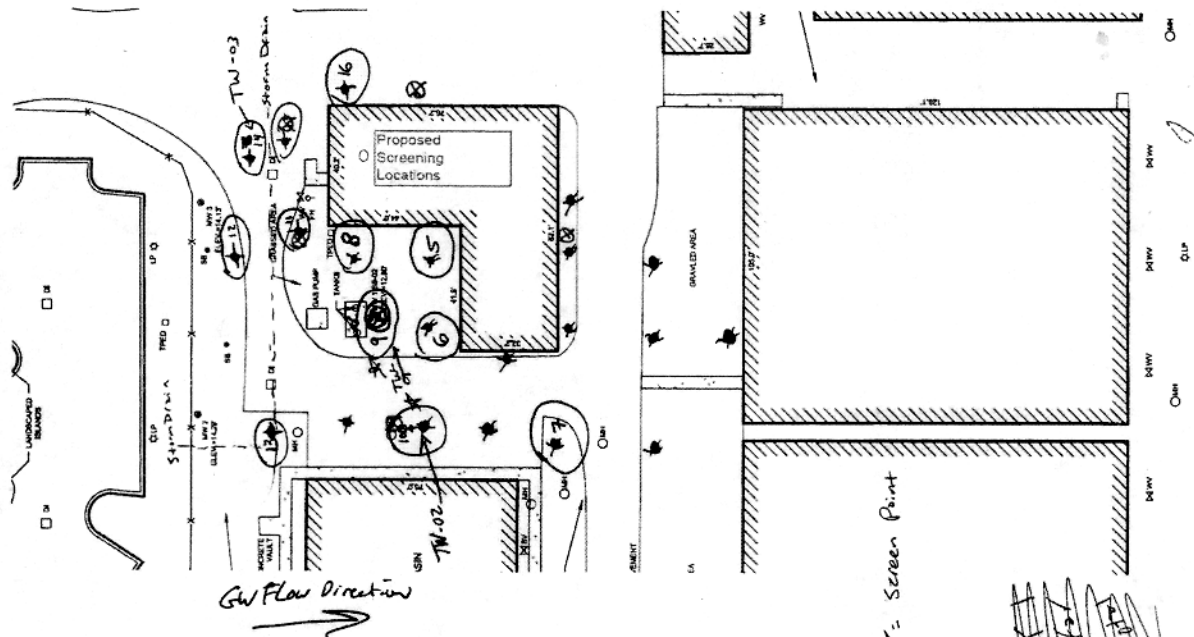
Detection Summary

AECOM

Lot Number: VB05053

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	TW01-20200204	Aqueous	Ethylbenzene	8260B	0.85	J	ug/L	5
001	TW01-20200204	Aqueous	Toluene	8260B	1.5		ug/L	5
001	TW01-20200204	Aqueous	Xylenes (total)	8260B	0.40	J	ug/L	5
002	TW01-20200204-DUP	Aqueous	Ethylbenzene	8260B	0.83	J	ug/L	6
004	TW02-20200204	Aqueous	Ethylbenzene	8260B	17		ug/L	8
004	TW02-20200204	Aqueous	Naphthalene	8260B	2.2		ug/L	8
004	TW02-20200204	Aqueous	Toluene	8260B	1.2		ug/L	8
004	TW02-20200204	Aqueous	Xylenes (total)	8260B	46		ug/L	8
005	TW03-20200204	Aqueous	Toluene	8260B	0.99	J	ug/L	9

(9 detections)



+ 16 Screening locations?

15 Shallow + 1 Deep = 180' (shallow = 10' bgs) (deep = 30' bgs)

⊙ Deep well location

⊗ Proposed permanent well location

Re: UST Site #11399 - Drilling Audit

Gonzalez, Hugo R. <gonzalhr@dhec.sc.gov>

Wed 8/25/2021 4:30 PM

To: Grant, Jeremy <jeremy.grant@aecom.com>; Reibling, Brian <Brian.Reibling@aecom.com>

Ok, thank you, Jeremy. I'll grant a 30-day extension. Have a good afternoon.

Hugo

Hugo Gonzalez, Hydrogeologist

Assessment & Non-Permitted Petroleum Section

UST Management Division

S.C. Department of Health & Environmental Control

Phone: (803) 898-0628 | **Fax:** (803) 898-0673

Email: gonzalhr@dhec.sc.gov



From: Grant, Jeremy <jeremy.grant@aecom.com>

Sent: Wednesday, August 25, 2021 4:23 PM

To: Gonzalez, Hugo R. <gonzalhr@dhec.sc.gov>; Reibling, Brian <Brian.Reibling@aecom.com>

Subject: RE: UST Site #11399 - Drilling Audit

*** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***

Hugo,

The data from the slug tests that were previously performed was not good so, I have someone going to the site tomorrow to conduct three slug tests. I'm also in the process of reviewing what Brian drafted thus far. My guesstimate is that the report will be ready for submittal by mid-September.

Jeremy Grant, PG, STS

Remediation Services Lead/Project Manager, Environment, East Region

D +1-803-740-1604 NEW PHONE NUMBER

Ext x2381604 NEW JABBER EXTENSION

M +1-803-422-2910

jeremy.grant@aecom.com

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Imagine it. Delivered.

Re: UST Site #11399 - Drilling Audit

Gonzalez, Hugo R. <gonzalhr@dhec.sc.gov>

Wed 11/10/2021 10:58 AM

To: Grant, Jeremy <jeremy.grant@aecom.com>

Thank you, I will grant the extension to November 25, 2021.

Hugo

**Hugo Gonzalez, Hydrogeologist***Assessment & Non-Permitted Petroleum Section**UST Management Division***S.C. Department of Health & Environmental Control****Phone:** (803) 898-0628 | **Fax:** (803) 898-0673**Email:** gonzalhr@dhec.sc.gov

From: Grant, Jeremy <jeremy.grant@aecom.com>**Sent:** Wednesday, November 10, 2021 10:27 AM**To:** Gonzalez, Hugo R. <gonzalhr@dhec.sc.gov>**Subject:** RE: UST Site #11399 - Drilling Audit

*** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***

Good morning Hugo,

Per our conversation, there has been a lot of progress made on the draft report in the last two weeks but it still has some work that needs to be completed. I'm confident that this work can be wrapped up in the next couple of weeks. We respectfully request a two week extension to the report deadline. Thanks!

Jeremy Grant, PG, STS

Remediation Services Lead/Project Manager, Environment, East Region

D +1-803-740-1604 NEW PHONE NUMBER**Ext x2381604 NEW JABBER EXTENSION****M +1-803-422-2910**jeremy.grant@aecom.com**AECOM**

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Project Manager AECOM

Name of Contractor Hugo Gonzalez

Docket Title Tier II

Document Number 13 kcal

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Tier II Assessment Report

UST Permit #11399

Project number: 60617359

November 2021

Quality information

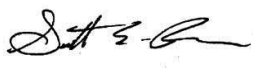
Checked by

Jeremy Grant for

Brian Reibling

Verified by

Jeremy Grant

Approved by

Scott Ross, PG

Revision History

Revision	Revision date	Details	Authorized	Name	Position

Prepared for:

Hugo Gonzalez, Hydrogeologist
UST Management Division
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2600 Bull Street
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Acronyms and Abbreviations

AECOM	AECOM, Inc.
AFVR	aggressive fluid vapor recovery
amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COC	constituent of concern
DO	dissolved oxygen
DPT	direct push technology
ft	feet
ft/day	feet per day
HHPSD	Hilton Head Public Service District
IDW	investigative derived waste
MTBE	methyl tertiary butyl ether
NFA	No Further Action
NTU	nephelometric turbidity unit
ORP	oxidation reduction potential
OVA PID	organic vapor analyzer photoionization detector
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RBSL	Risk-based Screening Level
SCDHEC	South Carolina Department of Health and Environmental Control
SSWP	Site-Specific Work Plan
SU	standard units
USEPA	United States Environmental Protection Agency
UST	underground storage tank
µg/L	micrograms per liter

1. Introduction

AECOM, Technical Services, Inc. (AECOM) has prepared this Tier II Assessment (Tier II) report for the South Carolina Department of Health and Environmental Control (SCDHEC) on behalf of the Hilton Head Public Service District (HHPSD). This Tier II report presents the results of field activities and laboratory analyses for Underground Storage Tank (UST) site ID #11399 at the HHPSD facility located at 21 Oak Park Drive (the Site) in Hilton Head Island, South Carolina, as shown on **Figure 1**.

1.1 Site Background and Properties

The HHPSD operates a wastewater treatment plant at the Site. The Site is surrounded by various buildings associated with the water treatment facility and consists of a 10,000-gallon fiberglass reinforced plastic UST used to supply diesel fuel to fleet vehicles. A fuel dispenser is located approximately 10 feet (ft) from the UST and is directly adjacent to an access road within the wastewater facility. The Site is located within a commercial business district, with other light commercial and residential properties in the vicinity of the Site.

A 1,000-gallon steel UST that was used to store diesel fuel was in operation at the facility from December 13, 1988 until December 18, 1998. The UST was abandoned in place and filled with inert material, likely sand. No releases were reported for this UST. A second 10,000-gallon UST constructed of fiberglass reinforced plastic was installed, began operation on September 1, 1991 and is still currently in use. Two releases were reported for the Site. Release #1 was reported on September 30, 1999. At that time an unknown amount of diesel fuel was released and subsequently cleaned up. No Further Action (NFA) was granted for this release on October 8, 1999. Release #2 was reported on July 27, 2017. Further investigation revealed the likely cause of release #2 was connection issues in the product piping between the UST and the dispenser. An unknown amount of diesel fuel was released and this release remains open.

AECOM submitted a Site-Specific Work Plan (SSWP) to SCDHEC on March 18, 2019 detailing plans for a Tier I Assessment. The Tier I Assessment included the advancement of four soil borings and installation of three monitoring wells. The four soil borings (SB-01 through SB-04) were chosen to assess the source of the release from the UST system (tank, piping, and dispenser). Monitoring well MW-01 was installed adjacent to boring SB-02 near the UST. Monitoring wells MW-02 and MW-03 were installed outside of the source area in approximately triangular positions to allow for the estimation of the site-specific direction of groundwater flow. The locations of the Tier I Assessment borings and monitoring wells are depicted on **Figure 2**.

The Tier I Report documenting the results of this investigation was completed and submitted to SCDHEC on December 17, 2018 (AECOM, 2018). Based on impacts to soil and groundwater at the Site, additional investigative activities were recommended. In a letter dated April 10, 2019, SCDHEC concurred with the recommendations and issued a directive to perform a Tier II Assessment.

The scope of work for the Tier II was to evaluate the extent of free phase product in monitoring well MW-01, the vertical and horizontal extent of groundwater impact and conduct additional slug tests to assess hydraulic characteristics of the water table aquifer. Twelve soil borings and three temporary groundwater screening points were completed in the first phase of the Tier II Assessment (**Figure 2**). The second phase of the Tier II Assessment included the installation of seven permanent monitoring wells (MW-04 through MW-10) and one telescoping well (DCW-01).

The ground surface at the Site is generally covered by concrete and asphalt roadways, grassed areas, buildings, aeration/storage tanks associated with the wastewater treatment facility, parking lots to the north and northwest and pine forest to the east. The central portion of the Site contains the UST/dispenser, is primarily covered with concrete/buildings with surrounding grassy areas and drainage features and is the primary focus of the Tier II Assessment.

The topography of the Site generally slopes to the southeast with an elevation of approximately 14 ft above main sea level (amsl). Potable water is supplied to the Site by a HHPSD and no potable water wells are located within 1,000 feet of the Site.

1.2 Geologic Setting

Hilton Head is in the southeastern portion of the Lower Coastal Plain physiographic province of South Carolina and is south of the Garner-Edisto fault line. The Coastal Plain consists of unconsolidated sediments and partially lithified sedimentary rock ranging in age from the Late Cretaceous Period to the Holocene Epoch.

The Lower Coastal Plain consists of a wedge of unconsolidated and lithified sediments overlying a basement complex of igneous and metamorphic rocks. The total thickness of coastal plain sediments underlying the Site is approximately 3,500 feet. Hilton Head Island is located within the Hawthorn Formation and is comprised of various sands and limestone deposits. Hilton Head Island was formed from the erosional fragments of coastal and sand bodies deposited from the Pleistocene high sea level changes. Hilton Head is a sea island having a roughly rectangular shape is parallel to the shoreline of the Atlantic Ocean. Aquifers associated with the Hilton Head area include the Tertiary Limestone, Peedee, Black Creek, Middendorf, and Middle Floridan (Soller and Mills, 1991).

The subsurface geology beneath the Site is comprised of fine to medium grained sand to a depth of approximately 35 ft below ground surface (bgs). Below 35 ft bgs, a high and low plasticity clay is observed to the total investigation depth of 45 ft bgs.

2. Tier II Assessment Activities

The following presents a summary of the field activities conducted at the Site during the Tier II Assessment. All field activities were approved by SCDHEC prior to mobilization to the Site. The Tier II Assessment activities were outlined in a SSWP and comprised a phased approach:

- Direct Push Technology (DPT) soil and groundwater screening;
- Permanent monitoring well installations, including a telescoping monitoring well;
- Well development and sampling; and
- Slug test aquifer characterization.

The overall objective of these activities was to delineate the soil and groundwater contamination horizontally and vertically at the Site and assess the rate of groundwater flow.

2.1 Field Activities

Phase I of the Tier II field activities were conducted from February 3, 2020 to February 4, 2020 and included the screening of soil at twelve soil boring locations (SB-05 through SB-16) and collection of groundwater samples from three temporary DPT locations (TW-01 through TW-03). After review of the groundwater screening data, seven permanent monitoring wells (MW-04 through MW-10) and one permanent telescoping monitoring well (DCW-01) were installed on April 19, 2021 through April 20, 2021 (**Figure 2**). The newly installed monitoring wells were developed and sampled the week of April 19, 2021. Additionally, three wells (MW-08, MW-09 and DCW-01) were slug tested on August 26, 2021. Field activities were conducted in accordance with procedures summarized in the SCDHEC UST Programmatic Quality Assurance Project Plan (QAPP) and the SSWP (SCDHEC, 2020).

2.1.1 Soil and Groundwater Screening

During the first phase of the Tier II Assessment, soil borings (SB-05 to SB-16) were screened with an organic vapor analyzer photoionization detector (OVA PID). Elevated OVA PID readings indicating petroleum hydrocarbon impact were detected in soil from borings SB-08, SB-09 and SB-11. Boring SB-9 was installed near the UST/dispenser to assess the vertical extent of petroleum impact in the source area. Borings B-8 and B-11 were installed in areas extending outward from the source area to assess the horizontal extent of petroleum hydrocarbon impact in saturated soils. Soil OVA PID screening data can be found in the boring logs in **Appendix A**.

To verify the OVA PID readings had identified the vertical and horizontal extent of petroleum hydrocarbon impact, three temporary wells (TW-01 through TW-03) were installed via DPT to collect groundwater samples for confirmatory laboratory analysis. DPT groundwater screening sample tooling consisted of a 2-inch outside diameter stainless steel

drive rod with a 3-foot long, 1¼ inch diameter inner retractable screen. Once the sampling device was driven to its desired depth, the outer drive casing was retracted, exposing the inner screen to the surrounding aquifer.

The DPT groundwater screening samples were collected using a peristaltic pump with ¼ inch inside diameter dedicated, disposable polyethylene and silicone tubing. The polyethylene tubing was inserted into DPT rods to extract groundwater from within the temporary well screened interval. Temporary well TW-01 was installed directly adjacent to boring SB-09 at a screened interval of 17 to 20 ft bgs to verify that the vertical extent of petroleum impact had been accurately assessed by the saturated soil vapor screening. Temporary well TW-02 and TW-03 were installed adjacent to borings SB-10 and SB-14, respectively, at screened interval of 7 to 10 ft bgs to verify that the horizontal extent of petroleum impact had been accurately assessed by the saturated soil vapor screening. Soil boring and temporary well locations are displayed on **Figure 2**.

Groundwater samples were collected in laboratory supplied, precleaned bottleware, packed on ice and shipped via overnight courier to the SCDHEC approved laboratory Pace Analytical Services in Columbia, SC (SCDHEC Certification Number 32010001). Each groundwater sample was analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), 1,2-Dichloroethane, oxygenates, methyl tertiary butyl ether (MTBE) and naphthalene by United States Environmental Protection Agency (USEPA) SW-846 Test Method 8260D. Groundwater data from the temporary DPT groundwater points are displayed in **Table 2** and laboratory analytical results are in **Appendix B**.

2.1.2 Monitoring Well Installation

Based upon the soil vapor screening and confirmatory groundwater screening data, AECOM proposed permanent well (seven shallow and one telescoping) locations to SCDHEC and SCDHEC approved the proposed locations. The locations were selected to supplement in the assessment of the horizontal and vertical extent of the contamination. Well locations are shown on **Figure 2**.

In April 2021, Elite Techniques, Inc. installed monitoring wells MW-04 through MW-10 using a 3.75-inch diameter DPT steel casing. The monitoring wells were constructed of 2-inch diameter Schedule 40 polyvinyl chloride (PVC) screen and riser. The screened portion of the well was a 10-foot long, prepacked 0.010-inch slotted screen (#10 slot). The outer casing of the telescoping well was installed to a depth of 25 feet bgs using hollow stem augers. After allowing the grout to set for at least 24 hours, the telescoping well was installed using the DPT well installation procedure described above with a prepacked 5-foot long screen.

The sand pack consisted of #2 filter sand extending from the bottom of the boring to one ft above the top of the screened portion of the well. A 1-foot thick seal was then created using hydrated granular bentonite and Portland cement grout filled the remaining borehole annulus to the surface. The well was then fitted with a lockable cap and surface finishing was completed with an 8-inch diameter 12-inch-thick flush mounted surface casing set in a 2-foot by 2-foot concrete pad.

Monitoring well construction details are summarized in Table 1. Boring/well construction logs for each well are included in **Appendix A** which show the lithological descriptions of soils encountered at the Site and the well construction details. As discussed in **Section 1.2**, the soils encountered consist of fine to medium-grained sand to a depth of approximately 35 ft bgs and are underlain by high plasticity and stiff (low plasticity) clay.

2.1.3 Groundwater Monitoring Well Development and Sampling

The newly installed wells were developed by pumping with a submersible pump and surging the screened interval. Development efforts were completed on the wells prior to groundwater sampling efforts.

Prior to initiation of monitoring well purging and groundwater sampling, a complete round of groundwater level measurements (i.e., depth to water) was collected from the monitoring wells. Each monitoring well was opened and allowed to equilibrate to atmospheric pressure before collection of the water level measurement. Groundwater was encountered between approximately 5 to 7 ft bgs during the Tier II Assessment.

Groundwater measurements, including calculated groundwater elevations, are summarized in **Table 1**. A potentiometric surface map based on these data is presented on **Figure 3**. No free phase product was encountered in any newly installed monitoring well; however, free phase product was detected in the existing monitoring well MW-01 at a thickness of 2.75 feet on April 22, 2021.

Groundwater samples were collected using low-flow purging/sample collection techniques. Dedicated tubing (Teflon® lined) was lowered into each monitoring well until the end of the tubing was in the approximate middle portion of the well screen. A peristaltic pump was used to purge/sample groundwater from each of the monitoring wells.

Parameters including oxidation reduction potential (ORP), temperature, specific conductance, pH, turbidity, and dissolved oxygen (DO) were monitored during purging and were recorded on the low flow purge data form for each monitoring well. Purging continued until the temperature, pH, specific conductance had stabilized, and the turbidity had either stabilized or was below 10 nephelometric turbidity units (NTUs). Stabilization was considered complete when pH measurements remained constant within 0.1 Standard Unit (SU), or reproducible to within 0.1 SU, specific conductance varied no more than 10 percent, and the temperature was consistent for at least three consecutive readings.

Following the purging activities, groundwater samples were collected following procedures established in the South Carolina SCDHEC UST Programmatic QAPP, dated July 2020, Revision 4.0. Groundwater samples were analyzed for the BTEX (benzene, toluene, ethylbenzene, xylenes), 1,2-Dichloroethane, oxygenates, MTBE and naphthalene by USEPA Method 8260D by Pace Analytical Services of West Columbia, South Carolina. Due to the presence of free phase product in monitoring well MW-01, a groundwater sample was not collected from this well.

A laboratory-prepared trip blank was included with sample shipment to the laboratory. The Tier II groundwater laboratory analytical results from the monitoring well network are summarized in **Table 3**. The groundwater laboratory analytical reports with chain of custody documentation are provided in **Appendix B**.

2.1.4 Hydraulic Characterization

Hydraulic conductivity tests (slug tests) were performed in three of the newly installed monitoring wells (MW-08, MW-09 and DCW-01). These tests were conducted to provide estimates of the hydraulic conductivity in the portion of the aquifer immediately surrounding a well screen. Slug tests were conducted by two methods, falling head test (slug in) and rising head test (slug out).

Falling head tests were conducted by quickly inserting a 1.5 inch diameter, 60 inch length solid polyvinyl chloride (PVC) cylinder (slug) into a well. The resulting water level rises and is monitored over time as it declines back toward static level. Rising head tests were conducted by quickly removing the submerged slug from a well. The resulting water level declines and is monitored over time as it rises back to static level. Changes in water levels were monitored using pressure transducer data loggers (In-Situ Level TROLL® 700 or similar). The testing methods and data analysis followed the procedures described by Bouwer and Rice (1976) and Bouwer (1989).

The hydraulic conductivities of slug test conducted during the Tier II ranged from 6.02 to 10.72 feet per day (ft/day) for wells MW-08, MW-09 and DCW-1. Based upon the slug test data, the average hydraulic conductivity at the Site is 13.16 ft/day. Slug test results are presented in **Table 4**. Slug test data analysis sheets are in **Appendix C**.

2.2 Investigation Derived Waste

Investigation-derived waste (IDW) generated during the Tier II field activities consisted of soil cuttings, monitoring well development water and groundwater sampling purge water. The liquid IDW was pumped into 5-gallon graduated buckets during development, purging and sampling procedures then transferred into a 55-gallon steel drum. Soil cuttings were placed directly into the drums during soil boring and well boring efforts, after the lithology was logged by the field geologist.

Seven 55-gallon drums of wastewater and two 55-gallon drums of soil cuttings were generated at the Site during the Tier II field activities. The 55-gallon drums used to store the IDW from the Site were labeled with proper identifying and contact information including source location, contents, and date collected. The 55-gallon drums were stored at a location designated by HHPSD within the HHPSD property. A disposal manifest for these materials will be submitted under separate cover.

3. Groundwater Flow and Contaminant Distribution

Groundwater flow and contaminant distribution at the HHPSD facility for the Tier II sampling event are discussed below.

3.1 Groundwater Elevations and Flow Velocities

Depths to groundwater were measured at each of the eleven monitoring wells on April 20, 2021. The groundwater elevations ranged from 6.93 feet amsl at MW-10 to 7.73 feet amsl at MW-02. As depicted on **Figure 3**, groundwater flow is generally to the south-southeast in the assessment area.

Based upon slug test data from both the Tier I and Tier II, the water table aquifer at the site has an average hydraulic conductivity of 13.16 ft/day. Using the calculated horizontal hydraulic gradient of 0.0049 foot/foot, the average groundwater seepage velocity of is 0.26 ft/day (94.1 feet/year) across the Site.

3.2 Contaminant Distribution

Based on the results of the April 2021 monitoring event, the petroleum-related impacts appear to encompass an approximate 100 square foot area that includes monitoring wells MW-01, MW-04, MW-05, and MW-09 and MW-10. Telescoping monitoring well DCW-01, with a well screening depth of 29-34 ft bgs, contained constituents of concern (COCs) below SCDHEC RBSL (Risk-Based Screening Level).

Results of the Tier II groundwater sampling indicate the following in relation to SCDHEC RBSLs:

- Benzene was detected above its RSBL of 5 micrograms per liter (µg/L) in monitoring wells MW-04, MW-05 and MW-09 at concentrations of 7.4, 9.5 and 45 µg/L; respectively.
- Free product was measured in MW-01 at a thickness of 2.75 feet.
- There were no other detections of petroleum hydrocarbons exceeding SCDHEC RBSL.

Groundwater COC exceedances detected during the April 2021 groundwater sampling event are summarized in Table 3. Figure 4 also depicts the results of the April 2021 sampling event.

Based upon information collected during the Tier I, potential receptors include the municipal water supply line approximately 20 ft east of the UST and the salt marsh associated with the Broad Creek located approximately 1,500 ft south of the Site. Although the water supply line is located close to the source area it is not submerged within the water table therefore it is unlikely that petroleum hydrocarbon impacted groundwater will impact this supply line. Also based on the relatively low dissolved phase concentrations in groundwater, the limited area of impact, the low groundwater flow rate, and the distance to the salt marsh, it is likely that natural attenuation processes will prevent the impacted groundwater from migrating to and negatively impacting the marsh.

4. Conclusions and Recommendations

Based on the results of the Tier II Assessment, the following conclusions and recommendations are made:

- The groundwater contamination plume has been delineated horizontally and vertically. The petroleum-related impacts appear to encompass an approximate 100 square foot area that includes monitoring wells MW-01, MW-04, MW-05, and MW-09 and MW-10.
- Benzene is the only petroleum hydrocarbon whose RBSL was exceeded. Groundwater containing benzene above its RBSL was collected from monitoring wells MW-04, MW-05 and MW-09.
- Free phase product at the Site is isolated to the vicinity of monitoring well MW-01. Free product was measured in MW-01 at a thickness of 2.75 feet.
- AECOM recommends aggressive fluid vapor recovery (AFVR) events to remove the free phase product from the subsurface. Approximately one month after the final AFVR event, AECOM recommends that groundwater samples be collected from the monitoring well network.

5. References

AECOM, December 2018. Tier I Assessment Report, Hilton Head Public Service District, 21 Oak Park Drive, Hilton Head, South Carolina.

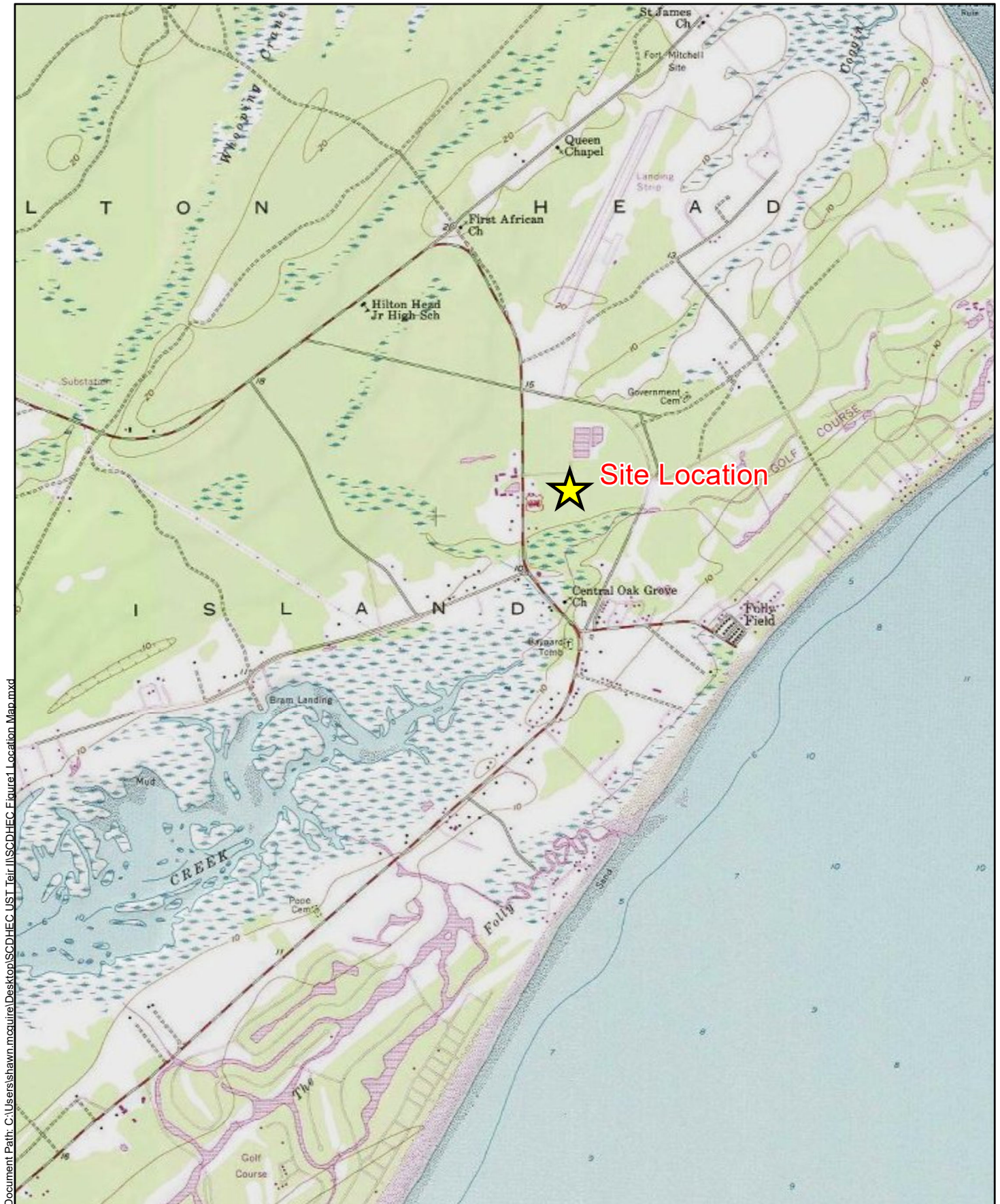
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Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, *Water Resources Research*, vol. 12, no. 3, pp. 423-428.

SCDHEC (South Carolina Department of Health and Environmental Control), July 2020. Quality Assurance Program Plan for the Underground Storage Tank Management Division. South Carolina Department of Health and Environmental Control, Columbia, South Carolina.

Soller, D.R., and Mills, H.H., 1991, Surficial geology and geomorphology, in Horton, J.W., Jr., and Zullo, V.A., eds., *The Geology of the Carolinas*: The University of Tennessee Press, Knoxville, p. 290-308.

Figures



Document Path: C:\Users\shawm\OneDrive\Desktop\SCDHEC\UST_Tier 1\SCDHEC Figure 1 Location Map.mxd

AECOM

0 2,000 4,000
Feet

Source: Orthoimagery from National Geographic Society, 2013.



21 OAK PARK DRIVE
HILTON HEAD ISLAND
SOUTH CAROLINA

DATE: 10/28/2021 DRWN: SM

FIGURE 1
Site Topographic Map
Tier 2 Assessment Report
HHPSD

Document Path: C:\Users\shawm.module\Desktop\SCDPEC UST Teir I\HHPSD Figure 2 Draft.mxd



FIGURE 2
Site Map
Tier 2 Assessment Report
HHPSD



LEGEND

- FP - Free Product
- DW - Deep Well
- Direction of Groundwater Flow
- Potentiometric Line
- ● Monitoring Well

AECOM

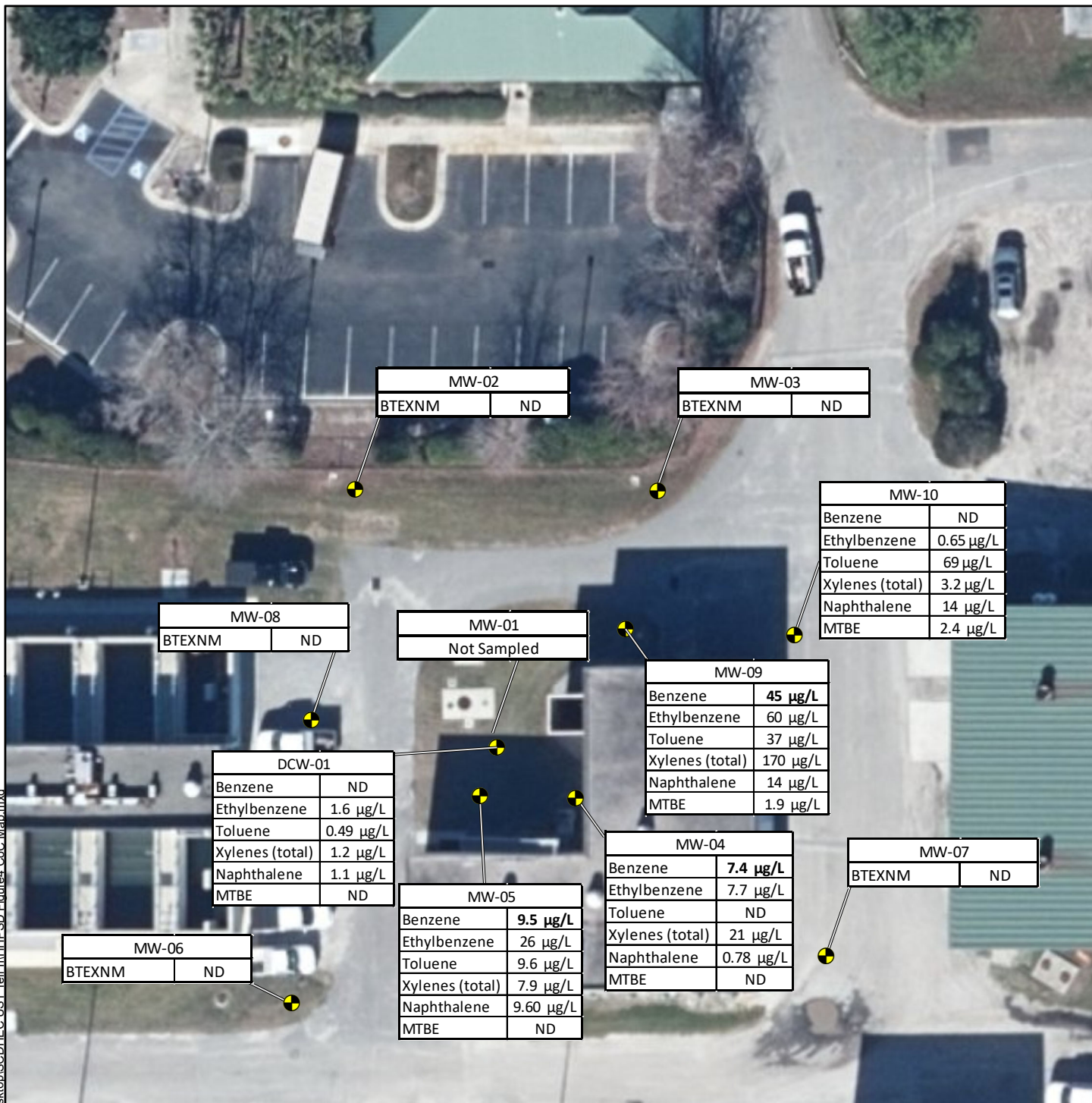
0 30 60 Feet



21 OAK PARK DRIVE
HILTON HEAD ISLAND
SOUTH CAROLINA

FIGURE 3
Potentiometric Map
April 2021
Tier 2 Assessment Report
HHPSD

Document Path: C:\Users\shawm.moulin\OneDrive\Documents\HHPSP\Figure4_CoC_Map.mxd



LEGEND



Monitoring Well

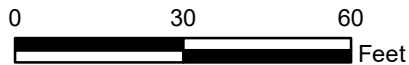
BTEXNM - Benzene, Ethylbenzene, Toluene, Xylene, Naphthalene, Methyl Tertiary Butyl Ether
COC - Contaminant of Concern

Bold -Detections above SC RBSLs (South Carolina Risk-Based Screening Levels)

MTBE - Methyl Tertiary Butyl Ether

ND - Non-Detect

AECOM



21 OAK PARK DRIVE
HILTON HEAD ISLAND
SOUTH CAROLINA

DATE: 11/15/2021 | DRWN: SM

FIGURE 4
Groundwater COC Map
Tier 2 Assessment Report
HHPSD

Source: Orthoimagery from ArcGIS Map Service, 2020.

Tables

Table 1
Tier II Assessment UST #11399
Well Construction Details and Groundwater Elevations
Hilton Head Public Service District, Hilton Head, SC

Monitoring Well	Date Measured	Well Diameter inches	Depth of Well feet bgs	Screen Length feet	Screen Interval feet bgs	State Plane Coordinates (Northing/Easting)	Top of Well Casing Elevation	4/22/2021	
								Depth to Water feet below toc	Groundwater Elevation
11399-MW1	4/20/2021	2	12	10	2-12	137347.85/2093024.56	NAVD'88 12.80	7.93*	FP
11399-MW2	4/20/2021	2	13.40	10	3.10 - 13.10	137405.49/2092992.13	14.29	6.56	7.73
11399-MW3	4/20/2021	2	13.32	10	3.02 - 13.02	137404.83/2093063.09	14.13	6.50	7.63
11399-MW4	4/20/2021	2	13.07	10	2.77 - 12.77	137332.17/2093044.55	13.17	6.14	7.03
11399-MW5	4/20/2021	2	14.10	10	3.80 - 13.80	137332.54/2093021.53	12.95	5.88	7.07
11399-MW6	4/20/2021	2	13.98	10	3.68 - 13.68	137283.89/2092977.35	13.30	6.20	7.10
11399-MW7	4/20/2021	2	13.02	10	2.72 - 12.72	137295.31/2093103.09	12.61	5.65	6.96
11399-MW8	4/20/2021	2	14.05	10	3.75 - 13.75	137350.40/2092981.59	13.00	5.86	7.14
11399-MW9	4/20/2021	2	13.52	10	3.22 - 13.22	137372.30/2093055.81	12.91	5.87	7.04
11399-MW10	4/20/2021	2	13.52	10	3.22 - 13.22	137370.96/2093095.66	12.71	5.78	6.93
11399-DCW-1	4/20/2021	2**	34.32	5	34.02 - 29.02	137344.42/2093025.57	12.92	5.85	7.07

Notes:

NAVD'88 - North American Vertical Datum of 1988

bgs - below ground surface

toc - top of casing

Screened interval calculated by taking the total depth of the well and subtracting 0.3'

* - Free phase product detected in 11399-MW1; depth to product = 5.18 feet below TOC.

FP - free phase product

** - DCW-1 is a telescoping well with a 6" PVC outer casing from 0-25' bgs, and a 2" PVC inner casing.

Table 2
Tier II Assessment UST #11399
Groundwater Screening Analytical Summary
Hilton Head Public Service District, Hilton Head, SC

Sample ID:	SC RBSLs	TW01-20200204	TW01-20200204-DUP	Trip Blank	TW02-20200204	TW03-20200204
Lab Sample ID:		VB05053-001	VB05053-002	VB05053-003	VB05053-004	VB05053-005
Date Collected:		2/4/2020	2/4/2020	2/4/2020	2/4/2020	2/4/2020
Unit:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compounds by Method 8260B						
tert-Amyl alcohol (TAA)	-	<8.0	<8.0	<8.0	<8.0	<8.0
tert-Amyl methyl ether (TAME)	-	<0.42	<0.42	<0.42	<0.42	<0.42
Benzene	5	<0.40	<0.40	<0.40	<0.40	<0.40
tert-Butyl formate (TBF)	-	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	5	<0.40	<0.40	<0.40	<0.40	<0.40
Diisopropyl ether (IPE)		<0.40	<0.40	<0.40	<0.40	<0.40
3,3-Dimethyl-1-butanol	-	<8.0	<8.0	<8.0	<8.0	<8.0
Ethanol	-	<52	<52	<52	<52	<52
Ethylbenzene	700	0.85	0.83	<0.40	17	<0.40
Ethyl-tert-butyl ether (ETBE)	-	<0.40	<0.40	<0.40	<0.40	<0.40
Methyl tertiary butyl ether (MTBE)	40	<0.40	<0.40	<0.40	<0.40	<0.40
Naphthalene	25	<0.40	<0.40	<0.40	2.2	<20
tert-butyl alcohol (TBA)	-	<0.40	<0.40	<0.40	<0.40	<0.40
Toluene	1,000	1.5	<0.40	<0.40	1.2	0.99
Xylenes (total)	10,000	0.40	<0.40	<0.40	46	<0.40

Notes:

RBSL - Risk-based screening level

ug/L - micrograms per liter

Bold concentrations represent detected compounds

Table 3
Tier II Assessment UST #11399
Groundwater Analytical Summary
Hilton Head Public Service District, Hilton Head, SC

Sample ID:	SC RBSLs	11399-MW-02	11399-MW-03	11399-MW-04	11399-MW-05	11399-MW-06	11399-MW-07
Lab Sample ID:		WD23010-001	WD23010-003	WD23010-004	WD23010-005	WD23010-006	WD23010-007
Date Collected:		4/21/2021	4/21/2021	4/22/2021	4/22/2021	4/22/2021	4/22/2021
Sample Type:		N	N	N	N	N	N
Unit:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compounds by Method 8260D							
tert-Amyl alcohol (TAA)	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
tert-Amyl methyl ether (TAME)	-	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42
Benzene	5	<0.40	<0.40	7.4	9.5	<0.40	<0.40
tert-Butyl formate (TBF)	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	5	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Diisopropyl ether (IPE)	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
3,3-Dimethyl-1-butanol	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Ethanol	-	<52	<52	<52	<52	<52	<52
Ethylbenzene	700	<0.40	<0.40	7.7	26	<0.40	<0.40
Ethyl-tert-butyl ether (ETBE)	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Methyl tertiary butyl ether (MTBE)	40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Naphthalene	25	<0.40	<0.40	0.78	9.6	<0.40	<0.40
tert-butyl alcohol (TBA)	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Toluene	1,000	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Xylenes (total)	10,000	<0.40	<0.40	21	7.9	<0.40	<0.40

Sample ID:	SC RBSLs	11399-MW-08	11399-MW-09	11399-MW-09	11399-MW10	11399-DCW1	TB-01
Lab Sample ID:		WD23010-008	WD23010-011	WD23010-012	WD23010-009	WD23010-010	WD23010-002
Date Collected:		4/22/2021	4/22/2021	4/22/2021	4/22/2021	4/22/2021	4/21/2021
Sample Type:		N	N	FD	N	N	N
Unit:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Volatile Organic Compounds by Method 8260D							
tert-Amyl alcohol (TAA)	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
tert-Amyl methyl ether (TAME)	-	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42
Benzene	5	<0.40	45	44	<0.40	<0.40	<0.40
tert-Butyl formate (TBF)	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	5	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Diisopropyl ether (IPE)	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
3,3-Dimethyl-1-butanol	-	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Ethanol	-	<52	<52	<52	<52	<52	<52
Ethylbenzene	700	<0.40	60	55	0.65	1.6	<0.40
Ethyl-tert-butyl ether (ETBE)	-	<0.40	2.4	2.8	<0.40	<0.40	<0.40
Methyl tertiary butyl ether (MTBE)	40	<0.40	1.9	2.4	<0.40	<0.40	<0.40
Naphthalene	25	<0.40	14	14	<0.40	1.1	<0.40
tert-butyl alcohol (TBA)	-	<0.40	1.4	1.4	<0.40	<0.40	<0.40
Toluene	1,000	<0.40	37	34	<0.40	0.49	<0.40
Xylenes (total)	10,000	<0.40	170	160	3.2	1.2	<0.40

Notes:

11399-MW1 was not sampled due to the detection of free product (2.75')

TB - Trip Blank

RBSL - Risk-based screening level

N - Normal sample

FD - Field duplicate

ug/L - micrograms per liter

Bold concentrations represent detected compounds

Shaded cells exceed the RBSL

Table 4
Tier II Assessment UST #11399
Summary of Aquifer Hydraulic Characteristics
Hilton Head Public Service District, Hilton Head, SC

Well Number	Test Type	Hydraulic Conductivity (K)		Average Hydraulic Conductivity (K)	
		cm/sec	ft/day	cm/sec	ft/day
MW-02*	F	2.79E-03	7.91	2.03E-03	5.76
	R	1.27E-03	3.60		
MW-03*	F	1.04E-03	2.95	1.16E-02	32.89
	R	2.22E-02	62.83		
MW-08	F	3.64E-03	10.32	3.70E-03	10.51
	R	3.77E-03	10.69		
MW-09	F	3.78E-03	10.72	3.74E-03	10.60
	R	3.69E-03	10.47		
DCW-01	F	2.12E-03	6.02	2.13E-03	6.05
	R	2.14E-03	6.07		
Average Conductivity				4.64E-03	13.16

cm/sec - Centimeters per second

ft/day - feet per day

* - Slug tests data from the Tier I Assessment

F - falling slug test

R - rising slug test

Appendix A Boring Logs

BORING NUMBER SB-05

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/03/2020</u>	COMPLETED <u>02/03/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>Elite Techniques</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>Geoprobe 7822DT</u>		EASTING <u>2093044.55</u>	NORTHING <u>137332.17</u>
DRILLING METHOD <u>DPT</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
1		0		0.00 SAND (SP), fine to medium grained, little silt. Black (7.5YR 2.5/1), dry, loose.
2				
3		0		2.00 Same as above (SP). Pinkish gray (7.5YR 6/2), moist, medium dense.
4				
5		0		4.00 Wet.
6				
7		5.2		5.20 Slight petroleum odor.
8				
9		9.5		
10				Bottom of borehole at 10 feet.

BORING NUMBER SB-06

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/03/2020</u>	COMPLETED <u>02/03/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>Elite Techniques</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>Geoprobe 7822DT</u>		EASTING <u>2093021.53</u>	NORTHING <u>137332.54</u>
DRILLING METHOD <u>DPT</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
1		0		0.00 SAND (SP), fine to medium grained, little silt. Black (7.5YR 2.5/1), dry, loose to medium dense.
2				
3		0		2.00 Same as above (SP). Pinkish gray (7.5YR 6/2), moist.
4				
5		0		4.00 Wet.
6		4.5		5.00 Increasing medium-grained, saturated. Slight petroleum odor.
7		12.6		
8				
9		9.2		
10				Bottom of borehole at 10 feet.

BORING NUMBER SB-07

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT		Hilton Head Public Service District	PROJECT NAME		HHPSD Tier II Assessment				
PROJECT NUMBER		60617359	SITE NAME		Hilton Head Public Service District				
DATE STARTED	02/03/2020	COMPLETED	02/03/2020	SURVEYING BY		NA			
DRILLING CONTRACTOR		Elite Techniques	ON			GROUND ELEVATION	N/A		
DRILLING EQUIPMENT		Geoprobe 7822DT	EASTING		2093103.09	NORTHING		137295.31	
DRILLING METHOD		DPT	HOLE DIAMETER		8 in				
LOGGED BY		Brian Reibling	CHECKED BY		Shawn McGuire	CASING TYPE			N/A

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
1		0		0.00 SAND (SP), fine to medium grained, little silt. Very dark brown (7.5YR 2.5/3), dry, loose to medium dense.
2				
3		0		2.00 SAND (SP), medium grained, little fine-grained sand, trace silt. Pinkish gray (7.5YR 6/2), moist.
4				
5		0		4.00 Wet.
6				
7		0		5.00 Saturated, medium dense.
8				
9		0		
10				Bottom of borehole at 10 feet.

BORING NUMBER SB-08

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/03/2020</u>	COMPLETED <u>02/03/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>Elite Techniques</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>Geoprobe 7822DT</u>		EASTING <u>2093030.39207</u>	NORTHING <u>137356.240553</u>
DRILLING METHOD <u>DPT</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0		0		0.00 SAND (SP), fine to medium grained, trace silt. Black (7.5YR 2.5/1), dry, loose to medium dense.
1				1.00 Same as above (SP). Pinkish gray (7.5YR 6/2), moist. Strong petroleum odor and staining.
2		32.5		
3				
4		66.9		4.00 Wet.
5				
6				
7				7.00 Same as above (SP), trace to little silt. Medium dense, petroleum odor and staining.
8		110.5		
9		36.2		
10				Bottom of borehole at 10 feet.

BORING NUMBER SB-10

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/03/2020</u>	COMPLETED <u>02/03/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>Elite Techniques</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>Geoprobe 7822DT</u>		EASTING <u>2092981.59</u>	NORTHING <u>137350.4</u>
DRILLING METHOD <u>DPT</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
0				0.00 GRAVEL
1		0		0.50 SAND (SP), fine to medium grained, trace to little silt. Black (7.5YR 2.5/1), dry, loose to medium dense.
2				2.00 Moist.
3		0		
4				4.00 Wet.
5		0		
6				6.00 SAND (SW) medium grained, well-graded, trace silt and gravel. Pinkish gray (7.5YR 6/2), wet, loose to medium dense.
7		0		
8				
9		0		
10				

Bottom of borehole at 10 feet.

BORING NUMBER SB-11

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/04/2020</u>	COMPLETED <u>02/04/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>Elite Techniques</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>Geoprobe 7822DT</u>		EASTING <u>2093055.81</u>	NORTHING <u>137372.3</u>
DRILLING METHOD <u>DPT</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
1		2.5		0.00 SAND (SP), fine to medium-grained, little silt. Black (7.5YR 2.5/1), dry, loose.
2				
3		50.9		2.00 Same as above (SP). Pinkish gray (7.5YR 6/2), moist, medium dense. Petroleum odor.
4				
5		92.6		4.00 Wet.
6				
7		110.5		5.00 Increasing fines. Very strong petroleum odor. Saturated.
8				
9		136.2		
10		125.9		
Bottom of borehole at 10 feet.				

BORING NUMBER SB-12

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/04/2020</u>	COMPLETED <u>02/04/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>Elite Techniques</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>Geoprobe 7822DT</u>		EASTING <u>2093042.6728</u>	NORTHING <u>137394.268977</u>
DRILLING METHOD <u>DPT</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
1		0		0.00 SAND (SP), fine to medium grained, little silt. Black (7.5YR 2.5/1), dry, loose.
2				
3		0		2.00 Same as above (SP). Pinkish gray (7.5YR 6/2), moist, medium dense. Petroleum odor.
4				
5		0		4.00 Wet.
6				
7		0.9		6.00 Same as above (SP), trace clay, wet, loose.
8				
9		1.2		8.00 Same as above (SP). Brown (7.5YR 5/2), wet, medium dense.
10				Bottom of borehole at 10 feet.

BORING NUMBER SB-13

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/04/2020</u>	COMPLETED <u>02/04/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>N/A</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>N/A</u>		EASTING <u>2092983.46314</u>	NORTHING <u>137381.760295</u>
DRILLING METHOD <u>N/A</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
1		0		0.00 SAND (SP), fine to medium-grained, trace silt. Black (7.5YR 2.5/1), loose. dry.
2				
3		0		2.00 Moist.
4				
5		0		4.00 Same as above (SP). Pinkish gray (7.5YR 6/2), wet, medium dense.
6				
7				
8				
9		0		8.00 Same as above (SP). Increasing fines, saturated.
10				Bottom of borehole at 10 feet.

BORING NUMBER SB-14

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT <u>Hilton Head Public Service District</u>		PROJECT NAME <u>HHPSD Tier II Assessment</u>	
PROJECT NUMBER <u>60617359</u>		SITE NAME <u>Hilton Head Public Service District</u>	
DATE STARTED <u>02/04/2020</u>	COMPLETED <u>02/04/2020</u>	SURVEYING BY <u>NA</u>	
DRILLING CONTRACTOR <u>N/A</u>		ON _____	GROUND ELEVATION <u>N/A</u>
DRILLING EQUIPMENT <u>N/A</u>		EASTING <u>2093073.58162</u>	NORTHING <u>137385.41683</u>
DRILLING METHOD <u>N/A</u>		HOLE DIAMETER <u>8 in</u>	
LOGGED BY <u>Brian Reibling</u>	CHECKED BY <u>Shawn McGuire</u>	CASING TYPE <u>N/A</u>	

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
0.00				Asphalt
0.50		0		SAND (SP), fine to medium grained, trace silt. Black (7.5YR 2.5/1), loose to medium dense, dry.
2.00		0		Same as above (SP). Pinkish gray (7.5YR 6/2), medium dense. Petroleum odor.
4.00				Wet.
6.00				Same as above (SP). Saturated, increasing fines.
10				Bottom of borehole at 10 feet.



BORING NUMBER SB-15

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT	Hilton Head Public Service District	PROJECT NAME	HHPSD Tier II Assessment
PROJECT NUMBER	60617359	SITE NAME	Hilton Head Public Service District
DATE STARTED	02/04/2020	COMPLETED	02/04/2020
DRILLING CONTRACTOR	N/A	SURVEYING BY	NA
DRILLING EQUIPMENT	N/A	ON	
DRILLING METHOD	N/A	GROUND ELEVATION	N/A
LOGGED BY	Brian Reibling	EASTING	2093073.58162
CHECKED BY	Shawn McGuire	NORTHING	137385.41683
		HOLE DIAMETER	8 in
		CASING TYPE	N/A

AECOM SMART LOG_8X11 - NANAIMO LOGS_DC.GPJ - 11/22/21 15:15 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION
0				0.00 Asphalt
1		0		0.50 SAND (SP), fine to medium grained with little silt. Black (7.5YR 2.5/1), dry, loose to medium dense.
2				
3		0		
4				3.50 Moist.
5		0		4.00 Wet.
6				
7		0		6.00 Same as above (SP). Saturated, increasing fines.
8				
9		0		
10				

Bottom of borehole at 10 feet.



BORING NUMBER SB-16

TOTAL DEPTH 10 FT BGS
PAGE 1 OF 1

CLIENT	Hilton Head Public Service District	PROJECT NAME	HHPSD Tier II Assessment
PROJECT NUMBER	60617359	SITE NAME	Hilton Head Public Service District
DATE STARTED	02/04/2020	COMPLETED	02/04/2020
DRILLING CONTRACTOR	Elite Techniques	ON	
DRILLING EQUIPMENT	Geoprobe 7822DT	GROUND ELEVATION	N/A
DRILLING METHOD	DPT	EASTING	2093099.10986
LOGGED BY	Brian Reibling	NORTHING	137356.595541
CHECKED BY	Shawn McGuire	HOLE DIAMETER	8 in
		CASING TYPE	N/A

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/17/21 15:30 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	GRAPHIC LOG	MATERIAL DESCRIPTION
0			
0.00			Asphalt
0.50			SAND (SP), fine to medium grained, trace silt, trace gravel. Black (7.5YR 2.5/1), loose to medium dense, dry.
2.00			Moist.
4.00			Wet.
10			

Bottom of borehole at 10 feet.

WELL NUMBER MW-04

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1



CLIENT Hilton Head Public Service District PROJECT NAME HHPSD Tier II Assessment
PROJECT NUMBER 60617359 SITE NAME Hilton Head Public Service District
DATE STARTED 04/19/2021 COMPLETED 04/19/2021 SURVEYING BY AECOM
DRILLING CONTRACTOR Elite Techniques ON 5/20/2021 GROUND ELEVATION 13.17 ft
DRILLING EQUIPMENT Geoprobe 7822DT EASTING 2093044.55 NORTHING 137332.17
DRILLING METHOD DPT HOLE DIAMETER 8 in
LOGGED BY Brian Reibling CHECKED BY Shawn McGuire CASING TYPE PVC

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/22/21 15:06 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0				0.00 SILT (ML). Dark yellowish brown (10YR 4/4), dry, loose.	13.2	Well Casing MW-04 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 3 ft bgs Backfill Type: Portland Cement Top: 0 ft bgs Bottom: 1 ft bgs Annular Seal Type: Bentonite Powdered Top: 1 ft bgs Bottom: 2 ft bgs Sand Type: #2 Filter Sand Top: 2 ft bgs Bottom: 15 ft bgs Well Screen MW-04 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 3 ft bgs Bottom: 13 ft bgs
1		0				
2				2.00 SAND (SP), fine-grained, little silt. Brown (10YR 5/3), dry, loose.	11.2	
3		0				
4						
5		0		4.00 Same as above (SP). Black (10YR 2/1), moist.	9.2	
6		0				
7				6.00 Same as above (SP). Brown (7.5 YR 4/4), moist to wet, loose.	7.2	
8		1				
9						
10						
11						
12						
13		0				
14						
15						

Bottom of borehole at 15 feet.

Notes:

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-04	4/22/2021	6.14	0.00	13.17	7.03	Flushmount

WELL NUMBER MW-05

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1



CLIENT Hilton Head Public Service District	PROJECT NAME HHPSD Tier II Assessment
PROJECT NUMBER 60617359	SITE NAME Hilton Head Public Service District
DATE STARTED 04/19/2021	COMPLETED 04/19/2021
DRILLING CONTRACTOR Elite Techniques	SURVEYING BY AECOM
DRILLING EQUIPMENT Geoprobe 7822DT	ON 5/20/2021
DRILLING METHOD DPT	GROUND ELEVATION 12.95 ft
LOGGED BY Brian Reibling	EASTING 2093021.53
CHECKED BY Shawn McGuire	NORTHING 137332.54
CASING TYPE PVC	HOLE DIAMETER 8 in

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/17/21 14:48 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0						
1		0		0.00 SILT (ML). Brown (10YR 5/3), dry, loose.	13.0	Well Casing MW-05 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 4 ft bgs Surface Seal Type: Concrete Top: 0 ft bgs Bottom: 2 ft bgs Annular Seal Type: Bentonite Top: 2 ft bgs Bottom: 3 ft bgs Filter Pack Type: #2 Filter Sand Top: 3 ft bgs Bottom: 15 ft bgs Well Screen MW-05 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 4 ft bgs Bottom: 14 ft bgs
2						
3		0.2		2.00 SAND (SP), fine-grained, little silt. Very dark grayish brown (10YR 3/2), dry, loose.	11.0	
4						
5		0		4.00 Same as above (SP). Light brownish gray (10YR 6/2), moist.	9.0	
6						
7				6.00 Same as above (SP). Brown (10YR 5/6), moist to wet.	7.0	
8		0				
9						
10				10.00 Wet.	3.0	
11						
12						
13		0				
14						
15						

Bottom of borehole at 15 feet.

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-05	4/22/2021	5.88	0.00	12.95	7.07	Flushmount

WELL NUMBER MW-06

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1

AECOM

CLIENT Hilton Head Public Service District	PROJECT NAME HHPSD Tier II Assessment
PROJECT NUMBER 60617359	SITE NAME Hilton Head Public Service District
DATE STARTED 04/20/2021 COMPLETED 04/20/2021	SURVEYING BY AECOM
DRILLING CONTRACTOR Elite Techniques	ON 5/20/2021 GROUND ELEVATION 13.3 ft
DRILLING EQUIPMENT Geoprobe 7822DT	EASTING 2093103.09 NORTHING 137295.31
DRILLING METHOD DPT	HOLE DIAMETER 8 in
LOGGED BY Brian Reibling CHECKED BY Shawn McGuire	CASING TYPE PVC

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/22/21 15:06 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0						
1		0		0.00 SILT (ML). Brown (10YR 5/3), dry, loose.	13.3	Well Casing MW-06 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 3 ft bgs
2						
3						Type: Portland Cement Top: 0 ft bgs Bottom: 2 ft bgs
4		0		3.00 SAND (SP), fine-grained, little silt. Dark yellowish brown (10YR 3/6), dry to moist, loose.	10.3	
5						Type: Bentonite Top: 2 ft bgs Bottom: 3 ft bgs
6						
7				6.00 Same as above (SP). Brown (10YR 4/3), wet.	7.3	Well Screen MW-06 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 3 ft bgs Bottom: 14 ft bgs
8						
9		0				Type: #2 Filter Sand Top: 3 ft bgs Bottom: 15 ft bgs
10						
11				11.00 Same as above (SP). Very dark grayish brown (10YR 3/2), wet.	2.3	
12						
13		0				
14						
15		0		14.00 Trace shell fragments.	-0.7	

Bottom of borehole at 15 feet.

Notes:

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-06	4/22/2021	6.19	0.00	13.30	7.11	Flushmount

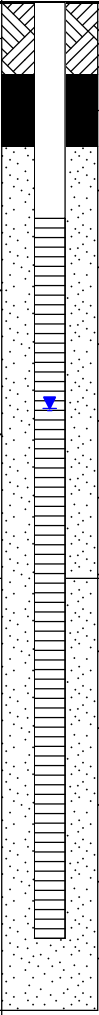
WELL NUMBER MW-07

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1

AECOM

CLIENT Hilton Head Public Service District	PROJECT NAME HHPSD Tier II Assessment
PROJECT NUMBER 60617359	SITE NAME Hilton Head Public Service District
DATE STARTED 04/20/2021 COMPLETED 04/20/2021	SURVEYING BY AECOM
DRILLING CONTRACTOR Elite Techniques	ON 5/20/2021 GROUND ELEVATION 12.61 ft
DRILLING EQUIPMENT Geoprobe 7822DT	EASTING 2093103.09 NORTHING 137295.31
DRILLING METHOD DPT	HOLE DIAMETER 8 in
LOGGED BY Brian Reibling CHECKED BY Shawn McGuire	CASING TYPE PVC

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/17/21 14:48 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0				0.00 Asphalt	12.6	 Well Casing MW-07 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 3 ft bgs Surface Seal Type: Concrete Top: 0 ft bgs Bottom: 1 ft bgs Annular Seal Type: Bentonite Top: 1 ft bgs Bottom: 2 ft bgs Sand Type: #2 Filter Sand Top: 2 ft bgs Bottom: 14 ft bgs Well Screen MW-07 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 3 ft bgs Bottom: 13 ft bgs
1				0.50 SAND (SP), fine-grained, little silt. Dark yellowish brown (10YR 5/6), dry to moist, loose.	12.1	
2		0				
3		0				
4		0		4.00 Same as above (SP). Yellowish brown (10YR 5/4), moist to wet.	8.6	
5		0				
6		0		6.00 SAND (SP), fine-grained, some silt. Dark gray (10YR 3/1), wet, medium dense.	6.6	
7		0				
8		0		8.00 SAND (SP), fine-grained, little silt. Light gray (10YR 7/2), wet, loose to medium dense.	4.6	
9		0		9.00 Same as above (SP). Dark yellowish brown (10YR 4/6).	3.6	
10		0		10.00 Same as above (SP). Light gray (10YR 7/2).	2.6	
11		0		11.00 Same as above (SP). Dark yellowish brown (10YR 4/6).	1.6	
12		0				
13		0				
14						
15						

Bottom of borehole at 15 feet.

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-07	4/22/2021	5.64	0.00	12.61	6.97	Flushmount

WELL NUMBER MW-08

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1



CLIENT Hilton Head Public Service District
PROJECT NUMBER 60617359
DATE STARTED 04/20/2021 **COMPLETED** 04/20/2021
DRILLING CONTRACTOR Elite Techniques
DRILLING EQUIPMENT Geoprobe 7822DT
DRILLING METHOD DPT
LOGGED BY Brian Reibling **CHECKED BY** Shawn McGuire
PROJECT NAME HHPSD Tier II Assessment
SITE NAME Hilton Head Public Service District
SURVEYING BY AECOM
ON 5/20/2021 **GROUND ELEVATION** 13 ft
EASTING 2092981.59 **NORTHING** 137350.4
HOLE DIAMETER 8 in
CASING TYPE PVC

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/17/21 14:48 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0					13.0	
1				0.00 GRAVEL 0.33 SAND (SP) , fine-grained, little silt. Grayish brown (10YR 5/2), dry, loose.	12.7	Well Casing MW-08 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 4 ft bgs Surface Seal Type: Concrete Top: 0 ft bgs Bottom: 2 ft bgs Annular Seal Type: Bentonite Top: 2 ft bgs Bottom: 3 ft bgs Sand Type: #2 Filter Sand Top: 3 ft bgs Bottom: 15 ft bgs Well Screen MW-08 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 4 ft bgs Bottom: 14 ft bgs
2	0					
3				3.00 Moist.	10.0	
4	0					
5						
6						
7				7.00 Wet.	6.0	
8						
9	0					
10				10.00 Same as above (SP). Dark brown (10YR 3/2), loose.	3.0	
11						
12	0					
13				13.00 Same as above (SP), brown (7.5YR 4/6), medium dense, slight increase in grain size.	0.0	
14	0					
15						

Bottom of borehole at 15 feet.

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-08	4/22/2021	5.85	0.00	13.00	7.15	Flushmount

WELL NUMBER MW-09

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1



CLIENT Hilton Head Public Service District **PROJECT NAME** HHPSD Tier II Assessment
PROJECT NUMBER 60617359 **SITE NAME** Hilton Head Public Service District
DATE STARTED 04/20/2021 **COMPLETED** 04/20/2021 **SURVEYING BY** AECOM
DRILLING CONTRACTOR Elite Techniques **ON** 5/20/2021 **GROUND ELEVATION** 12.91 ft
DRILLING EQUIPMENT Geoprobe 7822DT **EASTING** 2093055.81 **NORTHING** 137372.3
DRILLING METHOD DPT **HOLE DIAMETER** 8 in
LOGGED BY Brian Reibling **CHECKED BY** Shawn McGuire **CASING TYPE** PVC

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/22/21 15:06 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0						
1		0		0.00 SILT (ML). Light yellowish brown (10YR 6/4), dry, loose.	12.9	Well Casing MW-09 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 3.5 ft bgs Type: Concrete Top: 0 ft bgs Bottom: 1.5 ft bgs Type: Bentonite Top: 1.5 ft bgs Bottom: 2.5 ft bgs Sand Type: #2 Filter Sand Top: 2.5 ft bgs Bottom: 15 ft bgs Well Screen MW-09 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 3.5 ft bgs Bottom: 13.5 ft bgs
2						
3		9.5		2.00 SAND (SP), fine-grained, little silt. Light yellowish brown (10YR 6/4), dry to moist, loose.	10.9	
4						
5		283.5		4.00 Same as above (SP). Gray (10YR 5/1), moist, petroleum odor/staining.	8.9	
6						
7		407.5		6.00 Same as above (SP). Dark gray (10YR 3/1), wet, petroleum sheen/odor/staining.	6.9	
8						
9		49.6		7.00 Same as above (SP). Brown (7.5YR 4/4), no petroleum sheen/odor.	5.9	
10						
11		40.9				
12						
13						
14		7.4				
15						

Bottom of borehole at 15 feet.

Notes:

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-09	4/22/2021	5.83	0.00	12.91	7.08	Flushmount

WELL NUMBER MW-10

TOTAL DEPTH 15 FT BGS
PAGE 1 OF 1



CLIENT Hilton Head Public Service District	PROJECT NAME HHPSD Tier II Assessment
PROJECT NUMBER 60617359	SITE NAME Hilton Head Public Service District
DATE STARTED 04/20/2021	COMPLETED 04/20/2021
DRILLING CONTRACTOR Elite Techniques	SURVEYING BY AECOM
DRILLING EQUIPMENT Geoprobe 7822DT	ON 5/20/2021
DRILLING METHOD DPT	GROUND ELEVATION 12.71 ft
LOGGED BY Brian Reibling	EASTING 2093095.66
CHECKED BY Shawn McGuire	NORTHING 137370.96
CASING TYPE PVC	HOLE DIAMETER 8 in

AECOM SMART LOG 8X11 - NANAIMO LOGS_DC.GPJ - 11/17/21 14:49 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0				0.00 Asphalt	12.7	Well Casing MW-10 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 3.5 ft bgs Surface Seal Type: Concrete Top: 0 ft bgs Bottom: 1.5 ft bgs Annular Seal Type: Bentonite Top: 1.5 ft bgs Bottom: 2.5 ft bgs Sand Type: #2 Filter Sand Top: 2.5 ft bgs Bottom: 15 ft bgs Well Screen MW-10 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 3.5 ft bgs Bottom: 13.5 ft bgs
1				0.50 SILT (ML). Yellowish brown (10YR 5/4), dry, loose.	12.2	
2		0		2.00 SAND (SP), fine-grained, little silt. Light yellowish brown (10YR 6/4), dry to moist, loose.	10.7	
3						
4		0				
5						
6						
7		0		6.00 Same as above (SP). Yellowish brown (10YR 5/6), wet.	6.7	
8						
9		0		8.00 Same as above (SP). Strong brown (7.5YR 5/6).	4.7	
10						
11				10.00 Saturated.	2.7	
12		0				
13						
14						
15						

Bottom of borehole at 15 feet.

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
MW-10	4/22/2021	5.75	0.00	12.71	6.96	Flushmount

CLIENT Hilton Head Public Service District	PROJECT NAME HHPSD Tier II Assessment
PROJECT NUMBER 60617359	SITE NAME Hilton Head Public Service District
DATE STARTED 04/19/2021 COMPLETED 04/19/2021	SURVEYING BY AECOM
DRILLING CONTRACTOR Elite Techniques	ON 5/20/2021 GROUND ELEVATION 12.92 ft
DRILLING EQUIPMENT Geoprobe 7822DT	EASTING 2093025.57 NORTHING 137344.42
DRILLING METHOD Hollow Stem Auger/DPT	HOLE DIAMETER 8 in
LOGGED BY Brian Reibling CHECKED BY Shawn McGuire	CASING TYPE PVC

AECOM SMART LOG 8X11 - NANAIMO LOGS DC.GPJ - 11/23/21 08:39 - C:\USERS\PUBLIC\DOCUMENTS\BENTLEY\GINT\PROJECTS\BLANK GINT PROJECT FOR COLLECT.GPJ

DEPTH (ft)	SAMPLE	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft msl)	WELL DIAGRAM
0						
		0		0.00 SILT (ML). Dark brownish yellow (10YR 4/4), dry, loose.	12.9	Well Casing DCW-01 Type: Schedule 40 PVC Diameter: 2 in Top: 0 ft bgs Bottom: 29 ft bgs Well Casing DCW-01 Type: Schedule 40 PVC Diameter: 6 in Top: 0 ft bgs Bottom: 25 ft bgs Backfill Type: Portland Cement Top: 0 ft bgs Bottom: 27 ft bgs Annular Seal Type: Bentonite Powdered Top: 27 ft bgs Bottom: 28 ft bgs Sand Type: #2 Filter Sand Top: 28 ft bgs Bottom: 35 ft bgs Well Screen DCW-01 Type: Schedule 40 PVC Slot Size: 0.01 in Top: 29 ft bgs Bottom: 34 ft bgs
		52.6		2.00 SAND (SP), fine-grained, little silt. Brown (10YR 5/3), dry, loose, petroleum odor.	10.9	
5		185.1		4.00 Same as above (SP). Dark grayish brown (10YR 4/2), moist to wet, petroleum odor.	8.9	
10		258		8.00 Wet, medium dense.	4.9	
				10.00 Petroleum sheen/odor.	2.9	
		295.6				
		2.9		15.00 No petroleum sheen.	-2.1	
20		1.4		17.00 SAND (SP), fine to medium grained, trace silt. Red (2.5YR 5/6), wet, medium dense, slight petroleum odor.	-4.1	
				20.00 No odor, saturated.	-7.1	
25		0				
				25.00 SAND (SP), very fine-grained, little to some silt. Gray (10YR 6/1), saturated, loose.	-12.1	
30		0		30.00 Dense.	-17.1	
35		0		34.00 CLAY (CH), highly plastic, marl. Gray (10YR 5/1), stiff.	-21.1	
		0		35.00 CLAY (CL), non-plastic. Gray (10YR 5/1), soft.	-22.1	
		0		36.00 CLAY (CH), highly plastic, marl, trace shell fragments. Gray (10YR 5/1), stiff.	-23.1	
40				40.00 Same as above (CH). Trace fine-grained sand lenses. Trace to few shell fragments.	-27.1	
45						

Bottom of borehole at 45 feet.

Notes:

1. DCW-1 is a telescoping well with a 6" PVC outer casing from 0-25' bgs, and a 2" PVC inner casing.

Well ID	Date	Depth to water (ft bgs)	Stickup (ft)	TOC Elevation	GW Elevation	Type
DCW-01	4/22/2021	7.07	0.00	12.92	5.85	Flushmount

Appendix B Laboratory Analytical Reports



Report of Analysis

AECOM
4016 Salt Pointe Parkway
North Charleston, SC 29405
Attention: Brian Reibling

Project Name: Hilton Head Public Service District (HHPSD)

Project Number: 60617359.Task 2

Lot Number: **VB05053**

Date Completed: 02/21/2020

N. Saikaly

02/21/2020 4:31 PM
Approved and released by:
Project Manager: **Nisreen Saikaly**



The electronic signature above is the equivalent of a handwritten signature.
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PACE ANALYTICAL SERVICES, LLC

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

Case Narrative

AECOM

Lot Number: VB05053

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 Pace Analytical Services, LLC ("Pace") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Pace 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 Pace Project Manager listed on the cover page.

PACE ANALYTICAL SERVICES, LLC

Sample Summary

AECOM

Lot Number: VB05053

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	TW01-20200204	Aqueous	02/04/2020 1200	02/05/2020
002	TW01-20200204-DUP	Aqueous	02/04/2020 1200	02/05/2020
003	TW01-20200204-TB	Aqueous	02/04/2020 1200	02/05/2020
004	TW02-20200204	Aqueous	02/04/2020 1220	02/05/2020
005	TW03-20200204	Aqueous	02/04/2020 1530	02/05/2020

(5 samples)

PACE ANALYTICAL SERVICES, LLC

Detection Summary

AECOM

Lot Number: VB05053

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	TW01-20200204	Aqueous	Ethylbenzene	8260B	0.85	J	ug/L	5
001	TW01-20200204	Aqueous	Toluene	8260B	1.5		ug/L	5
001	TW01-20200204	Aqueous	Xylenes (total)	8260B	0.40	J	ug/L	5
002	TW01-20200204-DUP	Aqueous	Ethylbenzene	8260B	0.83	J	ug/L	6
004	TW02-20200204	Aqueous	Ethylbenzene	8260B	17		ug/L	8
004	TW02-20200204	Aqueous	Naphthalene	8260B	2.2		ug/L	8
004	TW02-20200204	Aqueous	Toluene	8260B	1.2		ug/L	8
004	TW02-20200204	Aqueous	Xylenes (total)	8260B	46		ug/L	8
005	TW03-20200204	Aqueous	Toluene	8260B	0.99	J	ug/L	9

(9 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: VB05053-001
Description: TW01-20200204	Matrix: Aqueous
Date Sampled: 02/04/2020 1200	
Date Received: 02/05/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/06/2020 1411	BWS		44095

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	0.85	J	1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	1.5		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	0.40	J	1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		92	70-130					
Bromofluorobenzene		105	70-130					
Toluene-d8		100	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL
 H = Out of holding time W = Reported on wet weight basis

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

Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: VB05053-002
Description: TW01-20200204-DUP	Matrix: Aqueous
Date Sampled: 02/04/2020 1200	
Date Received: 02/05/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/06/2020 1433	BWS		44095

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	0.83	J	1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		94	70-130					
Bromofluorobenzene		104	70-130					
Toluene-d8		98	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL
 H = Out of holding time W = Reported on wet weight basis

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

Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: VB05053-003
Description: TW01-20200204-TB	Matrix: Aqueous
Date Sampled: 02/04/2020 1200	
Date Received: 02/05/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/06/2020 1240	BWS		44095

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		92	70-130					
Bromofluorobenzene		99	70-130					
Toluene-d8		100	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: VB05053-004
Description: TW02-20200204	Matrix: Aqueous
Date Sampled: 02/04/2020 1220	
Date Received: 02/05/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/06/2020 1456	BWS		44095

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	17		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	2.2		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	1.2		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	46		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		93	70-130					
Bromofluorobenzene		105	70-130					
Toluene-d8		98	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL
 H = Out of holding time W = Reported on wet weight basis

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: VB05053-005
Description: TW03-20200204	Matrix: Aqueous
Date Sampled: 02/04/2020 1530	
Date Received: 02/05/2020	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	02/06/2020 1519	BWS		44095

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260B	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260B	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260B	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260B	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260B	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260B	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260B	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260B	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260B	ND		20	8.0	ug/L	1
Toluene	108-88-3	8260B	0.99	J	1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		92	70-130					
Bromofluorobenzene		100	70-130					
Toluene-d8		99	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL
 H = Out of holding time W = Reported on wet weight basis

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: VQ44095-001

Matrix: Aqueous

Batch: 44095

Prep Method: 5030B

Analytical Method: 8260B

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	02/06/2020 1033
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	02/06/2020 1033
Benzene	ND		1	1.0	0.40	ug/L	02/06/2020 1033
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	02/06/2020 1033
1,2-Dichloroethane	ND		1	1.0	0.40	ug/L	02/06/2020 1033
Diisopropyl ether (IPE)	ND		1	1.0	0.40	ug/L	02/06/2020 1033
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	02/06/2020 1033
Ethanol	ND		1	100	52	ug/L	02/06/2020 1033
Ethylbenzene	ND		1	1.0	0.40	ug/L	02/06/2020 1033
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	02/06/2020 1033
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	0.40	ug/L	02/06/2020 1033
Naphthalene	ND		1	1.0	0.40	ug/L	02/06/2020 1033
tert-butyl alcohol (TBA)	ND		1	20	8.0	ug/L	02/06/2020 1033
Toluene	ND		1	1.0	0.40	ug/L	02/06/2020 1033
Xylenes (total)	ND		1	1.0	0.40	ug/L	02/06/2020 1033
Surrogate	Q	% Rec	Acceptance Limit				
1,2-Dichloroethane-d4		92	70-130				
Bromofluorobenzene		103	70-130				
Toluene-d8		100	70-130				

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

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

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the DL

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

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: VQ44095-002

Matrix: Aqueous

Batch: 44095

Prep Method: 5030B

Analytical Method: 8260B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	960		1	96	70-130	02/06/2020 0926
tert-Amyl methyl ether (TAME)	50	50		1	101	70-130	02/06/2020 0926
Benzene	50	47		1	95	70-130	02/06/2020 0926
tert-Butyl formate (TBF)	250	240		1	95	70-130	02/06/2020 0926
1,2-Dichloroethane	50	48		1	96	70-130	02/06/2020 0926
Diisopropyl ether (IPE)	50	48		1	95	70-130	02/06/2020 0926
3,3-Dimethyl-1-butanol	1000	1000		1	100	70-130	02/06/2020 0926
Ethanol	5000	4100		1	83	70-130	02/06/2020 0926
Ethylbenzene	50	47		1	93	70-130	02/06/2020 0926
Ethyl-tert-butyl ether (ETBE)	50	45		1	90	70-130	02/06/2020 0926
Methyl tertiary butyl ether (MTBE)	50	44		1	88	70-130	02/06/2020 0926
Naphthalene	50	48		1	96	70-130	02/06/2020 0926
tert-butyl alcohol (TBA)	1000	900		1	90	70-130	02/06/2020 0926
Toluene	50	48		1	96	70-130	02/06/2020 0926
Xylenes (total)	100	95		1	95	70-130	02/06/2020 0926
Surrogate	Q	% Rec	Acceptance Limit				
1,2-Dichloroethane-d4		90	70-130				
Bromofluorobenzene		99	70-130				
Toluene-d8		96	70-130				

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

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

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the DL

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

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Volatile Organic Compounds by GC/MS - MS

Sample ID: VB05053-004MS

Matrix: Aqueous

Batch: 44095

Prep Method: 5030B

Analytical Method: 8260B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	ND	1000	850		1	85	70-130	02/06/2020 1626
tert-Amyl methyl ether (TAME)	ND	50	53		1	106	70-130	02/06/2020 1626
Benzene	ND	50	57		1	114	70-130	02/06/2020 1626
tert-Butyl formate (TBF)	ND	250	ND	N	1	0.00	70-130	02/06/2020 1626
1,2-Dichloroethane	ND	50	55		1	110	70-130	02/06/2020 1626
Diisopropyl ether (IPE)	ND	50	55		1	110	70-130	02/06/2020 1626
3,3-Dimethyl-1-butanol	ND	1000	1000		1	103	70-130	02/06/2020 1626
Ethanol	ND	5000	3700		1	74	70-130	02/06/2020 1626
Ethylbenzene	17	50	75		1	115	70-130	02/06/2020 1626
Ethyl-tert-butyl ether (ETBE)	ND	50	49		1	97	70-130	02/06/2020 1626
Methyl tertiary butyl ether (MTBE)	ND	50	49		1	98	70-130	02/06/2020 1626
Naphthalene	2.2	50	55		1	106	70-130	02/06/2020 1626
tert-butyl alcohol (TBA)	ND	1000	860		1	86	70-130	02/06/2020 1626
Toluene	1.2	50	58		1	114	70-130	02/06/2020 1626
Xylenes (total)	46	100	160		1	116	70-130	02/06/2020 1626
Surrogate	Q	% Rec	Acceptance Limit					
1,2-Dichloroethane-d4		91	70-130					
Bromofluorobenzene		106	70-130					
Toluene-d8		98	70-130					

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the DL

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: VB05053-004MD

Matrix: Aqueous

Batch: 44095

Prep Method: 5030B

Analytical Method: 8260B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	ND	1000	800		1	80	6.1	70-130	20	02/06/2020 1649
tert-Amyl methyl ether (TAME)	ND	50	53		1	105	0.45	70-130	20	02/06/2020 1649
Benzene	ND	50	56		1	112	1.8	70-130	20	02/06/2020 1649
tert-Butyl formate (TBF)	ND	250	ND	N	1	0.00	0.00	70-130	20	02/06/2020 1649
1,2-Dichloroethane	ND	50	54		1	109	1.0	70-130	20	02/06/2020 1649
Diisopropyl ether (IPE)	ND	50	56		1	112	1.8	70-130	20	02/06/2020 1649
3,3-Dimethyl-1-butanol	ND	1000	1100		1	111	7.3	70-130	20	02/06/2020 1649
Ethanol	ND	5000	3500		1	70	5.3	70-130	20	02/06/2020 1649
Ethylbenzene	17	50	67		1	100	11	70-130	20	02/06/2020 1649
Ethyl-tert-butyl ether (ETBE)	ND	50	49		1	97	0.38	70-130	20	02/06/2020 1649
Methyl tertiary butyl ether (MTBE)	ND	50	51		1	101	3.3	70-130	20	02/06/2020 1649
Naphthalene	2.2	50	61		1	117	9.9	70-130	20	02/06/2020 1649
tert-butyl alcohol (TBA)	ND	1000	800		1	80	7.3	70-130	20	02/06/2020 1649
Toluene	1.2	50	58		1	114	0.41	70-130	20	02/06/2020 1649
Xylenes (total)	46	100	150		1	99	11	70-130	20	02/06/2020 1649
Surrogate	Q	% Rec	Acceptance Limit							
1,2-Dichloroethane-d4		90	70-130							
Bromofluorobenzene		103	70-130							
Toluene-d8		96	70-130							

LOQ = Limit of Quantitation

P = The RPD between two GC columns exceeds 40%

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

+ = RPD is out of criteria

LOD = Limit of Detection

ND = Not detected at or above the DL

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

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Chain of Custody and Miscellaneous Documents

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www.shealyab.com

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[illegible]

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s): PLINK-Field/Cient Copy

Document Number: FAD-133 Effective Date: 08-01-2014

PACE ANALYTICAL SERVICES, LLC

Shealy Environmental Services, Inc.
Document Number: ME6018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: Accom

Cooler Inspected by/date: LKH / 02/05/2020

Lot #: VB05053

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: <u>NA</u> Chlorine Strip ID: <u>NA</u> Tested by: <u>NA</u>	
Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: <u>NA</u>	
1.9 / 1.9 °C <u>NA</u> / <u>NA</u> °C <u>NA</u> / <u>NA</u> °C <u>NA</u> / <u>NA</u> °C	
Method: ☒ Temperature Blank ☐ Against Bottles IR Gun ID: <u>6</u> IR Gun Correction Factor: <u>0</u> °C	
Method of coolant: ☒ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None	
☐ Yes ☐ No ☒ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: <u>phone / email / face-to-face</u> (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 1/2 the holding time or 48 hours, whichever comes first?
☐ Yes ☒ No	15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes ☐ No ☒ NA	16. For VOA and RSK-175 samples, were bubbles present >"pca-size" (1/4" or 6mm in diameter) in any of the VOA vials?
☐ Yes ☐ No ☒ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes ☐ No ☒ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes ☐ No ☒ NA	19. Were all applicable NH ₃ /TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes ☐ No ☒ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☒ Yes ☐ No	21. Was the quote number listed on the container label? If yes, Quote # <u>22846</u>
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)	
Sample(s) <u>NA</u> were received incorrectly preserved and were adjusted accordingly in sample receiving with <u>NA</u> mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # <u>NA</u>	
Time of preservation <u>NA</u> . If more than one preservative is needed, please note in the comments below.	
Sample(s) <u>NA</u> were received with bubbles >6 mm in diameter.	
Samples(s) <u>NA</u> were received with TRC > 0.5 mg/L (If #19 is no) and were adjusted accordingly in sample receiving with sodium thiosulfate (Na ₂ S ₂ O ₃) with Shealy ID: <u>NA</u>	
SR barcode labels applied by: <u>LKH</u> Date: <u>02/05/2020</u>	

Comments:



Report of Analysis

AECOM
4016 Salt Pointe Parkway
North Charleston, SC 29405
Attention: Brian Reibling

Project Name: Hilton Head Public Service District (HHPSD)

Lot Number: **WD23010**
Date Completed: 04/30/2021

Kathy Smith

04/30/2021 2:34 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**



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PACE ANALYTICAL SERVICES, LLC

SC DHEC No: 32010001

NELAC No: E87653

NC DENR No: 329

NC Field Parameters No: 5639

Case Narrative AECOM Lot Number: WD23010

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

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

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

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

Volatiles

The MS/MSD associated with sample WD23010-001 had TAME, TBF , ETBE and MTBE recovered outside of the acceptance limits. The LCS was recovered within the required acceptance limits; therefore, this demonstrates a matrix effect and data quality is not impacted.

PACE ANALYTICAL SERVICES, LLC

Sample Summary

AECOM

Lot Number: WD23010

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	11399-MW2	Aqueous	04/21/2021 1345	04/23/2021
002	TB-01	Aqueous	04/21/2021 1345	04/23/2021
003	11399-MW3	Aqueous	04/21/2021 1515	04/23/2021
004	11399-MW4	Aqueous	04/22/2021 0900	04/23/2021
005	11399-MW5	Aqueous	04/22/2021 0935	04/23/2021
006	11399-MW6	Aqueous	04/22/2021 1035	04/23/2021
007	11399-MW7	Aqueous	04/22/2021 1115	04/23/2021
008	11399-MW8	Aqueous	04/22/2021 1150	04/23/2021
009	11399-MW10	Aqueous	04/22/2021 1245	04/23/2021
010	11399-DCW1	Aqueous	04/22/2021 1340	04/23/2021
011	11399-MW9	Aqueous	04/22/2021 1430	04/23/2021
012	11399-MW9-DUP	Aqueous	04/22/2021 1430	04/23/2021

(12 samples)

PACE ANALYTICAL SERVICES, LLC

Detection Summary

AECOM

Lot Number: WD23010

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	11399-MW4	Aqueous	Benzene	8260D	7.4		ug/L	8
004	11399-MW4	Aqueous	Ethylbenzene	8260D	7.7		ug/L	8
004	11399-MW4	Aqueous	Naphthalene	8260D	0.78	J	ug/L	8
004	11399-MW4	Aqueous	Xylenes (total)	8260D	21		ug/L	8
005	11399-MW5	Aqueous	Benzene	8260D	9.5		ug/L	9
005	11399-MW5	Aqueous	Ethylbenzene	8260D	26		ug/L	9
005	11399-MW5	Aqueous	Naphthalene	8260D	9.6		ug/L	9
005	11399-MW5	Aqueous	Xylenes (total)	8260D	7.9		ug/L	9
009	11399-MW10	Aqueous	Ethylbenzene	8260D	0.65	J	ug/L	13
009	11399-MW10	Aqueous	Toluene	8260D	69		ug/L	13
009	11399-MW10	Aqueous	Xylenes (total)	8260D	3.2		ug/L	13
010	11399-DCW1	Aqueous	Ethylbenzene	8260D	1.6		ug/L	14
010	11399-DCW1	Aqueous	Naphthalene	8260D	1.1		ug/L	14
010	11399-DCW1	Aqueous	Toluene	8260D	0.49	J	ug/L	14
010	11399-DCW1	Aqueous	Xylenes (total)	8260D	1.2		ug/L	14
011	11399-MW9	Aqueous	Benzene	8260D	45		ug/L	15
011	11399-MW9	Aqueous	Ethylbenzene	8260D	60		ug/L	15
011	11399-MW9	Aqueous	Ethyl-tert-butyl ether (ETBE)	8260D	2.4		ug/L	15
011	11399-MW9	Aqueous	Methyl tertiary butyl ether	8260D	1.9		ug/L	15
011	11399-MW9	Aqueous	Naphthalene	8260D	14		ug/L	15
011	11399-MW9	Aqueous	tert-butyl alcohol (TBA)	8260D	1.4	J	ug/L	15
011	11399-MW9	Aqueous	Toluene	8260D	37		ug/L	15
011	11399-MW9	Aqueous	Xylenes (total)	8260D	170		ug/L	15
012	11399-MW9-DUP	Aqueous	Benzene	8260D	44		ug/L	16
012	11399-MW9-DUP	Aqueous	Ethylbenzene	8260D	55		ug/L	16
012	11399-MW9-DUP	Aqueous	Ethyl-tert-butyl ether (ETBE)	8260D	2.8		ug/L	16
012	11399-MW9-DUP	Aqueous	Methyl tertiary butyl ether	8260D	2.4		ug/L	16
012	11399-MW9-DUP	Aqueous	Naphthalene	8260D	14		ug/L	16
012	11399-MW9-DUP	Aqueous	tert-butyl alcohol (TBA)	8260D	1.4	J	ug/L	16
012	11399-MW9-DUP	Aqueous	Toluene	8260D	34		ug/L	16
012	11399-MW9-DUP	Aqueous	Xylenes (total)	8260D	160		ug/L	16

(31 detections)

Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-001
Description: 11399-MW2	Matrix: Aqueous
Date Sampled: 04/21/2021 1345	
Date Received: 04/23/2021	

Run 1	Prep Method 5030B	Analytical Method 8260D	Dilution 1	Analysis Date 04/30/2021 0120	Analyst CJL2	Prep Date	Batch 90726
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Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND	S	10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND	S	5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND	S	1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND	S	1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		107	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-002
Description: TB-01	Matrix: Aqueous
Date Sampled: 04/21/2021 1345	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/29/2021 2319	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		103	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-003
Description: 11399-MW3	Matrix: Aqueous
Date Sampled: 04/21/2021 1515	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0144	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		108	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		104	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-004
Description: 11399-MW4	Matrix: Aqueous
Date Sampled: 04/22/2021 0900	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0209	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	7.4		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	7.7		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	0.78	J	1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	21		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		105	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-005
Description: 11399-MW5	Matrix: Aqueous
Date Sampled: 04/22/2021 0935	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0233	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	9.5		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	26		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	9.6		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	7.9		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		109	70-130					
Toluene-d8		111	70-130					
Bromofluorobenzene		105	70-130					

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-006
Description: 11399-MW6	Matrix: Aqueous
Date Sampled: 04/22/2021 1035	
Date Received: 04/23/2021	

Run 1	Prep Method 5030B	Analytical Method 8260D	Dilution 1	Analysis Date 04/30/2021 0257	Analyst CJL2	Prep Date	Batch 90726
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Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		108	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		105	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-007
Description: 11399-MW7	Matrix: Aqueous
Date Sampled: 04/22/2021 1115	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0321	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		107	70-130					
Toluene-d8		111	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-008
Description: 11399-MW8	Matrix: Aqueous
Date Sampled: 04/22/2021 1150	
Date Received: 04/23/2021	

Run 1	Prep Method 5030B	Analytical Method 8260D	Dilution 1	Analysis Date 04/30/2021 0345	Analyst CJL2	Prep Date	Batch 90726
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Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	ND		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	ND		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	ND		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		108	70-130					
Toluene-d8		109	70-130					
Bromofluorobenzene		105	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-009
Description: 11399-MW10	Matrix: Aqueous
Date Sampled: 04/22/2021 1245	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0409	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	0.65	J	1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	ND		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	69		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	3.2		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		108	70-130					
Toluene-d8		111	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-010
Description: 11399-DCW1	Matrix: Aqueous
Date Sampled: 04/22/2021 1340	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0433	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	ND		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	1.6		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	ND		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	ND		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	1.1		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	ND		20	0.40	ug/L	1
Toluene	108-88-3	8260D	0.49	J	1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	1.2		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		107	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-011
Description: 11399-MW9	Matrix: Aqueous
Date Sampled: 04/22/2021 1430	
Date Received: 04/23/2021	

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260D	1	04/30/2021 0457	CJL2		90726

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	45		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	60		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	2.4		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	1.9		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	14		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	1.4	J	20	0.40	ug/L	1
Toluene	108-88-3	8260D	37		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	170		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		107	70-130					
Toluene-d8		111	70-130					
Bromofluorobenzene		103	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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Volatile Organic Compounds by GC/MS

Client: AECOM	Laboratory ID: WD23010-012
Description: 11399-MW9-DUP	Matrix: Aqueous
Date Sampled: 04/22/2021 1430	
Date Received: 04/23/2021	

Run 1	Prep Method 5030B	Analytical Method 8260D	Dilution 1	Analysis Date 04/30/2021 0521	Analyst CJL2	Prep Date	Batch 90726
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Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
tert-Amyl alcohol (TAA)	75-85-4	8260D	ND		20	8.0	ug/L	1
tert-Amyl methyl ether (TAME)	994-05-8	8260D	ND		10	0.42	ug/L	1
Benzene	71-43-2	8260D	44		1.0	0.40	ug/L	1
tert-Butyl formate (TBF)	762-75-4	8260D	ND		5.0	2.0	ug/L	1
1,2-Dichloroethane	107-06-2	8260D	ND		1.0	0.40	ug/L	1
Diisopropyl ether (IPE)	108-20-3	8260D	ND		1.0	0.40	ug/L	1
3,3-Dimethyl-1-butanol	624-95-3	8260D	ND		20	8.0	ug/L	1
Ethanol	64-17-5	8260D	ND		100	52	ug/L	1
Ethylbenzene	100-41-4	8260D	55		1.0	0.40	ug/L	1
Ethyl-tert-butyl ether (ETBE)	637-92-3	8260D	2.8		1.0	0.40	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260D	2.4		1.0	0.40	ug/L	1
Naphthalene	91-20-3	8260D	14		1.0	0.40	ug/L	1
tert-butyl alcohol (TBA)	75-65-0	8260D	1.4	J	20	0.40	ug/L	1
Toluene	108-88-3	8260D	34		1.0	0.40	ug/L	1
Xylenes (total)	1330-20-7	8260D	160		1.0	0.40	ug/L	1
Surrogate	Q	Run 1 % Recovery	Acceptance Limits					
1,2-Dichloroethane-d4		107	70-130					
Toluene-d8		110	70-130					
Bromofluorobenzene		101	70-130					

LOQ = Limit of Quantitation B = Detected in the method blank E = Quantitation of compound exceeded the calibration range DL = Detection Limit Q = Surrogate failure
 ND = Not detected at or above the DL N = Recovery is out of criteria P = The RPD between two GC columns exceeds 40% J = Estimated result < LOQ and ≥ DL L = LCS/LCSD failure
 H = Out of holding time W = Reported on wet weight basis S = MS/MSD failure

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QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: WQ90726-001

Matrix: Aqueous

Batch: 90726

Prep Method: 5030B

Analytical Method: 8260D

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
tert-Amyl alcohol (TAA)	ND		1	20	8.0	ug/L	04/29/2021 2201
tert-Amyl methyl ether (TAME)	ND		1	10	0.42	ug/L	04/29/2021 2201
Benzene	ND		1	1.0	0.40	ug/L	04/29/2021 2201
tert-Butyl formate (TBF)	ND		1	5.0	2.0	ug/L	04/29/2021 2201
1,2-Dichloroethane	ND		1	1.0	0.40	ug/L	04/29/2021 2201
Diisopropyl ether (IPE)	ND		1	1.0	0.40	ug/L	04/29/2021 2201
3,3-Dimethyl-1-butanol	ND		1	20	8.0	ug/L	04/29/2021 2201
Ethanol	ND		1	100	52	ug/L	04/29/2021 2201
Ethylbenzene	ND		1	1.0	0.40	ug/L	04/29/2021 2201
Ethyl-tert-butyl ether (ETBE)	ND		1	1.0	0.40	ug/L	04/29/2021 2201
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	0.40	ug/L	04/29/2021 2201
Naphthalene	ND		1	1.0	0.40	ug/L	04/29/2021 2201
tert-butyl alcohol (TBA)	ND		1	20	0.40	ug/L	04/29/2021 2201
Toluene	ND		1	1.0	0.40	ug/L	04/29/2021 2201
Xylenes (total)	ND		1	1.0	0.40	ug/L	04/29/2021 2201
Surrogate	Q	% Rec	Acceptance Limit				
1,2-Dichloroethane-d4		102	70-130				
Toluene-d8		110	70-130				
Bromofluorobenzene		105	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

* = RSD is out of criteria

+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - LCS

Sample ID: WQ90726-002

Matrix: Aqueous

Batch: 90726

Prep Method: 5030B

Analytical Method: 8260D

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	1000	970		1	97	70-130	04/29/2021 2052
tert-Amyl methyl ether (TAME)	50	46		1	91	70-130	04/29/2021 2052
Benzene	50	48		1	96	70-130	04/29/2021 2052
tert-Butyl formate (TBF)	250	280		1	113	70-130	04/29/2021 2052
1,2-Dichloroethane	50	50		1	99	70-130	04/29/2021 2052
Diisopropyl ether (IPE)	50	46		1	92	70-130	04/29/2021 2052
3,3-Dimethyl-1-butanol	1000	1000		1	102	70-130	04/29/2021 2052
Ethanol	5000	4700		1	95	70-130	04/29/2021 2052
Ethylbenzene	50	49		1	98	70-130	04/29/2021 2052
Ethyl-tert-butyl ether (ETBE)	50	44		1	87	70-130	04/29/2021 2052
Methyl tertiary butyl ether (MTBE)	50	42		1	85	70-130	04/29/2021 2052
Naphthalene	50	50		1	101	70-130	04/29/2021 2052
tert-butyl alcohol (TBA)	1000	900		1	90	70-130	04/29/2021 2052
Toluene	50	50		1	101	70-130	04/29/2021 2052
Xylenes (total)	100	98		1	98	70-130	04/29/2021 2052
Surrogate	Q	% Rec	Acceptance Limit				
1,2-Dichloroethane-d4		97	70-130				
Toluene-d8		102	70-130				
Bromofluorobenzene		93	70-130				

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

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

P = The RPD between two GC columns exceeds 40%

* = RSD is out of criteria

+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MS

Sample ID: WD23010-001MS

Matrix: Aqueous

Batch: 90726

Prep Method: 5030B

Analytical Method: 8260D

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
tert-Amyl alcohol (TAA)	ND	1000	1100		1	108	70-130	04/30/2021 0545
tert-Amyl methyl ether (TAME)	ND	50	71	N	1	142	70-130	04/30/2021 0545
Benzene	ND	50	56		1	111	70-130	04/30/2021 0545
tert-Butyl formate (TBF)	ND	250	ND	N	1	0.00	70-130	04/30/2021 0545
1,2-Dichloroethane	ND	50	57		1	114	70-130	04/30/2021 0545
Diisopropyl ether (IPE)	ND	50	52		1	103	70-130	04/30/2021 0545
3,3-Dimethyl-1-butanol	ND	1000	1100		1	111	70-130	04/30/2021 0545
Ethanol	ND	5000	4600		1	92	70-130	04/30/2021 0545
Ethylbenzene	ND	50	58		1	115	70-130	04/30/2021 0545
Ethyl-tert-butyl ether (ETBE)	ND	50	68	N	1	135	70-130	04/30/2021 0545
Methyl tertiary butyl ether (MTBE)	ND	50	66	N	1	132	70-130	04/30/2021 0545
Naphthalene	ND	50	58		1	116	70-130	04/30/2021 0545
tert-butyl alcohol (TBA)	ND	1000	1200		1	117	70-130	04/30/2021 0545
Toluene	ND	50	59		1	118	70-130	04/30/2021 0545
Xylenes (total)	ND	100	120		1	115	70-130	04/30/2021 0545
Surrogate	Q	% Rec	Acceptance Limit					
1,2-Dichloroethane-d4		111	70-130					
Toluene-d8		120	70-130					
Bromofluorobenzene		108	70-130					

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

* = RSD is out of criteria

+ = RPD is out of criteria

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

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Volatile Organic Compounds by GC/MS - MSD

Sample ID: WD23010-001MD

Matrix: Aqueous

Batch: 90726

Prep Method: 5030B

Analytical Method: 8260D

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
tert-Amyl alcohol (TAA)	ND	1000	920		1	92	16	70-130	20	04/30/2021 0609
tert-Amyl methyl ether (TAME)	ND	50	62		1	123	14	70-130	20	04/30/2021 0609
Benzene	ND	50	48		1	96	14	70-130	20	04/30/2021 0609
tert-Butyl formate (TBF)	ND	250	ND	N	1	0.00	0.00	70-130	20	04/30/2021 0609
1,2-Dichloroethane	ND	50	49		1	99	15	70-130	20	04/30/2021 0609
Diisopropyl ether (IPE)	ND	50	45		1	90	14	70-130	20	04/30/2021 0609
3,3-Dimethyl-1-butanol	ND	1000	960		1	96	15	70-130	20	04/30/2021 0609
Ethanol	ND	5000	4100		1	83	11	70-130	20	04/30/2021 0609
Ethylbenzene	ND	50	49		1	98	16	70-130	20	04/30/2021 0609
Ethyl-tert-butyl ether (ETBE)	ND	50	59		1	119	13	70-130	20	04/30/2021 0609
Methyl tertiary butyl ether (MTBE)	ND	50	57		1	114	14	70-130	20	04/30/2021 0609
Naphthalene	ND	50	50		1	99	16	70-130	20	04/30/2021 0609
tert-butyl alcohol (TBA)	ND	1000	1000		1	100	15	70-130	20	04/30/2021 0609
Toluene	ND	50	50		1	101	16	70-130	20	04/30/2021 0609
Xylenes (total)	ND	100	99		1	99	15	70-130	20	04/30/2021 0609
Surrogate	Q	% Rec	Acceptance Limit							
1,2-Dichloroethane-d4		96	70-130							
Toluene-d8		102	70-130							
Bromofluorobenzene		92	70-130							

LOQ = Limit of Quantitation

ND = Not detected at or above the DL

N = Recovery is out of criteria

DL = Detection Limit

J = Estimated result < LOQ and ≥ DL

P = The RPD between two GC columns exceeds 40%

* = RSD is out of criteria

+ = RPD is out of criteria

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

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Chain of Custody and Miscellaneous Documents



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Number 119183

Client Hilton Head Public Service District		Report to Contact Jeremy Grant, Brian Reibing		Telephone No. / E-mail Brian Reibing @ aecom.com	Quote No. 24706
Address 21 Oak Park Drive		City Hilton Head		State SC	
Zip Code 29926		Project Name HHPSPD Tier II		Page 1 of 2	
Project No. 60617359	P.O. No.	Matrix		No. of Containers by Preservative Type	
Sample ID / Description (Containers for each sample may be combined on one use.)	Collection Date	Cultivation Time (minutes)	Agarose	Agarose	Agarose
11399 - MW2	04/21	1345	6X	3	3
11399 - MW2 - MS		1345		3	3
11399 - MW2 - MSD		1345		3	3
TB-01		1345		2	3
11399 - MW3		1515		3	3
11399 - MW4	04/22	0900		3	3
11399 - MW5		0935		3	3
11399 - MW6		0935		3	3
11399 - MW7		0935		3	3
11399 - MW8		1150		3	3
Turn Around Time Required (Prior lab approval required for expedited TAT.)		Sample Disposal		Possible Hazard Identification	
Standard ☒ Rush ☐ (Specify)	Return to Client ☒ Dispose by Lab	Non-Hazard ☒ Biohazard ☐ Radioactive ☐ Corrosive ☐ Volatile ☐ Other ☐ (Specify)		1. Received by Fed Ex Date 4/21/21 Time 1900	
Relinquished by B.R.	Date 4/21/21	2. Received by		Date	
Relinquished by	Date	3. Received by		Date	
Relinquished by	Date	4. Laboratory (received by Jay Goodman)		Date 4/21/21 Time 0900	
Note: All samples are retained for four weeks from receipt unless other arrangements are made.		1. AG USE ONLY Received on ice (Circle) ☒ Yes ☐ No		Receptor Temp. 4.0 °C	

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Samples; PINK-Field/Clean Copy

Document Number: ME00302-01



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

Number 119184

Client: HHPSD		Report to Contact: Jeremy Grant, Brian Reibling		Telephone No. / E-mail: jeremy.grant@pacelabs.com		Quote No.: 24706	
Address: 21 Oak Park Drive		Sampler's Signature: [Signature]		Analyst (Attach list if more space is needed):		Page: 2 of 2	
City: Hilton Head		Printed Name: B. B.		Barcode:		WD23010	
State: SC		Zip Code: 29926		Matrix: 8260D VOC		KES2	
Project Name: HHPSD Tier II		Project No.: 60617359		No. of Containers by Preservation Type:		Remarks / Order L.D.	
Sample ID / Description	Collection Container	Collection Time (hh:mm)	Analysis	GC/MS	GC/MS	GC/MS	GC/MS
11399-MW10	04/22	1245	6X				
11399-DCW1		1340	11				
11399-MW9		1430	11				
11399-MW9-DUP		1430	11				
TEMPERATURE BLANK 4/22 Turn Around Time Required (Prior to approval required for expedient TAT): ☒ Standard ☐ Rush (Specify): 1. Requested by: B.B. Date: 04/22/2021 Time: 1900 2. Requested by: [Signature] Date: 04/22/2021 Time: 1900 3. Requested by: [Signature] Date: 04/22/2021 Time: 1900 4. Requested by: Fedex Date: 4/23/21 Time: 0900 Note: All samples are retained for four weeks from receipt unless other arrangements are made.							

Document Number: MED03M2-61

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



Samples Receipt Checklist (SRC) (ME0018C-15)

Issuing Authority: Pace ENV - WCOL

Revised: 9/29/2020

Page 1 of 1

Sample Receipt Checklist (SRC)

Client: HILTON HEAD

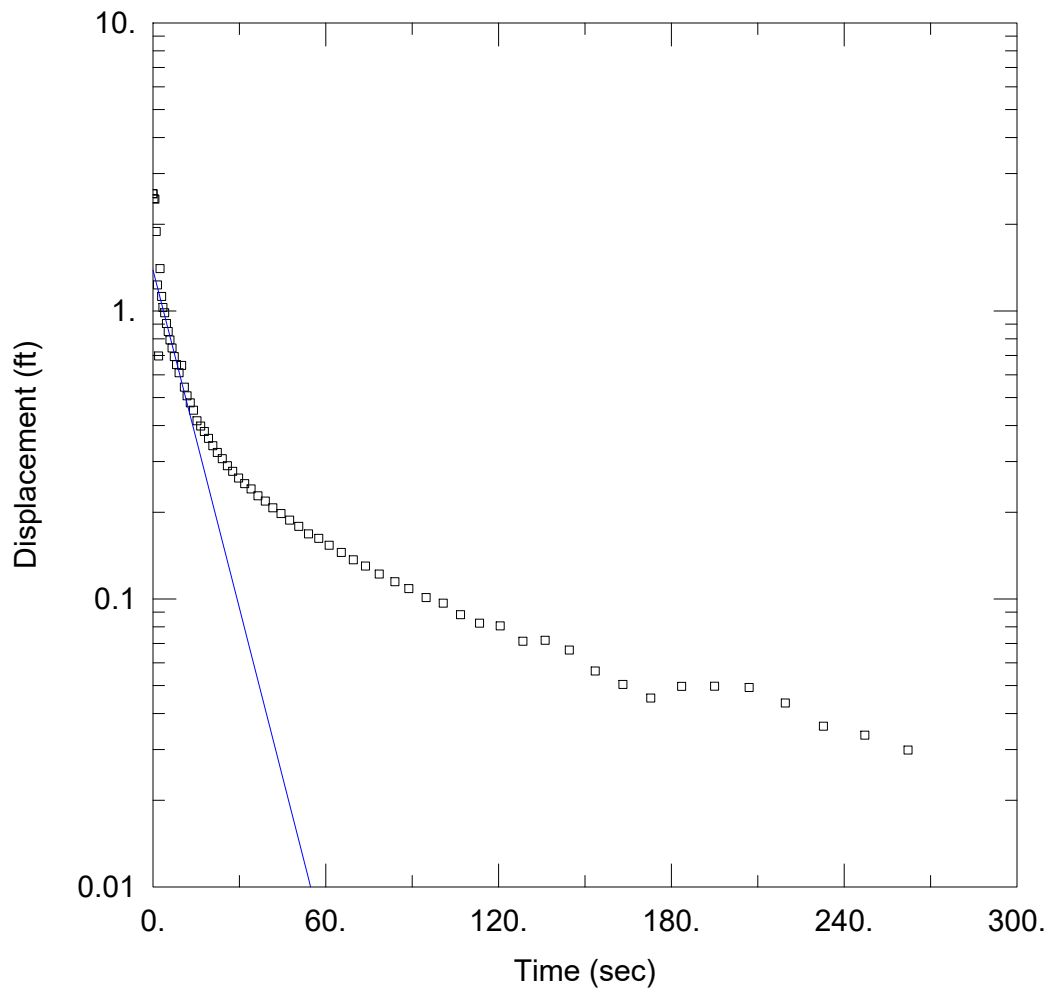
Cooler Inspected by/date: JRG2 / 04/23/2021

Lot #: WD23010

Means of receipt: ☐ Pace ☐ 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 Chlorine Strip ID: NA Tested by: NA	
Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA	
4.0 / 4.0 °C NA / NA °C NA / NA °C NA / NA °C	
Method: ☐ Temperature Blank ☒ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C	
Method of coolant: ☒ Wet Ice ☐ Ice Packs ☐ 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. For VOA and RSK-175 samples, were bubbles present > "pea-size" (¼" or 6mm in diameter) in any of the VOA vials?
☐ Yes ☐ No ☒ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes ☐ No ☒ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes ☐ No ☒ NA	19. Were all applicable NH ₃ /TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes ☐ No ☒ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☒ Yes ☐ No	21. Was the quote number listed on the container label? If yes, Quote # 24706
Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)	
Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA	
Time of preservation NA. If more than one preservative is needed, please note in the comments below.	
Sample(s) NA were received with bubbles > 6 mm in diameter.	
Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is no) and were adjusted accordingly in sample receiving with sodium thiosulfate (Na ₂ S ₂ O ₃) with Shealy ID: NA	
SR barcode labels applied by: JRG2 Date: 04/23/2021	

Comments:

Appendix C Hydraulic Characterization Data Sheets



MW-8 FALLING HEAD

Data Set: L:\...\MW-8_Falling.aqt
 Date: 10/31/21

Time: 22:15:42

PROJECT INFORMATION

Company: AECOM
 Client: HHPSD
 Location: Hopkins, SC
 Test Well: MW-8

AQUIFER DATA

Saturated Thickness: 28.9 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW-8)

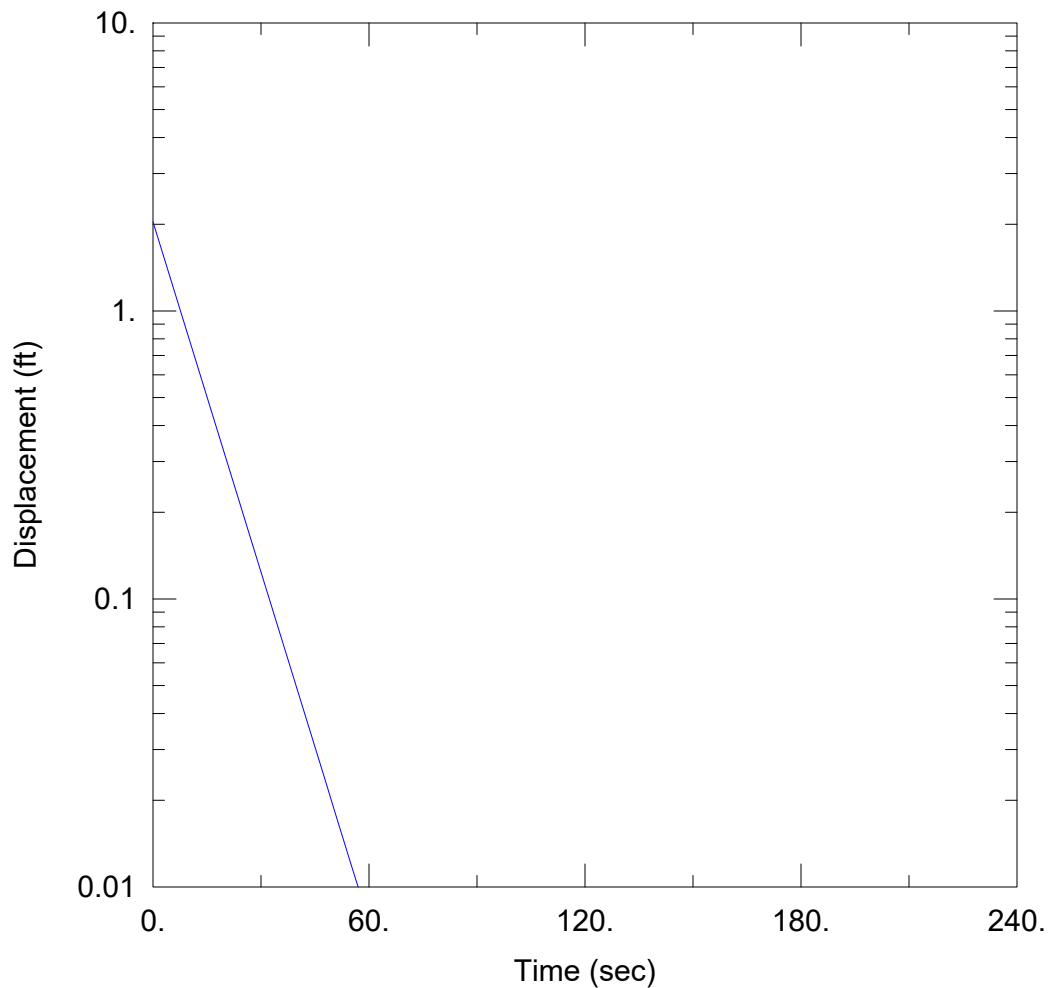
Initial Displacement: 2.55 ft
 Total Well Penetration Depth: 7.95 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 7.95 ft
 Screen Length: 7.95 ft
 Well Radius: 0.083 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 $K =$ 10.32 ft/day

Solution Method: Bouwer-Rice
 $y_0 =$ 1.387 ft



MW-8 RISING HEAD

Data Set: L:\...\MW-8_Rising.aqt
 Date: 10/31/21

Time: 22:21:23

PROJECT INFORMATION

Company: AECOM
 Client: HHPSD
 Location: Hopkins, SC
 Test Well: MW-8

AQUIFER DATA

Saturated Thickness: 28.9 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-8)

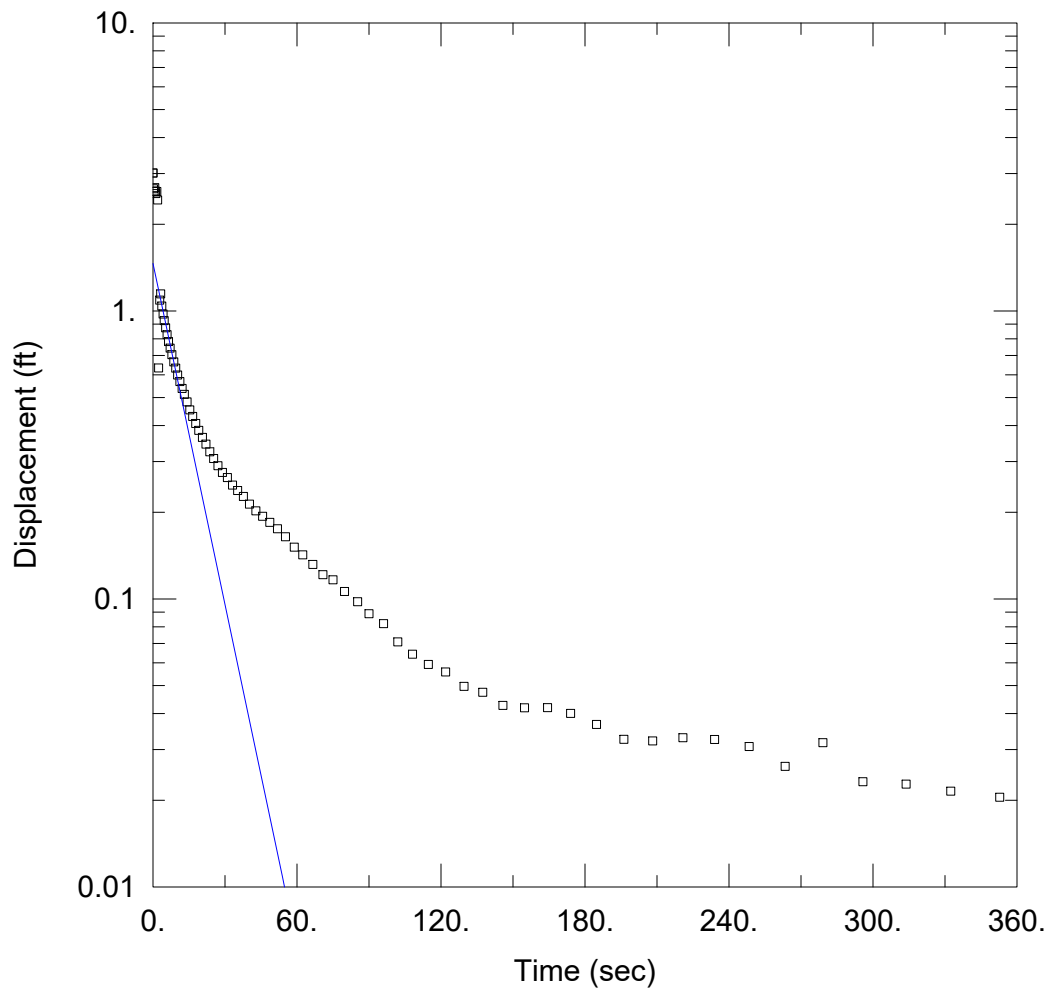
Initial Displacement: 2.28 ft
 Total Well Penetration Depth: 7.95 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 7.95 ft
 Screen Length: 7.95 ft
 Well Radius: 0.083 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 K = 10.69 ft/day

Solution Method: Bouwer-Rice
 y0 = 2.038 ft



MW-9 FALLING HEAD

Data Set: L:\...\MW-9_Falling.aqt
 Date: 10/31/21

Time: 22:24:34

PROJECT INFORMATION

Company: AECOM
 Client: HHPSD
 Location: Hopkins, SC
 Test Well: MW-9

AQUIFER DATA

Saturated Thickness: 29.12 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW-9)

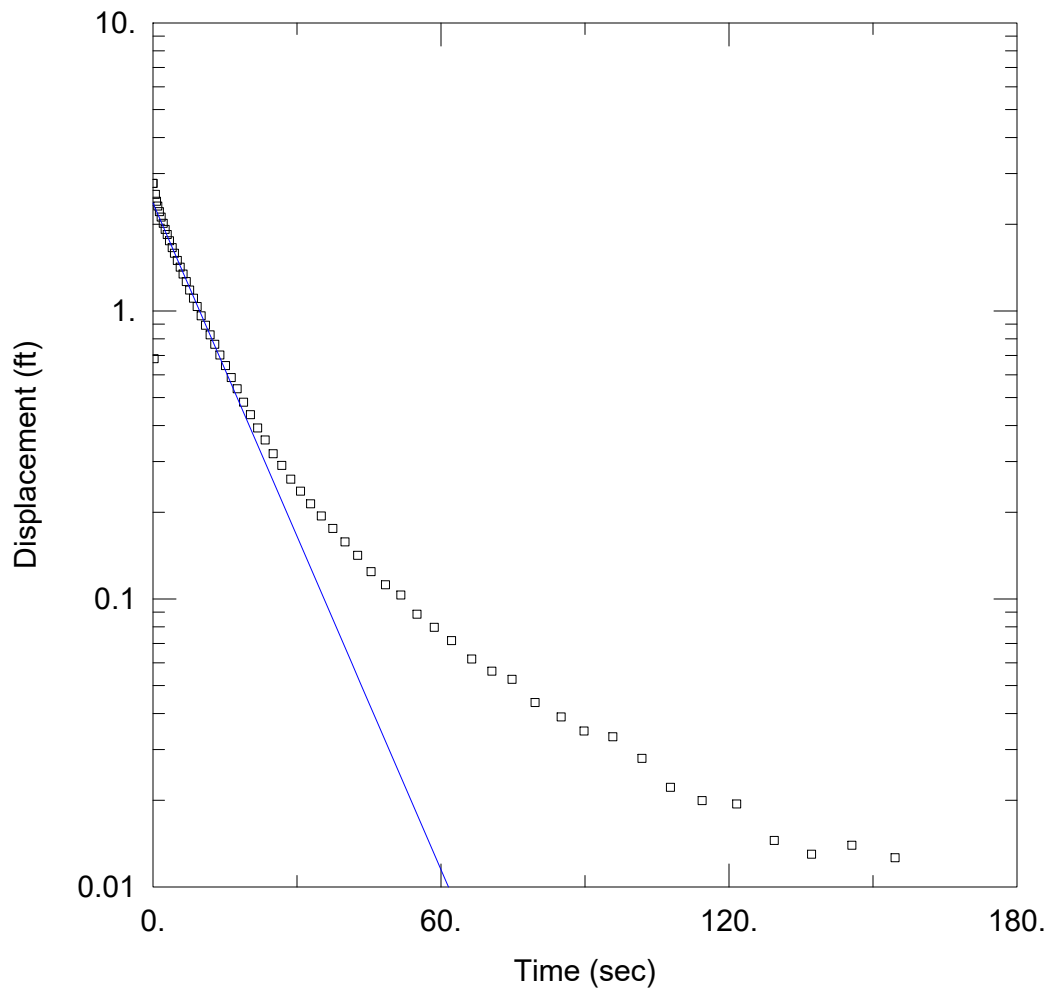
Initial Displacement: 3.01 ft
 Total Well Penetration Depth: 7.64 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 7.64 ft
 Screen Length: 7.64 ft
 Well Radius: 0.083 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 $K =$ 10.72 ft/day

Solution Method: Bouwer-Rice
 $y_0 =$ 1.462 ft



MW-9 RISING HEAD

Data Set: L:\...\MW-9_Rising.aqt
 Date: 10/31/21

Time: 22:25:41

PROJECT INFORMATION

Company: AECOM
 Client: HHPSD
 Location: Hopkins, SC
 Test Well: MW-9

AQUIFER DATA

Saturated Thickness: 29.12 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (MW-9)

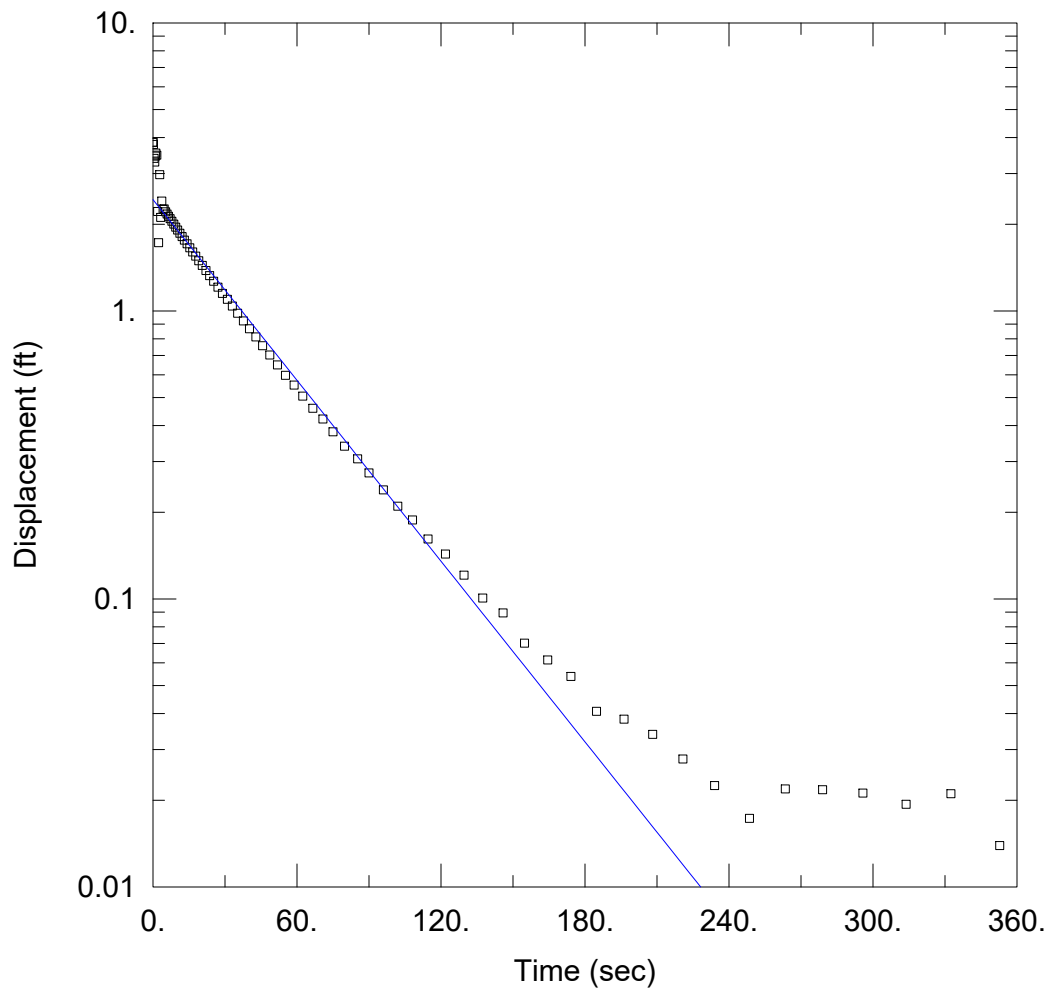
Initial Displacement: 2.77 ft
 Total Well Penetration Depth: 7.64 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 7.64 ft
 Screen Length: 7.64 ft
 Well Radius: 0.083 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 $K =$ 10.47 ft/day

Solution Method: Bouwer-Rice
 $y_0 =$ 2.37 ft



DCW-1 FALLING HEAD

Data Set: L:\...\DCW-1_Falling.aqt
 Date: 10/31/21

Time: 22:28:43

PROJECT INFORMATION

Company: AECOM
 Client: HHPSD
 Location: Hopkins, SC
 Test Well: DCW-1

AQUIFER DATA

Saturated Thickness: 28.41 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (DCW-1)

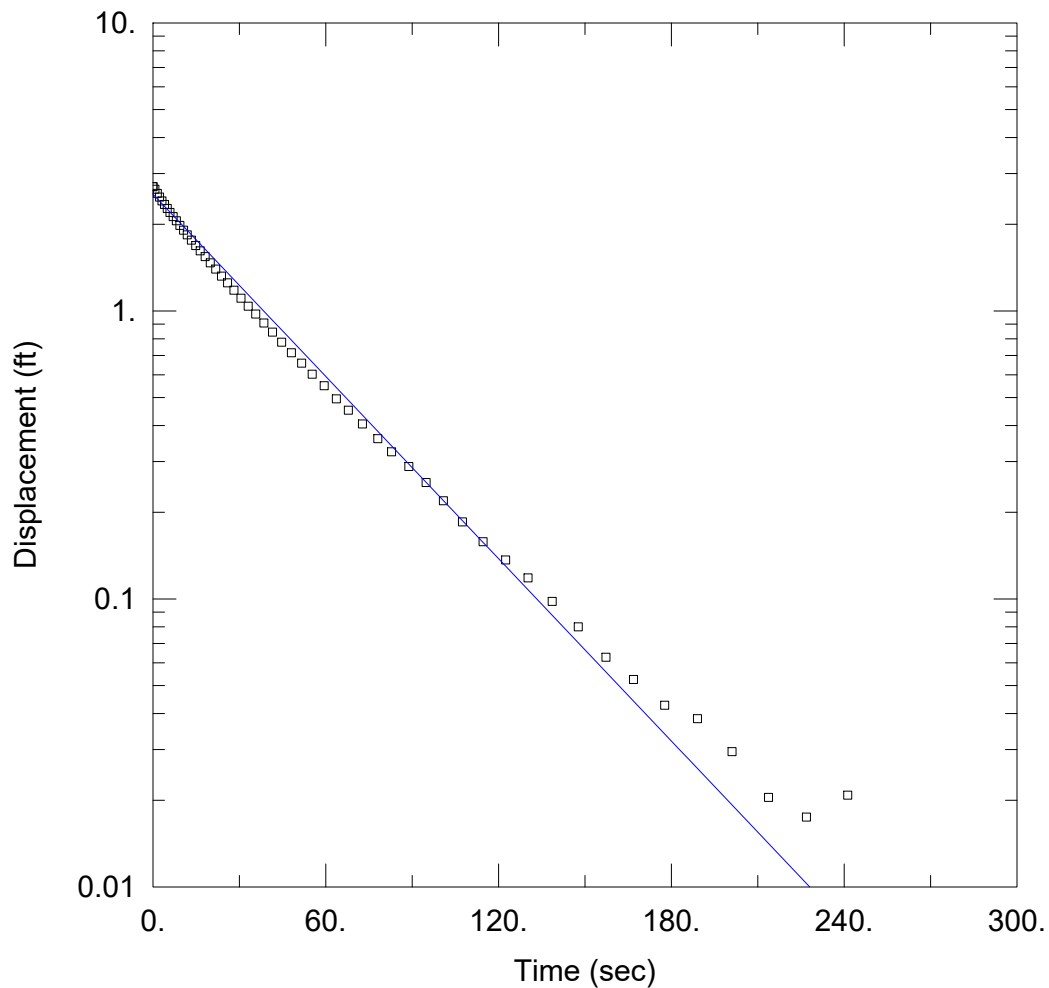
Initial Displacement: 3.85 ft
 Total Well Penetration Depth: 28.41 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 28.41 ft
 Screen Length: 5. ft
 Well Radius: 0.083 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 $K = 6.015$ ft/day

Solution Method: Bouwer-Rice
 $y_0 = 2.435$ ft



DCW-1 RISING HEAD

Data Set: L:\...\DCW-1_Rising.aqt
 Date: 10/31/21

Time: 22:30:59

PROJECT INFORMATION

Company: AECOM
 Client: HHPSD
 Location: Hopkins, SC
 Test Well: DCW-1

AQUIFER DATA

Saturated Thickness: 28.41 ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA (DCW-1)

Initial Displacement: 2.7 ft
 Total Well Penetration Depth: 28.41 ft
 Casing Radius: 0.083 ft

Static Water Column Height: 28.41 ft
 Screen Length: 5. ft
 Well Radius: 0.083 ft
 Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
 $K = 6.067$ ft/day

Solution Method: Bouwer-Rice
 $y_0 = 2.542$ ft

Brian Reibling
Geologist
T: 843-302-8746
E: brian.reibling@aecom.com

AECOM
4016 Salt Pointe Parkway
Charleston, SC 29405
aecom.com



Water Well Record Bureau of Water

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

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

1. WELL OWNER INFORMATION:

Name: Hilton Head Public Service District
Address: 21 Oak Park Drive
City: Hilton Head Island State: SC Zip: 29926-3641
Telephone: Work: _____ Home: _____

2. LOCATION OF WELL: COUNTY: Beaufort

Name: Hilton Head Public Service District
Street Address: 21 Oak Park Drive
City: Hilton Head Island Zip: 29926-3641
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER:

4. ABANDONMENT: ☐ Yes ☐ No

Give Details Below

Grouted Depth: from _____ ft. to _____ ft.

7. PERMIT NUMBER:

8. USE:

- ☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed)

Date Started: 04/19/21

14 ft.

Date Completed: 04/19/21

10. CASING: ☒ Threaded ☐ Welded

Diam: 2"

Type: ☐ PVC ☐ Galvanized
☐ Steel ☐ Other

0 in. to 4 ft. depth
0 in. to _____ ft. depth

Height: Above/Below

Surface _____ ft.

Weight _____ lb./ft.

Drive Shaft? ☐ Yes ☐ No

11. SCREEN:

Type: PVC

Diam: 2"

Slot/Gauge: 0.010

Length: 10'

Set Between: 4 ft. and 14 ft.

NOTE: MULTIPLE SCREENS

USE SECOND SHEET

Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.

_____ ft. after _____ hrs. Pumping _____ GPM.

Pumping Test: ☐ Yes (please enclose) ☐ No

Yield: _____

14. WATER QUALITY

Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No

Installed from 2 ft. to 14 ft.

Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No

☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other

Depth: From 0 ft. to 2 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. direction

Type _____

Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____

Not installed ☐

Mfr. Name: _____ Model No.: _____

H.P. _____ Volts _____ Length of drop pipe: _____ ft. Capacity _____ gpm

TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings CERT. NO.: 2216D

Address: (Print)

Level: A B C D (circle one)

1817 Bishopville Hwy

Columbia, SC 29020

Telephone No.: _____

Fax No.: _____

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Broadus Randall Eddings Date: 5/7/21
Well Driller

If Level Driller, provide supervising driller's name:

Deshaun Rodgers 1461A

5. TYPE: ☐ Hand Rotary ☐ Jetted ☐ Road
☐ Dug ☐ Air Rotary ☐ Driven
☐ Cable Tool ☐ Other

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

5. REMARKS:

MW-5



Water Well Record Bureau of Water

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

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

1. WELL OWNER INFORMATION:

Name: Hilton Head Public Service District
(last) (first)
Address: 21 Oak Park Drive
City: Hilton Head Island State: SC Zip: 29926-3641
Telephone: Work: _____ Home: _____

2. LOCATION OF WELL:

COUNTY: Beaufort

Name: Hilton Head Public Service District
Street Address: 21 Oak Park Drive
City: Hilton Head Island Zip: 29926-3641
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME:

PUBLIC SYSTEM NUMBER: _____

4. ABANDONMENT: ☐ Yes ☐ No

Give Details Below:

Grouted Depth: from _____ ft. to _____ ft.

7. PERMIT NUMBER:

8. USE:

- ☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ Monitor Well ☐ Replacement

9. WELL DEPTH (completed):

Date Started: 04/20/21

14 ft.

Date Completed: 04/20/21

10. CASING: ☒ Threaded ☐ Welded

Diam.: 2"

Type: ☐ PVC ☐ Galvanized
☐ Steel ☐ Other

0 in. to 4 ft. depth
in. to _____ ft. depth

Height: Above/Below

Surface: _____ ft.

Weight: _____ lb./ft.

Drive Shoe? ☐ Yes ☐ No

11. SCREEN:

Type: PVC

Diam.: 2"

Slot/Gauge: 0.010

Length: 10'

Set Between: 4 ft. and 14 ft.

ft. and _____ ft.

NOTE: MULTIPLE SCREENS

USE SECOND SHEET

Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL

_____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface

_____ ft. after _____ hrs. Pumping _____ GPM.

Pumping Test: ☐ Yes (please enclose) ☐ No

Yield: _____

14. WATER QUALITY

Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack): ☒ Yes ☐ No

Installed from 2 ft. to 14 ft.

Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No

☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other

Depth: From 0 ft. to 2 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION:

_____ ft. direction

Type _____

Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____

Not installed ☐

Mfr. Name: _____ Model No.: _____

HP: _____ Volts: _____ Length of down pipe: _____ ft. Capacity: _____ gpm.

TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine
☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings CERT NO.: 2216D

Address: (Print)

Level: A B C D (circle one)

1817 Bishopville Hwy

Camden, SC 29020

Telephone No.: _____

Fax No.: _____

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Broadus Randall Eddings
Well Driller

Date: 5/7/21

IF Level Driller, provide supervising driller's name:

Deeral Rodgers 1461A



Water Well Record Bureau of Water

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

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

1. WELL OWNER INFORMATION:

Name: Hilton Head Public Service District

Address: 21 Oak Park Drive

City: Hilton Head Island State: SC Zip: 29926-3641

Telephone: Work:

Home:

2. LOCATION OF WELL:

COUNTY: Beaufort

Name: Hilton Head Public Service District

Street Address: 21 Oak Park Drive

City: Hilton Head Island Zip: 29926-3641

Latitude:

Longitude:

7. PERMIT NUMBER:

8. USE:

☐ Residential

☐ Public Supply

☐ Process

☐ Irrigation

☐ Air Conditioning

☐ Emergency

☐ Test Well

☒ Monitor Well

☐ Replacement

9. WELL DEPTH (completed):

Date Started: 04/20/21

13

ft.

Date Completed: 04/20/21

10. CASING: ☒ Threaded ☐ Welded

Diam.: 2"

Type: ☒ PVC ☐ Galvanized

☐ Steel ☐ Other

0

in. to

3

ft. depth

in. to

ft. depth

Height Above/Below

Surface

Weight

lb./ft.

Drive Shoes? ☒ Yes ☐ No

11. SCREEN:

Type: PVC

Diam.: 2"

Slot/Gauge: 0.010

Length: 10'

Set Between: 3

ft. and

13

ft.

NOTE: MULTIPLE SCREENS

ft. and

ft.

USE SECOND SHEET

Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL

ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface:

ft. after

hrs. Pumping

GPM

Pumping Test: ☒ Yes (please enclose) ☐ No

Yield:

14. WATER QUALITY

Chemical Analysis ☐ Yes ☐ No

Bacterial Analysis ☐ Yes ☐ No

Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack): ☒ Yes ☐ No

Installed from 1

ft. to

13

ft.

Effective size

Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No

☐ Mortar Cement ☐ Hydraulic

☒ Bentonite/Cement ☐ Other

Depth: From 0

ft. to

1

ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION:

ft. direction

Type

Well Disinfected ☐ Yes ☐ No

Type:

Amount:

18. PUMP: Date installed:

Not installed ☐

Mfr. Name:

Model No.:

H.P.:

Volts:

Length of drive pipe:

ft.

Capacity

gpm

TYPE: ☐ Submersible

☐ Jet (shallow)

☐ Turbine

☐ Jet (deep)

☐ Reciprocating

☐ Centrifugal

19. WELL DRILLER: Broads Randall Eddings CERT NO: 2216D

Address (Print)

Tract: A B C D (circle one)

1817 Bishopville Hwy

Candlen, SC 29020

Telephone No.:

Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: *Randall Eddings*

Well Driller

Date: 5/7/21

FD Level Driller, provide supervising driller's name:

Deaton Rodgers 1461A

5. REMARKS:

MW-7

6. TYPE: ☐ Hand Rotary

☐ Aug

☐ Cable Tool

☐ Jetted

☐ Air Rotary

☐ Other

☐ Road

☐ Driven



Water Well Record

Bureau of Water

2600 Bull Street, Columbia, SC 29201-1706; (803) 898-4300

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

1. WELL OWNER INFORMATION:

Name: Hilton Head Public Service District
(last) (first)

Address: 21 Oak Park Drive

City: Hilton Head Island State: SC Zip: 29926-3641

Telephone: Work:

Home:

2. LOCATION OF WELL:

COUNTY: Beaufort

Name: Hilton Head Public Service District

Street Address: 21 Oak Park Drive

City: Hilton Head Island Zip: 29926-3641

Latitude:

Longitude:

7. PERMIT NUMBER:

8. USE:

☐ Residential

☐ Public Supply

☐ Process

☐ Irrigation

☐ Air Conditioning

☐ Emergency

☐ Test Well

☒ Monitor Well

☐ Replacement

9. WELL DEPTH (completed):

Date Started: 04/20/21

14 ft

Date Completed: 04/20/21

10. CASING: ☒ Threaded ☐ Welded

Diam: 2"

Height: Above/Below

Type: ☐ PVC ☐ Galvanized

Surface: _____ ft.

☐ Steel ☐ Other

Weight: _____ lb./ft.

0 in. to 4 ft. depth

Does Screen? ☐ Yes ☐ No

_____ in. to _____ ft. depth

11. SCREEN:

Type: PVC

Diam: 2"

Slot/Gauge: 0.010

Length: 10'

Set Between: 4 ft. and 14 ft.

NOTE: MULTIPLE SCREENS

_____ ft. and _____ ft.

USE SECOND SHEET

Sieve Analysis: ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL: Below Land Surface

_____ ft. after _____ hrs. Pumping _____ GPM.

Pumping Test: ☐ Yes (please enclose) ☐ No

Yield: _____

14. WATER QUALITY

Chemical Analysis ☐ Yes ☐ No

Bacterial Analysis ☐ Yes ☐ No

Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack): ☒ Yes ☐ No

Installed from 2 ft. to 14 ft.

Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No

☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other

Depth: From 0 ft. to 2 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. direction

Type _____

Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐

Mfr. Name: _____ Model No.: _____

H.P. _____ Volts _____ Length of drop pipe: _____ ft. Capacity _____ gpm

TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine

☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Bradus Randall Eddings CERT NO: 2216D

Address: (Print)

Level: A B C D (circle one)

1817 Bishopville Hwy

Candee, SC 29020

Telephone No.:

Fax No.:

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: *Bradus Randall Eddings*
Well Driller

Date: 5/7/21

If D Level Driller, provide supervising driller's name:

Doreal Rodgers 1461A

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

5. REMARKS:

MW-8

6. TYPE: ☐ Hand Rotary

☐ Jolted

☐ Bored

☐ Dig

☐ Air Rotary

☐ Driven

☐ Cable tool

☐ Other



Water Well Record Bureau of Water

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

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

1. WELL OWNER INFORMATION:

Name: Hilton Head Public Service District

(Last) (First)

Address: 21 Oak Park Drive

City: Hilton Head Island State: SC Zip: 29926-3641

Telephone: Work: _____

Home: _____

2. LOCATION OF WELL:

COUNTY: Beaufort

Name: Hilton Head Public Service District

Street Address: 21 Oak Park Drive

City: Hilton Head Island Zip: 29926-3641

Latitude: _____

Longitude: _____

3. PUBLIC SYSTEM NAME:

PUBLIC SYSTEM NUMBER: _____

4. ABANDONMENT:

☐ Yes ☐ No

Give Details Below:

Grouted Depth: from _____ ft. to _____ ft.

7. PERMIT NUMBER:

8. USE:

☐ Residential

☐ Public Supply

☐ Process

☐ Irrigation

☐ Air Conditioning

☐ Emergency

☐ Test Well

☒ Monitor Well

☐ Replacement

9. WELL DEPTH (completed):

Date Started: 04/21/21

13.5 ft.

Date Completed: 04/21/21

10. CASING: ☒ Threaded ☐ Welded

Diam: 2"

Type: ☐ PVC ☐ Galvanized

☐ Steel ☐ Other

0 in. to 3.5 ft. depth

_____ in. to _____ ft. depth

Height Above/Below

Surface _____ ft.

Weight _____ lb./ft.

Drive Shoe? ☐ Yes ☒ No

11. SCREEN:

Type: PVC

Diam: 2"

Slot/Gauge: 0.010

Length: 10'

Set Between: 3.5 ft. and 13.5 ft.

NOTE: MULTIPLE SCREENS

USE SECOND SHEET

Sieve Analysis ☐ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL

_____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface:

_____ ft. after _____ hrs. Pumping _____ GPM.

Pumping Test: ☐ Yes (please enclose) ☐ No

Yield: _____

14. WATER QUALITY

Chemical Analysis ☐ Yes ☐ No

Bacterial Analysis ☐ Yes ☐ No

Please enclose lab results.

15. ARTIFICIAL FILTER (Other pack): ☒ Yes ☐ No

Installed from 1.5 ft. to 13.5 ft.

Effective size _____ Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No

☐ Neat Cement ☐ Bentonite ☒ Bentonite/Cement ☐ Other

Depth: From 0 ft. to 1.5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. direction

Type _____

Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____

Not installed ☐

Mfr. Name: _____

Model No.: _____

H.P. _____ Volts _____ Length of drop pipe: _____ ft. Capacity _____ gpm.

TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine

☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Broadus Randall Eddings CERT NO.: 2216D

Address: (Print) _____

Level: A B C D (circle one)

1817 Bishopville Hwy

Columbia, SC 29202

Telephone No.: _____

Fax No.: _____

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Randall Eddings
Well Driller

Date: 5/7/21

IF Level Driller, provide supervising driller's name:

Dennis Rodgers 1461A