SUMMARY REPORT
598 WEST CARDINAL LANE (FORMERLY 1459 WEST CARDINAL LANE)
LAUREL BAY MILITARY HOUSING AREA
MARINE CORPS AIR STATION BEAUFORT
BEAUFORT, SC

Revision: 0
Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511-3095

and

Naval Facilities Engineering Command Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511-3095

JUNE 20**2**1

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Prepared by:

CDM - AECOM Multimedia Joint Venture
10560 Arrowhead Drive, Suite 500
Fairfax, Virginia 22030

Contract Number: N62470-14-D-9016
CTO WE52
JUNE 20**2**1

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Appendices

List of Acronyms

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CTO	Contract Task Order
COPC	constituents of potential concern
IDIQ	Indefinite Delivery, Indefinite Quantity
IGWA	Initial Groundwater Assessment
JV	Joint Venture
LBMH	Laurel Bay Military Housing
MCAS	Marine Corps Air Station
NAVFAC Mid-Lant	Naval Facilities Engineering Command Mid-Atlantic
NFA	No Further Action
PAH	polynuclear aromatic hydrocarbon
QAPP	Quality Assurance Program Plan
RBSL	risk-based screening level
SCDHEC	South Carolina Department of Health and Environmental Control
Site	LBMH area at MCAS Beaufort, South Carolina
UST	underground storage tank
VISL	vapor intrusion screening level

1.0 INTRODUCTION

The CDM - AECOM Multimedia Joint Venture (JV) was contracted by the Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC Mid-Lant) to provide reporting services for the heating oil underground storage tanks (USTs) located in Laurel Bay Military Housing (LBMH) area at the Marine Corps Air Station (MCAS) Beaufort, South Carolina (Site). This work has been awarded under Contract Task Order (CTO) WE52 of the Indefinite Delivery, Indefinite Quantity (IDIQ) Multimedia Environmental Compliance Contract (Contract No. N62470-14-D-9016).

As of January 2014, the LBMH addresses were re-numbered to comply with the E-911 emergency response addressing system; however, in order to remain consistent with historical sampling and reporting for LBMH area, the residences will continue to be referenced with their original address numbers in sample nomenclature and reporting documents.

This report summarizes the results the environmental investigation activities associated with the storage of home heating oil and the potential release of petroleum constituents at the referenced property. Based on the results of the investigation, a No Further Action (NFA) determination has been made by the South Carolina Department of Health and Environmental Control (SCDHEC) for 598 West Cardinal Lane (Formerly 1459 West Cardinal Lane). This NFA determination indicates that there are no unacceptable risks to human health or the environment for the petroleum constituents associated with the home heating oil USTs. The following information is included in this report:

- Background information;
- Sampling activities and results; and
- A determination of the property status.

1.1 Background Information

The LBMH area is located approximately 3.5 miles west of MCAS Beaufort. The area is approximately 970 acres in size and serves as an enlisted and officer family housing area. The area is configured with single family and duplex residential structures, and includes recreation, open space, and community facilities. The community includes approximately 1,300 housing units, including legacy Capehart style homes and newer duplex style homes. The housing area

is bordered on the west by salt marshes and the Broad River, and to the north, east and south by uplands. Forested areas lie along the northern and northeastern borders.

Capehart style homes within the LBMH area were formerly heated using heating oil stored in USTs at each residence. There were 1,100 Capehart style housing units in the LBMH area. The newer duplex homes within the LBMH area never utilized heating oil tanks. Heating oil has not been used at Laurel Bay since the mid-1980s. As was the accepted practice at the time, USTs were drained, filled with dirt, capped, and left in place when they were removed from service. Residential USTs are not regulated in the State of South Carolina (i.e., there are no federal or state laws governing installation, management, or removal).

In 2007, MCAS Beaufort began a voluntary program to remove the unregulated, residential USTs and conduct sampling activities to determine if, and to what extent, petroleum constituents may have impacted the surrounding environment. MCAS Beaufort coordinated with SCDHEC to develop removal procedures that were consistent with procedural requirements for regulated USTs. All tank removal activities and follow-on actions are conducted in coordination with SCDHEC. To date, all known USTs have been removed from all residential properties within the LBMH area.

1.2 UST Removal and Assessment Process

During the UST removal process, a soil sample was collected from beneath the UST excavations (approximately 4 to 6 feet [ft] below ground surface [bgs]) and analyzed for a predetermined list of constituents of potential concern (COPCs) associated with the petroleum compounds found in home heating oil. These COPCs, derived from the *Quality Assurance Program Plan (QAPP) for the Underground Storage Tank Management Division, Revision 3.1* (SCDHEC, 2016) and the *Underground Storage Tank Assessment Instructions for Permanent Closure and Change-In-Service,* (SCDHEC, 2018), are as follows:

- benzene, toluene, ethylbenzene, and xylenes (BTEX),
- naphthalene, and
- five select polynuclear aromatic hydrocarbon (PAHs): benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and dibenz(a,h)anthracene.

Soil sample results were submitted by MCAS Beaufort to SCDHEC utilizing SCDHEC's UST Assessment Report form. In accordance with SCDHEC's *QAPP for the UST Management*

Division (SCDHEC, 2016), the soil screening levels consists of SCDHEC risk-based screening levels (RBSLs). It should be noted that the RBSLs for select PAHs were revised in Revision 2.0 of the QAPP (SCDHEC, 2013) and were revised again in Revision 3.0 (SCDHEC, 2015). The screening levels used for evaluation at each site were those levels that were in effect at the time of reporting and review by SCDHEC.

The results of the soil sampling at each former UST location were used to determine if a potential for groundwater contamination exists (i.e., soil results greater than RBSLs) and subsequently to select properties for follow-up initial groundwater assessment (IGWA) sampling. The results of the IGWA sampling (if necessary) are used to determine the presence or absence of the aforementioned COPCs in groundwater and identify whether former UST locations will require additional delineation of COPCs in groundwater. In order to delineate the extent of impact to groundwater, permanent wells are installed and a sampling program is established for those former UST locations where IGWA sampling has indicated the presence of COPCs in excess of the SCDHEC RBSLs for groundwater. Groundwater analytical results are also compared to the site specific groundwater vapor intrusion screening levels (VISLs) to evaluate the potential for vapor intrusion and the necessity for an investigation associated with this media. A multi-media investigation selection process tree, applicable to the LBMH UST investigations, is presented as Appendix A.

2.0 SAMPLING ACTIVITIES AND RESULTS

The following section presents the sampling activities and associated results for 598 West Cardinal Lane (Formerly 1459 West Cardinal Lane). Details regarding the soil investigation at this site are provided in the *SCDHEC UST Assessment Report – 1459 West Cardinal Lane* (MCAS Beaufort, 2015). The UST Assessment Report is provided in Appendix B.

2.1 UST Removal and Soil Sampling

On October 20, 2014, a single 280 gallon heating oil UST was removed from the back yard adjacent to the patio area at 598 West Cardinal Lane (Formerly 1459 West Cardinal Lane). The former UST location is indicated on Figures 1 and 2 of the UST Assessment Report (Appendix B). The UST was removed and properly disposed of (i.e., shipped offsite for recycling or transported to a landfill). There was no visual evidence (i.e., staining or sheen) of petroleum impact at the time of the UST removal. According to the UST Assessment Report (Appendix B), the depth to the base of the UST was 6’7” bgs and a single soil sample was collected from that

depth. The sample was collected from the fill port side of the former UST to represent a worst case scenario.

Following UST removal, a soil sample was collected from the base of the excavation and shipped to an offsite laboratory for analysis of the petroleum COPCs. Sampling was performed in accordance with applicable South Carolina regulation R.61-92, Part 280 (SCDHEC, 2017) and assessment guidelines.

2.2 Soil Analytical Results

A summary of the laboratory analytical results and SCDHEC RBSLs is presented in Table 1. A copy of the laboratory analytical data report is included in the UST Assessment Report presented in Appendix B. The laboratory analytical data report includes the soil results for the additional PAHs that were analyzed, but do not have associated RBSLs.

The soil sample results were submitted by MCAS Beaufort to SCDHEC utilizing SCDHEC's UST Assessment Report form (Appendix B). The results of the soil sampling at the former UST location were used by MCAS Beaufort, in consultation with SCDHEC, to determine a path forward (i.e., additional sampling or NFA) for the property. The soil results collected from 598 West Cardinal Lane (Formerly 1459 West Cardinal Lane) were less than the SCDHEC RBSLs, which indicated the subsurface was not impacted by COPCs associated with the former UST at concentrations that presented a potential risk to human health and the environment.

3.0 PROPERTY STATUS

Based on the analytical results for soil, SCDHEC made the determination that NFA was required for 598 West Cardinal Lane (Formerly 1459 West Cardinal Lane). This NFA determination was obtained in a letter dated April 23, 2015. SCDHEC's NFA letter is provided in Appendix C.

4.0 REFERENCES

Marine Corps Air Station Beaufort, 2015. *South Carolina Department of Health and Environmental Control (SCDHEC) Underground Storage Tank Assessment Report – 1459 West Cardinal Lane, Laurel Bay Military Housing Area*, March 2015.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2013. *Quality Assurance Program Plan for the Underground Storage Tank Management* Division*, Revision 2.0*, April 2013.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2015. *Quality Assurance Program Plan for the Underground Storage Tank Management* Division*, Revision 3.0*, May 2015.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2016. *Quality Assurance Program Plan for the Underground Storage Tank Management* Division*, Revision 3.1*, February 2016.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2017*. R.61-92, Part 280, Underground Storage Tank Control Regulations*, March 2017.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management, 2018. *Underground Storage Tank Assessment Instructions for Permanent Closure and Change-In-Service*, March 2018.

Table

Table 1
Laboratory Analytical Results - Soil
598 West Cardinal Lane (Formerly 1459 West Cardinal Lane)
Laurel Bay Military Housing Area
Marine Corps Air Station Beaufort
Beaufort, South Carolina

Constituent	SCDHEC RBSLs [(1)]	Results Sample Collected 10/20/14
Volatile Organic Compounds Analyzed by EPA Method 8260B (mg/kg)		
Benzene	0.003	ND
Ethylbenzene	1.15	ND
Naphthalene	0.036	ND
Toluene	0.627	ND
Xylenes, Total	13.01	ND
Semivolatile Organic Compounds Analyzed by EPA Method 8270D (mg/kg)		
Benzo(a)anthracene	0.66	ND
Benzo(b)fluoranthene	0.66	ND
Benzo(k)fluoranthene	0.66	ND
Chrysene	0.66	ND
Dibenz(a,h)anthracene	0.66	ND

Notes:

[(1)] South Carolina Risk-Based Screening Levels from the Quality Assurance Program Plan for the Underground Storage Tank Management Division, Revision 2.0 (SCDHEC, April 2013).

Bold font indicates the analyte was detected.

Bold font and shading indicates the concentration exceeds the SCDHEC RBSL.

EPA - United States Environmental Protection Agency

mg/kg - milligram per kilogram

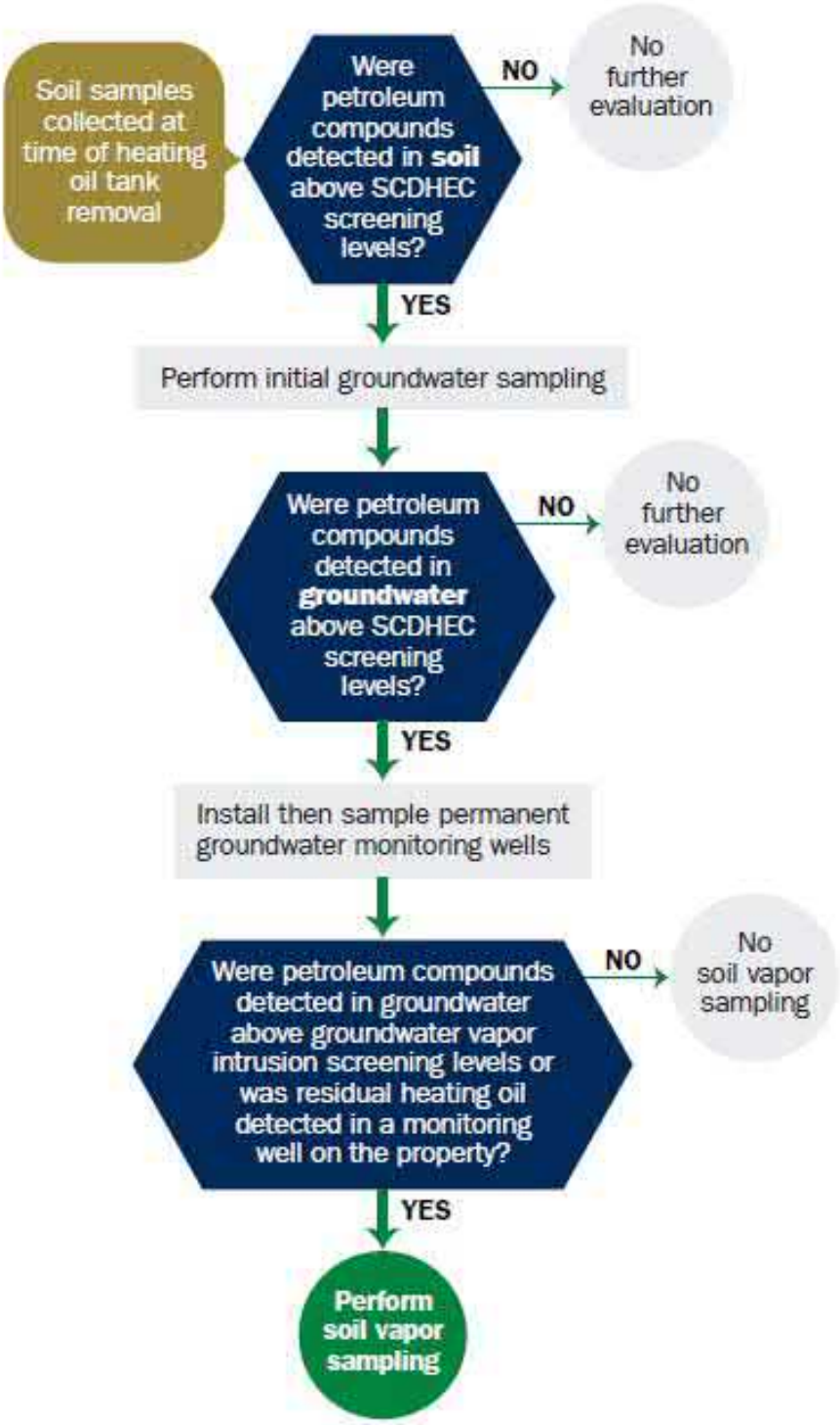
ND - not detected at the reporting limit (or method detection limit if shown on the laboratory report). The laboratory report is provided in Appendix B.

RBSL - Risk-Based Screening Level

SCDHEC - South Carolina Department Of Health and Environmental Control

Appendix A
Multi-Media Selection Process for LBMH

CDM - AECOM
Multimedia Joint Venture



Appendix A - Multi-Media Selection Process for LBMH

Appendix B
UST Assessment Report

CDM - AECOM
Multimedia Joint Venture

Attachment 1

South Carolina Department of Health and Environmental Control (SCDHEC)

Underground Storage Tank (UST) Assessment Report

Date Received

RECEIVED

State Use Only

MAR 17 2015

SC DHEC - Bureau of
Land & Waste Management

Submit Completed Form To:
UST Program
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201
Telephone (803) 896-7957

I. OWNERSHIP OF UST (S)

MCAS Beaufort, Commanding Officer Attn: NREAO (Craig Ehde)
Owner Name (Corporation, Individual, Public Agency, Other)

P.O. Box 55001
Mailing Address

Beaufort,	South Carolina	29904-5001
City	State	Zip Code
843	228-7317	Craig Ehde
Area Code	Telephone Number	Contact Person

II. SITE IDENTIFICATION AND LOCATION

Permit I.D. #

Laurel Bay Military Housing Area, Marine Corps Air Station, Beaufort, SC
Facility Name or Company Site Identifier

1459 Cardinal Lane, Laurel Bay Military Housing Area
Street Address or State Road (as applicable)

Beaufort,	Beaufort
City	County

Attachment 2

III. INSURANCE INFORMATION

Insurance Statement

The petroleum release reported to DHEC on _____ at Permit ID Number _____ may qualify to receive state monies to pay for appropriate site rehabilitation activities. Before participation is allowed in the State Clean-up fund, written confirmation of the existence or non-existence of an environmental insurance policy is required. **This section must be completed.**

Is there now, or has there ever been an insurance policy or other financial mechanism that covers this UST release? **YES**____ **NO**_____ (check one)

If you answered **YES** to the above question, please complete the following information:

My policy provider is:_____
The policy deductible is: _____
The policy limit is: _____

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

IV. REQUEST FOR SUPERB FUNDING

I **DO** / DO **NOT** wish to participate in the SUPERB Program. (Circle one.)

V. CERTIFICATION (To be signed by the UST owner)

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents; and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

_____
Name (Type or print.)

_____
Signature

To be completed by Notary Public:

Sworn before me this _____ day of_____, 20____

_____
(Name)

Notary Public for the state of_____.
Please affix State seal if you are commissioned outside South Carolina

VI. UST INFORMATION

A.	Product...(ex. Gas, Kerosene).....	1459 Cardinal	
B.	Capacity..(ex. 1k, 2k).....	Heating oil	
C.	Age.....	280 gal	
D.	Construction Material..(ex. Steel, FRP).....	Late 1950s	
E.	Month/Year of Last Use.....	Steel	
F.	Depth (ft.) To Base of Tank.....	Mid 80s	
G.	Spill Prevention Equipment Y/N.....	6'7"	
H.	Overfill Prevention Equipment Y/N.....	No	
I.	Method of Closure Removed/Filled.....	No	
J.	Date Tanks Removed/Filled.....	Removed	
K.	Visible Corrosion or Pitting Y/N.....	10/20/2014	
L.	Visible Holes Y/N.....	Yes	
		Yes	

M. Method of disposal for any USTs removed from the ground (attach disposal manifests)
UST 1459Cardinal was removed from the ground and disposed at a Subtitle "D" landfill. See Attachment "A".

N. Method of disposal for any liquid petroleum, sludges, or wastewaters removed from the USTs (attach disposal manifests)
UST 1459Cardinal was previously filled with sand by others.

O. If any corrosion, pitting, or holes were observed, describe the location and extent for each UST
Corrosion, pitting and holes were found throughout the tank.

VII. PIPING INFORMATION

1459 Cardinal		
Steel & Copper		
N/A		
N/A		
Suction		
No		
Yes		
No		
Late 1950s		

A. Construction Material..(ex. Steel, FRP).....

B. Distance from UST to Dispenser.....

C. Number of Dispensers.....

D. Type of System Pressure or Suction.....

E. Was Piping Removed from the Ground? Y/N

F. Visible Corrosion or Pitting Y/N.....

G. Visible Holes Y/N.....

H. Age.....

I. If any corrosion, pitting, or holes were observed, describe the location and extent for each piping run.

Corrosion and pitting were found on the surface of the steel vent pipe. Copper supply and return lines were sound.

VIII. BRIEF SITE DESCRIPTION AND HISTORY

The USTs at the residences are constructed of single wall steel and formerly contained fuel oil for heating. These USTs were installed in the late 1950s and last used in the mid 1980s.

IX. SITE CONDITIONS

	Yes	No	Unk
A. Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells? If yes, indicate depth and location on the site map.		X	
B. Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells? If yes, indicate location on site map and describe the odor (strong, mild, etc.)		X	
C. Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)?		X	
D. Did contaminated soils remain stockpiled on site after closure? If yes, indicate the stockpile location on the site map. Name of DHEC representative authorizing soil removal:		X	
E. Was a petroleum sheen or free product detected on any excavation or boring waters? If yes, indicate location and thickness.		X	

X. SAMPLE INFORMATION

A. SCDHEC Lab Certification Number 84009

B.

Sample #	Location	Sample Type (Soil/Water)	Soil Type (Sand/Clay)	Depth*	Date/Time of Collection	Collected by	OVA #
1459 Cardinal	Excav at fill end	Soil	Sandy	6'7"	10/20/14 1400 hrs	P. Shaw	
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

* = Depth Below the Surrounding Land Surface

XI. SAMPLING METHODOLOGY

Provide a detailed description of the methods used to collect and store the samples. Also include the preservative used for each sample. Please use the space provided below.

Sampling was performed in accordance with SC DHEC R.61-92 Part 280 and SC DHEC Assessment Guidelines. Sample containers were prepared by the testing laboratory. The grab method was utilized to fill the sample containers leaving as little head space as possible and immediately capped. Soil samples were extracted from area below tank. The samples were marked, logged, and immediately placed in a sample cooler packed with ice to maintain an approximate temperature of 4 degrees Centigrade. Tools were thoroughly cleaned and decontaminated with the seven step decon process after each use. The samples remained in custody of SBG-EEG, Inc. until they were transferred to Test America Incorporated for analysis as documented in the Chain of Custody Record.

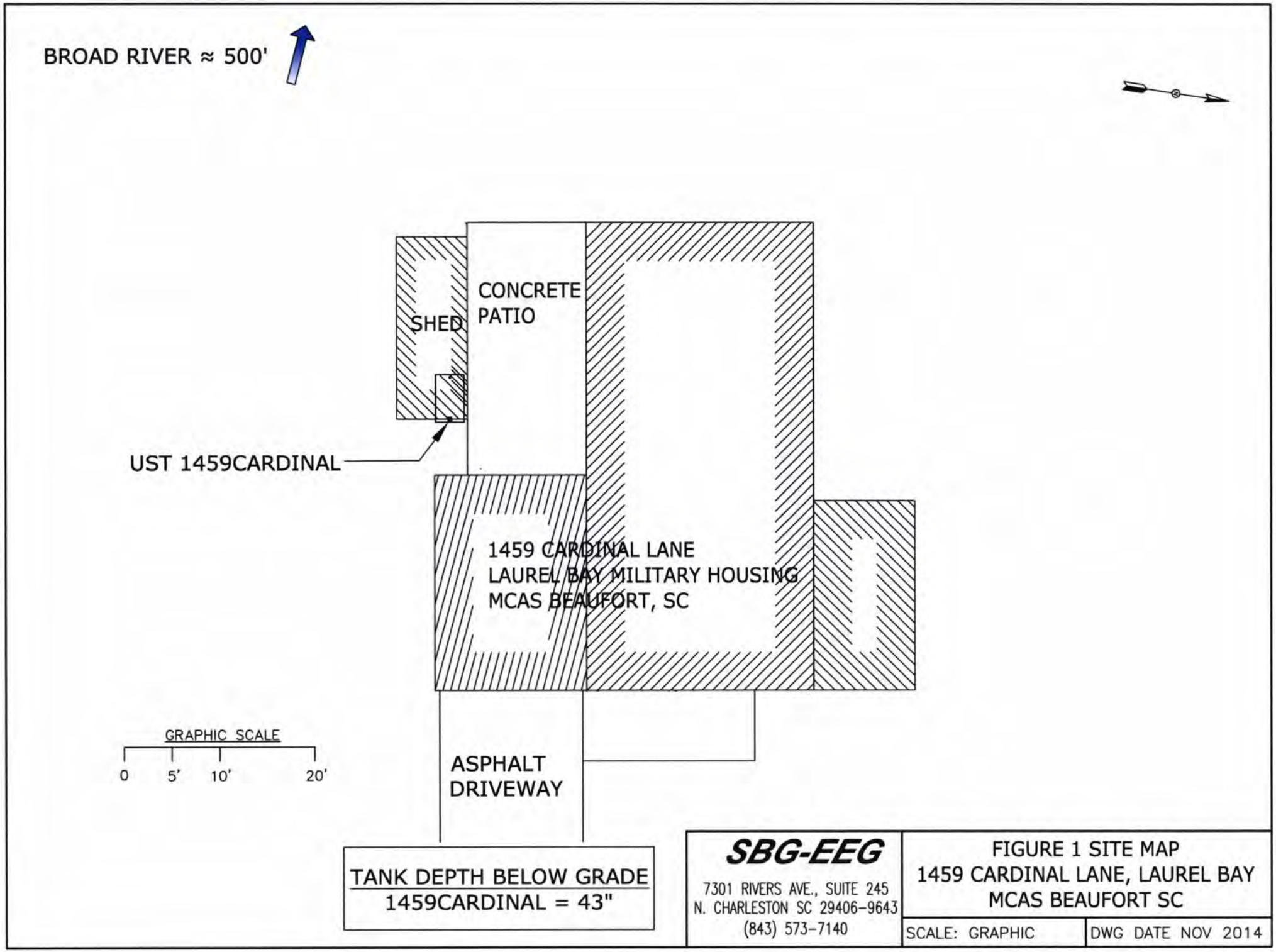
XII. RECEPTORS

	Yes	No
A. Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system? *Broad River If yes, indicate type of receptor, distance, and direction on site map.	*X	
B. Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system? If yes, indicate type of well, distance, and direction on site map.		X
C. Are there any underground structures (e.g., basements) Located within 100 feet of the UST system? If yes, indicate type of structure, distance, and direction on site map.		X
D. Are there any underground utilities (e.g., telephone, electricity, gas, water, sewer, storm drain) located within 100 feet of the UST system that could potentially come in contact with the contamination? *Sewer, water, electricity cable, fiber optic & geothermal If yes, indicate the type of utility, distance, and direction on the site map.	*X	
E. Has contaminated soil been identified at a depth less than 3 feet below land surface in an area that is not capped by asphalt or concrete? If yes, indicate the area of contaminated soil on the site map.		X

XIII. SITE MAP

You must supply a scaled site map. It should include all buildings, road names, utilities, tank and dispenser island locations, labeled sample locations, extent of excavation, and any other pertinent information.

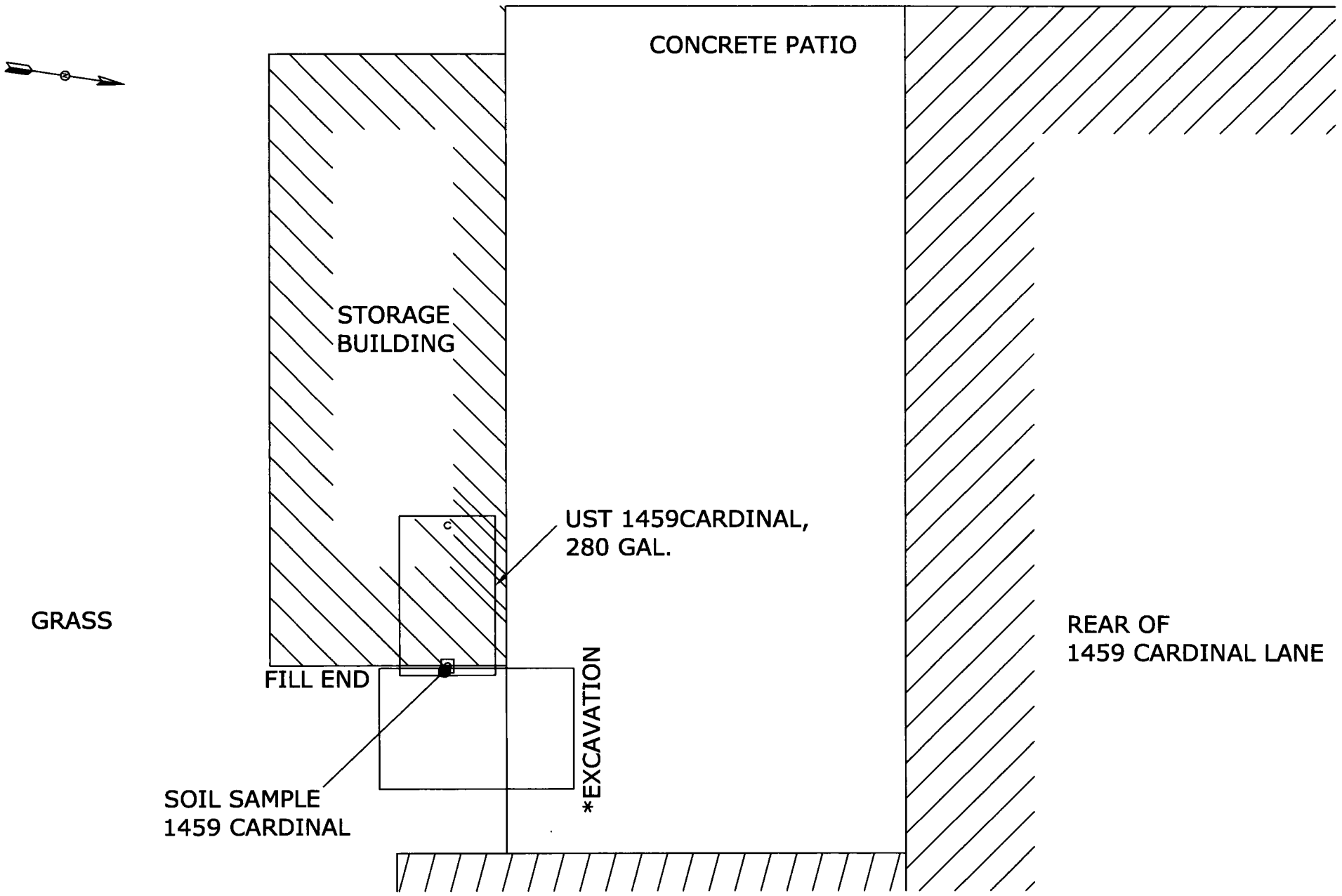
(Attach Site Map Here)



SBG-EEG
7301 RIVERS AVE., SUITE 245
N. CHARLESTON SC 29406-9643
(843) 573-7140

FIGURE 1 SITE MAP
1459 CARDINAL LANE, LAUREL BAY
MCAS BEAUFORT SC

SCALE: GRAPHIC | DWG DATE NOV 2014



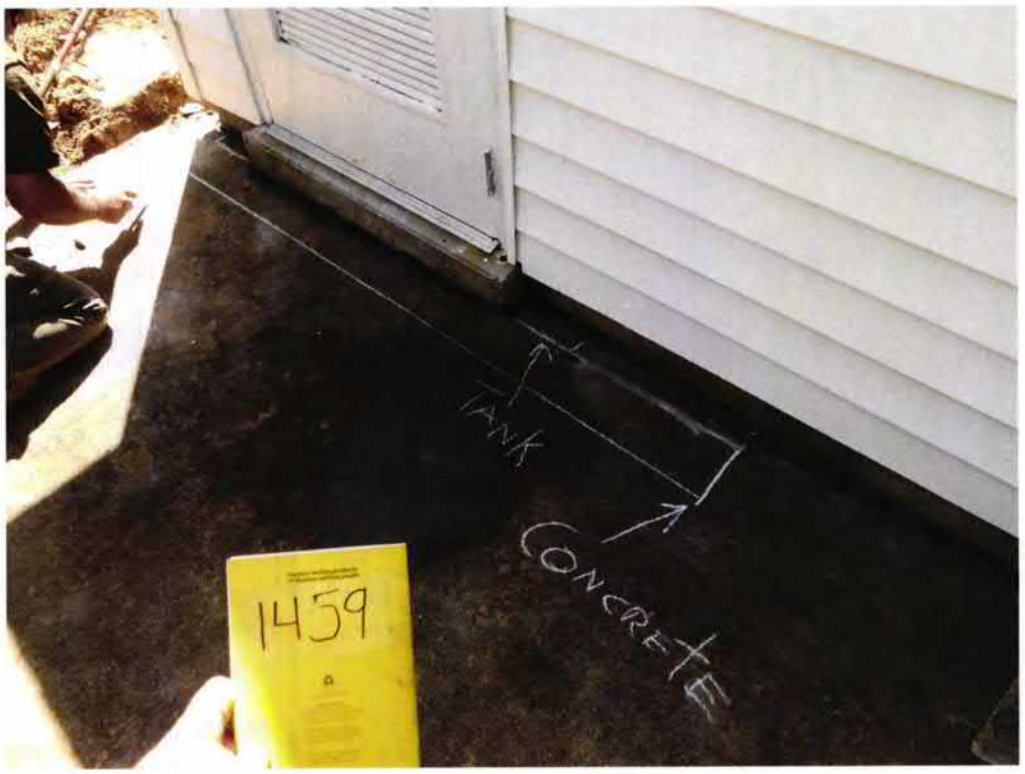
* A PORTION OF THE PATIO WAS REMOVED TO FACILITATE TANK EXTRACTION.

SBG-EEG
7301 RIVERS AVE., SUITE 245
N. CHARLESTON SC 29406-9643
(843) 573-7140

FIGURE 2 UST SAMPLE LOCATIONS
1459 CARDINAL LANE, LAUREL BAY
MCAS BEAUFORT SC

SCALE: GRAPHIC | DWG DATE NOV 2014

Picture 1: Location of UST 1459Cardinal.



Picture 2: UST 1459Cardinal detailed location.

Picture 3: Tank excavation in progress.

Picture 4: Site after completion of work.

XIV. SUMMARY OF ANALYSIS RESULTS

Enter the soil analytical data for each soil boring for all COC in the table below and on the following page.

CoC UST	1459Cardinal						
Benzene	ND						
Toluene	ND						
Ethylbenzene	ND						
Xylenes	ND						
Naphthalene	ND						
Benzo (a) anthracene	ND						
Benzo (b) fluoranthene	ND						
Benzo (k) fluoranthene	ND						
Chrysene	ND						
Dibenz (a, h) anthracene	ND						
TPH (EPA 3550)							

CoC								
Benzene								
Toluene								
Ethylbenzene								
Xylenes								
Naphthalene								
Benzo (a) anthracene								
Benzo (b) fluoranthene								
Benzo (k) fluoranthene								
Chrysene								
Dibenz (a, h) anthracene								
TPH (EPA 3550)								

SUMMARY OF ANALYSIS RESULTS (cont'd)

Enter the ground water analytical data for each sample for all CoC in the table below. If free product is present, indicate the measured thickness to the nearest 0.01 feet.

CoC	RBSL (µg/l)	W-1	W-2	W -3	W -4
Free Product Thickness	None				
Benzene	5				
Toluene	1,000				
Ethylbenzene	700				
Xylenes	10,000				
Total BTEX	N/A				
MTBE	40				
Naphthalene	25				
Benzo (a) anthracene	10				
Benzo (b) flouranthene	10				
Benzo (k) flouranthene	10				
Chrysene	10				
Dibenz (a, h) anthracene	10				
EDB	.05				
1,2-DCA	5				
Lead	Site specific				

XV. ANALYTICAL RESULTS

You must submit the laboratory report and chain-of-custody form for the samples. These samples must be analyzed by a South Carolina certified laboratory.

(Attach Certified Analytical Results and Chain-of-Custody Here)
(Please see Form #4)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204
Tel: (615)726-0177

TestAmerica Job ID: 490-64553-1
Client Project/Site: Laurel Bay Housing Project

For:
Small Business Group Inc.
10179 Highway 78
Ladson, South Carolina 29456

Attn: Tom McElwee

Authorized for release by:
11/5/2014 2:01:08 PM

Ken Hayes, Project Manager II
(615)301-5035
ken.hayes@testamericainc.com

Table of Contents

Sample Summary

Client: Small Business Group Inc.
Project/Site: Laurel Bay Housing Project

TestAmerica Job ID: 490-64553-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-64553-1	1459 Cardinal	Solid	10/20/14 14:00	10/23/14 08:40

Case Narrative

Client: Small Business Group Inc.
Project/Site: Laurel Bay Housing Project

TestAmerica Job ID: 490-64553-1

Job ID: 490-64553-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative
490-64553-1

Comments
No additional comments.

Receipt
The sample was received on 10/23/2014 8:40 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.7° C.

GC/MS VOA
Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 202323 recovered above the upper control limit for benzene and toluene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: (CCVIS 490-202323/3), 1459 Cardinal (490-64553-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Small Business Group Inc.
Project/Site: Laurel Bay Housing Project

TestAmerica Job ID: 490-64553-1

Client Sample ID: 1459 Cardinal
Date Collected: 10/20/14 14:00
Date Received: 10/23/14 08:40

Lab Sample ID: 490-64553-1
Matrix: Solid
Percent Solids: 77.0

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.00234	0.000785	mg/Kg	☼	10/24/14 15:19	10/31/14 06:24	1
Ethylbenzene	ND		0.00234	0.000785	mg/Kg	☼	10/24/14 15:19	10/31/14 06:24	1
Naphthalene	ND		0.00586	0.00199	mg/Kg	☼	10/24/14 15:19	10/31/14 06:24	1
Toluene	ND		0.00234	0.000867	mg/Kg	☼	10/24/14 15:19	10/31/14 06:24	1
Xylenes, Total	ND		0.00351	0.000785	mg/Kg	☼	10/24/14 15:19	10/31/14 06:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*70 - 130*	*10/24/14 15:19*	*10/31/14 06:24*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 130*	*10/24/14 15:19*	*10/31/14 06:24*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*	*10/24/14 15:19*	*10/31/14 06:24*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*	*10/24/14 15:19*	*10/31/14 06:24*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.0668	0.00998	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Acenaphthylene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Anthracene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Benzo[a]anthracene	ND		0.0668	0.0150	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Benzo[a]pyrene	ND		0.0668	0.0120	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Benzo[b]fluoranthene	ND		0.0668	0.0120	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Benzo[g,h,i]perylene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Benzo[k]fluoranthene	ND		0.0668	0.0140	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
1-Methylnaphthalene	ND		0.0668	0.0140	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Pyrene	ND		0.0668	0.0120	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Phenanthrene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Chrysene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Dibenz(a,h)anthracene	ND		0.0668	0.00698	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Fluoranthene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Fluorene	ND		0.0668	0.0120	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Indeno[1,2,3-cd]pyrene	ND		0.0668	0.00998	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
Naphthalene	ND		0.0668	0.00898	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1
2-Methylnaphthalene	ND		0.0668	0.0160	mg/Kg	☼	10/28/14 17:01	11/01/14 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*29 - 120*	*10/28/14 17:01*	*11/01/14 16:52*	*1*
Terphenyl-d14 (Surr)	*64*		*13 - 120*	*10/28/14 17:01*	*11/01/14 16:52*	*1*
Nitrobenzene-d5 (Surr)	*65*		*27 - 120*	*10/28/14 17:01*	*11/01/14 16:52*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	77		0.10	0.10	%			10/24/14 15:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: 490-64677-B-11-D MS
Matrix: Solid
Analysis Batch: 202323

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 200988

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	ND		0.0539	0.05515		mg/Kg	☼	102	31 - 143
Ethylbenzene	ND		0.0539	0.05527		mg/Kg	☼	103	23 - 161
Naphthalene	ND		0.0539	0.02700		mg/Kg	☼	50	10 - 176
Toluene	ND		0.0539	0.05967		mg/Kg	☼	111	30 - 155
Xylenes, Total	ND		0.108	0.1026		mg/Kg	☼	95	25 - 162

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 130*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*
Dibromofluoromethane (Surr)	*92*		*70 - 130*
Toluene-d8 (Surr)	*104*		*70 - 130*

Lab Sample ID: 490-64677-B-11-E MSD
Matrix: Solid
Analysis Batch: 202323

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 200988

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	ND		0.0518	0.05893		mg/Kg	☼	114	31 - 143	7	50
Ethylbenzene	ND		0.0518	0.05812		mg/Kg	☼	112	23 - 161	5	50
Naphthalene	ND		0.0518	0.03055		mg/Kg	☼	59	10 - 176	12	50
Toluene	ND		0.0518	0.06349		mg/Kg	☼	122	30 - 155	6	50
Xylenes, Total	ND		0.104	0.1079		mg/Kg	☼	104	25 - 162	5	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*70 - 130*
4-Bromofluorobenzene (Surr)	*89*		*70 - 130*
Dibromofluoromethane (Surr)	*91*		*70 - 130*
Toluene-d8 (Surr)	*104*		*70 - 130*

Lab Sample ID: MB 490-202323/8
Matrix: Solid
Analysis Batch: 202323

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.00200	0.000670	mg/Kg			10/31/14 01:27	1
Ethylbenzene	ND		0.00200	0.000670	mg/Kg			10/31/14 01:27	1
Naphthalene	ND		0.00500	0.00170	mg/Kg			10/31/14 01:27	1
Toluene	ND		0.00200	0.000740	mg/Kg			10/31/14 01:27	1
Xylenes, Total	ND		0.00300	0.000670	mg/Kg			10/31/14 01:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 130*		*10/31/14 01:27*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*10/31/14 01:27*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*10/31/14 01:27*	*1*
Toluene-d8 (Surr)	*104*		*70 - 130*		*10/31/14 01:27*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 490-202323/4
Matrix: Solid
Analysis Batch: 202323

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.05838		mg/Kg		117	75 - 127
Ethylbenzene	0.0500	0.05946		mg/Kg		119	80 - 134
Naphthalene	0.0500	0.07177		mg/Kg		144	69 - 150
Toluene	0.0500	0.06100		mg/Kg		122	80 - 132
Xylenes, Total	0.100	0.1132		mg/Kg		113	80 - 137

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*70 - 130*
4-Bromofluorobenzene (Surr)	*91*		*70 - 130*
Dibromofluoromethane (Surr)	*91*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

Lab Sample ID: LCSD 490-202323/5
Matrix: Solid
Analysis Batch: 202323

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0500	0.05789		mg/Kg		116	75 - 127	1	50
Ethylbenzene	0.0500	0.05966		mg/Kg		119	80 - 134	0	50
Naphthalene	0.0500	0.07104		mg/Kg		142	69 - 150	1	50
Toluene	0.0500	0.06122		mg/Kg		122	80 - 132	0	50
Xylenes, Total	0.100	0.1136		mg/Kg		114	80 - 137	0	50

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*70 - 130*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*
Dibromofluoromethane (Surr)	*91*		*70 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 490-201651/1-A
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 201651

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.0670	0.0100	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Acenaphthylene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Anthracene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Benzo[a]anthracene	ND		0.0670	0.0150	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Benzo[a]pyrene	ND		0.0670	0.0120	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Benzo[b]fluoranthene	ND		0.0670	0.0120	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Benzo[g,h,i]perylene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Benzo[k]fluoranthene	ND		0.0670	0.0140	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
1-Methylnaphthalene	ND		0.0670	0.0140	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Pyrene	ND		0.0670	0.0120	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Phenanthrene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 490-201651/1-A
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 201651

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Dibenz(a,h)anthracene	ND		0.0670	0.00700	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Fluoranthene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Fluorene	ND		0.0670	0.0120	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Indeno[1,2,3-cd]pyrene	ND		0.0670	0.0100	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
Naphthalene	ND		0.0670	0.00900	mg/Kg		10/28/14 17:01	10/31/14 19:26	1
2-Methylnaphthalene	ND		0.0670	0.0160	mg/Kg		10/28/14 17:01	10/31/14 19:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*29 - 120*	*10/28/14 17:01*	*10/31/14 19:26*	*1*
Terphenyl-d14 (Surr)	*92*		*13 - 120*	*10/28/14 17:01*	*10/31/14 19:26*	*1*
Nitrobenzene-d5 (Surr)	*79*		*27 - 120*	*10/28/14 17:01*	*10/31/14 19:26*	*1*

Lab Sample ID: LCS 490-201651/2-A
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 201651

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthylene	1.67	1.561		mg/Kg		94	38 - 120
Anthracene	1.67	1.571		mg/Kg		94	46 - 124
Benzo[a]anthracene	1.67	1.600		mg/Kg		96	45 - 120
Benzo[a]pyrene	1.67	1.537		mg/Kg		92	45 - 120
Benzo[b]fluoranthene	1.67	1.577		mg/Kg		95	42 - 120
Benzo[g,h,i]perylene	1.67	1.537		mg/Kg		92	38 - 120
Benzo[k]fluoranthene	1.67	1.463		mg/Kg		88	42 - 120
1-Methylnaphthalene	1.67	1.479		mg/Kg		89	32 - 120
Pyrene	1.67	1.510		mg/Kg		91	43 - 120
Phenanthrene	1.67	1.503		mg/Kg		90	45 - 120
Chrysene	1.67	1.456		mg/Kg		87	43 - 120
Dibenz(a,h)anthracene	1.67	1.622		mg/Kg		97	32 - 128
Fluoranthene	1.67	1.566		mg/Kg		94	46 - 120
Fluorene	1.67	1.652		mg/Kg		99	42 - 120
Indeno[1,2,3-cd]pyrene	1.67	1.550		mg/Kg		93	41 - 121
Naphthalene	1.67	1.430		mg/Kg		86	32 - 120
2-Methylnaphthalene	1.67	1.496		mg/Kg		90	28 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*83*		*29 - 120*
Terphenyl-d14 (Surr)	*93*		*13 - 120*
Nitrobenzene-d5 (Surr)	*86*		*27 - 120*

Lab Sample ID: 490-64496-E-1-B MS
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 201651

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthylene	ND		1.93	0.9215		mg/Kg	☐	48	25 - 120
Anthracene	ND		1.93	0.9446		mg/Kg	☐	49	28 - 125

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 490-64496-E-1-B MS
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 201651

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[a]anthracene	ND		1.93	0.9765		mg/Kg	☼	51	23 - 120
Benzo[a]pyrene	ND		1.93	0.8869		mg/Kg	☼	46	15 - 128
Benzo[b]fluoranthene	ND		1.93	1.011		mg/Kg	☼	52	12 - 133
Benzo[g,h,i]perylene	ND		1.93	0.8289		mg/Kg	☼	43	22 - 120
Benzo[k]fluoranthene	ND		1.93	0.8642		mg/Kg	☼	45	28 - 120
1-Methylnaphthalene	ND		1.93	0.8408		mg/Kg	☼	44	10 - 120
Pyrene	ND		1.93	0.9403		mg/Kg	☼	49	20 - 123
Phenanthrene	ND		1.93	0.9352		mg/Kg	☼	48	21 - 122
Chrysene	ND		1.93	0.9246		mg/Kg	☼	48	20 - 120
Dibenz(a,h)anthracene	ND		1.93	0.9273		mg/Kg	☼	48	12 - 128
Fluoranthene	ND		1.93	0.9958		mg/Kg	☼	52	10 - 143
Fluorene	ND		1.93	0.9924		mg/Kg	☼	51	20 - 120
Indeno[1,2,3-cd]pyrene	ND		1.93	0.8709		mg/Kg	☼	45	22 - 121
Naphthalene	ND		1.93	0.8297		mg/Kg	☼	43	10 - 120
2-Methylnaphthalene	ND		1.93	0.8570		mg/Kg	☼	44	13 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*36*		*29 - 120*
Terphenyl-d14 (Surr)	*44*		*13 - 120*
Nitrobenzene-d5 (Surr)	*39*		*27 - 120*

Lab Sample ID: 490-64496-E-1-C MSD
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 201651

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthylene	ND		1.94	1.475		mg/Kg	☼	76	25 - 120	46	50
Anthracene	ND		1.94	1.489		mg/Kg	☼	77	28 - 125	45	49
Benzo[a]anthracene	ND		1.94	1.528		mg/Kg	☼	79	23 - 120	44	50
Benzo[a]pyrene	ND		1.94	1.454		mg/Kg	☼	75	15 - 128	48	50
Benzo[b]fluoranthene	ND		1.94	1.576		mg/Kg	☼	81	12 - 133	44	50
Benzo[g,h,i]perylene	ND		1.94	1.413	F2	mg/Kg	☼	73	22 - 120	52	50
Benzo[k]fluoranthene	ND		1.94	1.384	F2	mg/Kg	☼	71	28 - 120	46	45
1-Methylnaphthalene	ND		1.94	1.391		mg/Kg	☼	72	10 - 120	49	50
Pyrene	ND		1.94	1.477		mg/Kg	☼	76	20 - 123	44	50
Phenanthrene	ND		1.94	1.444		mg/Kg	☼	74	21 - 122	43	50
Chrysene	ND		1.94	1.417		mg/Kg	☼	73	20 - 120	42	49
Dibenz(a,h)anthracene	ND		1.94	1.535		mg/Kg	☼	79	12 - 128	49	50
Fluoranthene	ND		1.94	1.519		mg/Kg	☼	78	10 - 143	42	50
Fluorene	ND		1.94	1.583		mg/Kg	☼	82	20 - 120	46	50
Indeno[1,2,3-cd]pyrene	ND		1.94	1.449		mg/Kg	☼	75	22 - 121	50	50
Naphthalene	ND		1.94	1.360		mg/Kg	☼	70	10 - 120	48	50
2-Methylnaphthalene	ND		1.94	1.417		mg/Kg	☼	73	13 - 120	49	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*62*		*29 - 120*
Terphenyl-d14 (Surr)	*73*		*13 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 490-64496-E-1-C MSD
Matrix: Solid
Analysis Batch: 202421

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 201651

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*67*		*27 - 120*

Method: Moisture - Percent Moisture

Lab Sample ID: 490-64552-F-18 DU
Matrix: Solid
Analysis Batch: 200779

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	81		80		%		2	20

Lab Sample ID: 490-64594-A-1 DU
Matrix: Solid
Analysis Batch: 201155

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	82		81		%		1	20

GC/MS VOA

Prep Batch: 200765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64553-1	1459 Cardinal	Total/NA	Solid	5035	

Prep Batch: 200988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64677-B-11-D MS	Matrix Spike	Total/NA	Solid	5030B	
490-64677-B-11-E MSD	Matrix Spike Duplicate	Total/NA	Solid	5030B	

Analysis Batch: 202323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64553-1	1459 Cardinal	Total/NA	Solid	8260B	200765
490-64677-B-11-D MS	Matrix Spike	Total/NA	Solid	8260B	200988
490-64677-B-11-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8260B	200988
LCS 490-202323/4	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 490-202323/5	Lab Control Sample Dup	Total/NA	Solid	8260B	
MB 490-202323/8	Method Blank	Total/NA	Solid	8260B	

GC/MS Semi VOA

Prep Batch: 201651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64496-E-1-B MS	Matrix Spike	Total/NA	Solid	3550C	
490-64496-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	3550C	
490-64553-1	1459 Cardinal	Total/NA	Solid	3550C	
LCS 490-201651/2-A	Lab Control Sample	Total/NA	Solid	3550C	
MB 490-201651/1-A	Method Blank	Total/NA	Solid	3550C	

Analysis Batch: 202421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64496-E-1-B MS	Matrix Spike	Total/NA	Solid	8270D	201651
490-64496-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8270D	201651
LCS 490-201651/2-A	Lab Control Sample	Total/NA	Solid	8270D	201651
MB 490-201651/1-A	Method Blank	Total/NA	Solid	8270D	201651

Analysis Batch: 202743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64553-1	1459 Cardinal	Total/NA	Solid	8270D	201651

General Chemistry

Analysis Batch: 200779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64552-F-18 DU	Duplicate	Total/NA	Solid	Moisture	
490-64552-F-18 MS	Matrix Spike	Total/NA	Solid	Moisture	
490-64552-F-18 MSD	Matrix Spike Duplicate	Total/NA	Solid	Moisture	
490-64553-1	1459 Cardinal	Total/NA	Solid	Moisture	

Analysis Batch: 201155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64594-A-1 DU	Duplicate	Total/NA	Solid	Moisture	
490-64594-A-1 MS	Matrix Spike	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Analysis Batch: 201155 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-64594-A-1 MSD	Matrix Spike Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Small Business Group Inc.
Project/Site: Laurel Bay Housing Project

TestAmerica Job ID: 490-64553-1

Client Sample ID: 1459 Cardinal
Date Collected: 10/20/14 14:00
Date Received: 10/23/14 08:40

Lab Sample ID: 490-64553-1
Matrix: Solid
Percent Solids: 77.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.542 g	5.0 mL	200765	10/24/14 15:19	JLP	TAL NSH
Total/NA	Analysis	8260B		1	5.542 g	5.0 mL	202323	10/31/14 06:24	KKK	TAL NSH
Total/NA	Prep	3550C			39.05 g	1.00 mL	201651	10/28/14 17:01	LDC	TAL NSH
Total/NA	Analysis	8270D		1	39.05 g	1.00 mL	202743	11/01/14 16:52	SNR	TAL NSH
Total/NA	Analysis	Moisture		1			200779	10/24/14 15:12	RRS	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Method Summary

Client: Small Business Group Inc.
Project/Site: Laurel Bay Housing Project

TestAmerica Job ID: 490-64553-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NSH
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL NSH
Moisture	Percent Moisture	EPA	TAL NSH

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Certification Summary

Client: Small Business Group Inc.
Project/Site: Laurel Bay Housing Project

TestAmerica Job ID: 490-64553-1

Laboratory: TestAmerica Nashville

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
South Carolina	State Program	4	84009 (001)	02-28-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8270D	3550C	Solid	1-Methylnaphthalene
Moisture		Solid	Percent Solids

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

Charleston

490-64553 Chain of Custody

Cooler Received/Opened On 10/23/2014 @ 0840

1. Tracking # 9068 (last 4 digits, FedEx)

Courier: FedEx IR Gun ID 96210146

2. Temperature of rep. sample or temp blank when opened: 0.7 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO...NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 1 (Front) 1 (back)

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) Ch

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA SOP

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # NA

I certify that I unloaded the cooler and answered questions 7-14 (intial) D

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES..NO..NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) M

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) M

I certify that I attached a label with the unique LIMS number to each container (intial) D

21. Were there Non-Conformance issues at login? YES...NO Was a PIPE generated? YES...NO...#

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 11/28/2012

11/5/2014

11/5/2014

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Nashville Division
2960 Foster Creighton
Nashville, TN 37204

Phone: 615-726-0177
Toll Free: 800-765-0980
Fax: 615-726-3404

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?

Compliance Monitoring? Yes ____ No ____

Enforcement Action? Yes ____ No ____

Client Name/Account #: EEG - SBG # 2449
Address: 10179 Highway 78
City/State/Zip: Ladson, SC 29456
Project Manager: Tom McElwee email: mcelwee@eeginc.net
Telephone Number: 843.412.2097 **Fax No.:** (843) 879-0401
Sampler Name: (Print) Pratt Shaw
Sampler Signature:

Site State: SC
PO#: 1406
TA Quote #:
Project ID: Laurel Bay Housing Project
Project #:

Loc: 490
64553

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	HNO_3 (Red Label)	~~HCl (Blue Label)~~ Sodium Bisulfate	NaOH (Orange Label)	H_2SO_4 Plastic (Yellow Label)	H_2SO_4 Glass(Yellow Label)	None (Black Label)	Other (Specify) Methanol	Matrix: Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):	Analyze For: BTEX + Napth - 8260	PAH - 8270D	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
1459 Cardinal	10/20/14	1400	5	X					2				2	1					X		X	X				

Special Instructions:

Method of Shipment: FEDEX

Relinquished by:	Date	Time	Received by:	Date	Time
	10/22/14	0900	Fedex		
Relinquished by:	**Date**	**Time**	**Received by TestAmerica:**	**Date**	**Time**
				10/23/14	0810

0.7

Laboratory Comments:
Temperature Upon Receipt:
VOCs Free of Headspace? Y N

Login Sample Receipt Checklist

Client: Small Business Group Inc.

Job Number: 490-64553-1

Login Number: 64553
List Number: 1
Creator: Buckingham, Paul

List Source: TestAmerica Nashville

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ATTACHMENT A

NON-HAZARDOUS MANIFEST

WASTE MANAGEMENT

NON-HAZARDOUS MANIFEST	1. Generator's US EPA ID No.	Manifest Doc No.	2. Page 1 of 1	

3. Generator's Mailing Address:
MCAS BEAUFORT
LAUREL BAY HOUSING
BEAUFORT, SC 29904
4. Generator's Phone 843-879-0411

Generator's Site Address (If different than mailing):

A. Manifest Number: WMNA 01519117
B. State Generator's ID:

5. Transporter 1 Company Name 843.522.1500
Carolina Containers
P.O. Box 1925
Beaufort SC 29901

6. US EPA ID Number

C. State Transporter's ID:
D. Transporter's Phone:

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
HICKORY HILL LANDFILL
2621 LOW COUNTRY DRIVE
RIDGELAND, SC 29936

10. US EPA ID Number

G. State Facility ID:
H. State Facility Phone: 843-987-4643

GENERATOR

11. Description of Waste Materials	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.	I. Misc. Comments
a. HEATING OIL TANK FILLED WITH SAND WM Profile # 102655SC	1	20	6.58	TON	749149
b. WM Profile #					
c. WM Profile #					
d. WM Profile #					

J. Additional Descriptions for Materials Listed Above

K. Disposal Location
Cell | Level
Grid

15. Special Handling Instructions and Additional Information
UST's from:
1) 477 Dogwood
2) 473 Dogwood ✓
3) 1459 Cardinal ✓
4) 1479 Cardinal-2

Purchase Order # | EMERGENCY CONTACT / PHONE NO.:

16. GENERATOR'S CERTIFICATE:
I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Printed Name	Signature "On behalf of"	Month	Day	Year
		12	01	14

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year
Pratt Shaw		12	1	14

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed Name	Signature	Month	Day	Year
Michael Broich		12	2	14

FACILITY

19. Certificate of Final Treatment/Disposal
I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above-described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the dates listed above.

20. Facility Owner or Operator: Certification of receipt of non-hazardous materials covered by this manifest.

Printed Name	Signature	Month	Day	Year
John Childs		12	2	14

White- TREATMENT, STORAGE, DISPOSAL FACILITY COPY
Blue- GENERATOR #2 COPY
Yellow- GENERATOR #1 COPY
Pink- FACILITY USE ONLY
Gold- TRANSPORTER #1 COPY

Appendix C
Regulatory Correspondence

D H E C
PROMOTE PROTECT PROSPER
W. Marshall Taylor Jr., Acting Director
Promoting and protecting the health of the public and the environment

April 23, 2015

Commanding Officer
Attention: NREAO Mr. William A. Drawdy
United State Marine Corps Air Station
Post Office Box 55001
Beaufort, SC 29904-5001

RE: No Further Action
Laurel Bay Underground Storage Tank Assessment Reports for:
See attached sheet

Dear Mr. Drawdy,

The South Carolina Department of Health and Environmental Control (the Department) received the above referenced Underground Storage Tanks (USTs) Assessment Reports for the addresses listed above. The regulatory authority for the investigation and cleanup of releases from these tank systems is the South Carolina Pollution Control Act (S.C. Code Ann. §48-1-10 et seq., as amended).

The Department has reviewed the referenced assessment reports and agrees there is no indication of soil or groundwater contamination on these properties, and therefore no further investigation is required at this time.

Please note that the Department's decision is based on information provided by the Marine Corps Air Station (MCAS) to date. Any information found to be contradictory to this decision may require additional action. Furthermore, the Department retains the right to request further investigation if deemed necessary.

If you have any questions, please contact me at kriegkm@dhec.sc.gov or 803-898-0255.

Sincerely,

Kent Krieg
Department of Defense Corrective Action Section
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control

Cc: Russell Berry (via email)
Craig Ehde (via email)

D H E C
PROMOTE PROTECT PROSPER
W. Marshall Taylor Jr., Acting Director
Promoting and protecting the health of the public and the environment

Attachment to: Krieg to Drawdy
Subject: NFA
Dated 4/23/2015

Laurel Bay Underground Storage Tank Assessment Reports for: (2 addresses/2 tanks)

1459 Cardinal	1462 Cardinal