

July 20, 2017

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-23248-1

TestAmerica Sample Delivery Group: SL2585
Client Project/Site: F17-009

For:

CH2M Hill Plateau Remediation Company
PO BOX 1600, MS H8-41
Richland, Washington 99352

Attn: Mr. Scot Fitzgerald



Authorized for release by:
7/20/2017 11:39:03 AM

Jayna Awalt, Project Manager II
(314)298-8566

jayna.awalt@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Chain of Custody	6
Definitions/Glossary	18
Method Summary	19
Sample Summary	20
Client Sample Results	21
QC Sample Results	22
QC Association Summary	24
Surrogate Summary	25

Job ID: 160-23248-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
July 20, 2017
Attention: Scot Fitzgerald

SDG	: SL2585
Number of Samples	: 4 samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: July 13, 2017

II. Introduction

On July 12 and 13, 4 samples were received by TestAmerica - St. Louis for analysis. The samples were received within temperature criteria. See the COC and receipt checklists for documentation of any variations on receipt conditions and temperature. Upon receipt, samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F17-009

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with an LCS/LCS duplicate.

Note: For Metals analyses, per standard practice, all 6020 water and soil samples are initially prepared at 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate a narrative note; however, they are flagged "D" due to a limitation in the LIMS.

For solid matrices, all Metals analyses (including Hg) use a Standard Reference Material for the Laboratory Control Sample (LCS). Certificate for this source material may be obtained from TASL.

For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

For WTPH methods, the lab utilizes method 8015B. Per CHPRC direction, the method name in the electronic data has been modified to read WTPH in the place of 8015B.

Per CHPRC direction, due to the short hold times for Nitrate, Nitrite and Phosphate by IC (48 hours) as well as pH analysis (24 hours), a SIR request is not needed when samples are run outside 1x hold but within 2x hold. A narrative comment will be included below if a sample is run outside the lab-specified hold time for waters.

For extractable and volatile organic analyses, several analytes are considered poor performers and will not meet CHPRC QC limits. Per CHPRC direction, the lab's statistical limits have been reported. Excursions outside these statistical limits will include a non-conformance in the sections below.

Job ID: 160-23248-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL.
- **B** - For radiochemistry, Method Blank reported above the MDC. Sample activity is > 5% the method blank.
- **J** - For organic analyses, the sample is estimated and less than the RL.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL/RL but not greater than 5% the MB.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For ICPMS Metals analyses, per standard practice, all samples are initially prepared at a 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner and will not be narrated below. Only dilutions above 2x will be narrated and considered a true dilution for these samples.
- **N** - For inorganics, rad and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.
- **o** - For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **P** - For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.
- **X**- Organics and Anions IC - Sample concentration over calibration and/or surrogate recovery outside QC limits.
- **X**- Inorganics - The analyte present in the original sample is > 4x the spike concentration.
- **X**- Radiochemistry - Carrier or Tracer recovery is outside limits.
- **Z**- Sample was prepped or analyzed beyond the specified sample holding time.
- **y** - RPD is outside established limits.

Volatiles

Batch: 317313

The matrix spike duplicate (MSD) recovery for preparation batch 160-317314 and analytical batch 160-317313 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control samples (LCS/LCSD) recoveries were within acceptance limits. (160-23275-C-1-A MSD) This analyte has been qualified accordingly with a "T" flag in the associated samples.

The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 160-317314 and analytical batch 160-317313 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits. (160-23275-C-1-A MSD)

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager or designee and the laboratory's client services representative as verified by their signature on this report.

Reviewed and approved:

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

Job ID: 160-23248-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

Jayna Awalt
St. Louis Project Manager

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-23275-1

SDG Number: SL2585

Login Number: 23275

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill C

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.	True	
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	0.1°
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 (excluding tests with immediate HTs)	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.	True	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

1
2
3
4
5
6
7
8
9
10
11

82585

SAMPLE RECORD SHEET FOR VOC SAMPLE COLLECTION

Location:

ZOO-DV-1 C9513 CORE 10 / F17-009-411

Sampler Initials and Date:

~~7/11/17~~ 7/11/17

Sample Number ¹	Sample Suffix	Initial Weight ² (grams)	Total Weight ³ (grams)	Soil Weight ⁴ (grams)
B39WX3	K	29.23	35.40	6.17
↓	L	29.10	35.90	6.8
	M	29.33	36.22	6.89
	N	29.64	36.59	6.95
	P	29.39	36.47	7.08

- ¹ Enter sample number associated with the sampling event.
- ² Initial weight is to include all labels, stickers, bags, spin bars (for samples with suffix K, L, M, N and P) and anything else that will be associated with the bottle when it is weighed with the sample.
- ³ Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.
- ⁴ Soil weight is the vial with sample minus Initial Weight.

A-6005-526 (REV 0)

1
2
3
4
5
6
7
8
9
10
11

SL2585 SAMPLE RECORD SHEET FOR VOC SAMPLE COLLECTION

Location: 200-DV-1 C9513 Core 10 / F17-009-410

Sampler Initials and Date: *[Signature]* 7/11/17

Sample Number ¹	Sample Suffix	Initial Weight ² (grams)	Total Weight ³ (grams)	Soil Weight ⁴ (grams)
B39WX1	K	29.40	45.08	15.68
↓	L	29.81	37.40	7.59
	M	29.68	38.94	9.26
	N	29.69	36.06	6.37
	P	30.13	37.84	7.71

¹ Enter sample number associated with the sampling event.
² Initial weight is to include all labels, stickers, bags, spin bars (for samples with suffix K, L, M, N and P) and anything else that will be associated with the bottle when it is weighed with the sample.
³ Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.
⁴ Soil weight is the vial with sample minus Initial Weight.

A-6005-526 (REV 0)



FedEx® Tracking

779612073649

Ship date:

Wed 7/12/2017

RICHLAND, WA US

Actual delivery:

Thu 7/13/2017 8:23 am

EARTH CITY, MO US

Delivered

Signed for by: B.DANIELS

Travel History

Date/Time	Activity	Location
7/13/2017 - Thursday		
8:23 am	Delivered	EARTH CITY, MO
7:06 am	On FedEx vehicle for delivery	EARTH CITY, MO
6:53 am	At local FedEx facility	EARTH CITY, MO
5:20 am	At destination sort facility	BERKELEY, MO
4:37 am	Departed FedEx location	MEMPHIS, TN
12:12 am	Arrived at FedEx location	MEMPHIS, TN
7/12/2017 - Wednesday		
4:53 pm	Left FedEx origin facility	PASCO, WA
3:20 pm	Picked up	PASCO, WA
11:13 am	Shipment information sent to FedEx	

Shipment Facts

Tracking number	779612073649	Service	FedEx Standard Overnight
Weight	49 lbs / 22.23 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	49 lbs / 22.23 kgs
Terms	Recipient	Shipper reference	GWS-600
Packaging	Your Packaging	Special handling section	Deliver Weekday, Additional Handling Surcharge
Standard transit	7/13/2017 by 3:00 pm		

- Customer Focus**
- New Customer Center
- Small Business Center
- Service Guide
- Customer Support
- Company Information**
- About FedEx
- Careers
- Investor Relations
- Subscribe to FedEx email

- Featured Services**
- FedEx Delivery Manager
- FedEx Critical Inventory Logistics
- FedEx SameDay
- FedEx Home Delivery
- FedEx TechConnect
- FedEx HealthCare Solutions
- Online Retail Solutions
- Packaging Services
- Ancillary Clearance Services

- Other Resources**
- FedEx Compatible
- Developer Resource Center
- FedEx Ship Manager Software
- FedEx Mobile

- Companies**
- FedEx Express
- FedEx Ground
- FedEx Office
- FedEx Freight
- FedEx Custom Critical
- FedEx Trade Networks
- FedEx Cross Border
- FedEx Supply Chain

Follow FedEx

United States - English

Ask FedEx

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-23248-1

SDG Number: SL2585

Login Number: 23248

List Source: TestAmerica St. Louis

List Number: 1

Creator: Taylor, Kristene N

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	True	
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	1.5
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 (excluding tests with immediate HTs)	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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-390	PAGE 1 OF 1
COLLECTOR Roger Fricasz Jr. /CHPRC	42585	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	PRICE CODE 8H
SAMPLING LOCATION C9513, Core 1		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	ACTUAL SAMPLE DEPTH 45 - 47.5	SAF NO. F17-009	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. 6WS-683		FIELD LOGBOOK NO. HNF-N-645 S-50	COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	DATA TURNAROUND 30 Days / 30 Days
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. NA	BILL OF LADING/AIR BILL NO. 7790 0021 1285		ORIGINAL

MATRIX*	PRESERVATION	Frozen/Cool <-7C and >-20C
A=Air	HOLDING TIME	14 Days
DL=Drum	TYPE OF CONTAINER	Gs
Liquids	NO. OF CONTAINER(S)	5
DS=Drum	VOLUME	40ml
Solids	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
L=Liquid	SAMPLE DATE	JUL 10 2017
O=Oil	SAMPLE TIME	1110
S=Soil	MATRIX*	SOIL
SE=Sediment		
T=Tissue		
V=Vegetation		
W=Water		
WI=Wipe		
X=Other		

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-390	PAGE 1 OF 1
COLLECTOR Roger Fricasz Jr. /CHPRC	42585	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	PRICE CODE 8H
SAMPLING LOCATION C9513, Core 1		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	ACTUAL SAMPLE DEPTH 45 - 47.5	SAF NO. F17-009	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. 6WS-683		FIELD LOGBOOK NO. HNF-N-645 S-50	COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	DATA TURNAROUND 30 Days / 30 Days
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. NA	BILL OF LADING/AIR BILL NO. 7790 0021 1285		ORIGINAL

SPECIAL INSTRUCTIONS		TRVL-17-119; SAMPLE B39WV0 AND B39WV1 PORTION B
* All VOA samples will be collected using EPA Method 5035A and will include 5 bottles for low level analysis.		
** The laboratory is to use one of the low level VOA bottles for moisture content determination.		
(1) 5035/8260_VOA: LOW LEVEL: COMMON {4-Methyl-2-pentanone};		

RELINQUISHED BY/REMOVED FROM CHPRC	DATE/TIME JUL 10 2017	SIGN/ PRINT NAMES SSU-1	RECEIVED BY/STORED IN JAMES ZADLER	DATE/TIME JUL 10 2017
RELINQUISHED BY/REMOVED FROM SSU-1	DATE/TIME JUL 11 2017	RECEIVED BY/STORED IN CHPRC	DATE/TIME JUL 11 2017	DATE/TIME 0715
RELINQUISHED BY/REMOVED FROM James Z Adler	DATE/TIME JUL 11 2017	RECEIVED BY/STORED IN FED EX	DATE/TIME JUL 11 2017	DATE/TIME 170920
RELINQUISHED BY/REMOVED FROM FED EX	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME	DATE/TIME



July 20, 2017

SAMPLE RECORD SHEET FOR VOC SAMPLE COLLECTION

Location: 200-DV-1 C9513 CORE 1 / F17-009-390

Sampler Initials and Date: *[Signature]* Roger Priez Jr. CHPRC JUL 10 2017

Sample Number ¹	Sample Suffix	Initial Weight ² (grams)	Total Weight ³ (grams)	Soil Weight ⁴ (grams)
B39WV1	K	30.11	39.87	9.76
↓	L	29.51	39.36	9.85
	M	29.63	39.57	9.94
	N	29.89	39.91	10.02
	P	29.68	41.13	11.45

¹ Enter sample number associated with the sampling event.
² Initial weight is to include all labels, stickers, bags, spin bars (for samples with suffix K, L, M, N and P) and anything else that will be associated with the bottle when it is weighed with the sample.
³ Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.
⁴ Soil weight is the vial with sample minus Initial Weight.

A-6005-526 (REV 0)

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-391	PAGE 1 OF 1
COLLECTOR Roger Friesz Jr. /CHPRC	92585	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	PRICE CODE 8H
SAMPLING LOCATION C9513, Core 1 FXR		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	ACTUAL SAMPLE DEPTH (N/A)	SAF NO. F17-009	DATA TURNAROUND 30 Days / 30 Days
ICE CHEST NO. 625 683		FIELD LOGBOOK NO. HNF-N-645 5-50		COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. N/A		BILL OF LADING/AIR BILL NO. 7796 0021 1285	

MATRIX* A=Air DL=Drum L=Liquid S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WL=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION Frozen/Cool <-7C and >-20C 14 Days	HOLDING TIME Gs	TYPE OF CONTAINER 5	NO. OF CONTAINER(S) 40mL	VOLUME SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE NA						
SAMPLE NO. B39WV2	MATRIX* SOIL	SAMPLE DATE JUL 10 2017	SAMPLE TIME 1052			

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-17-119;	
Roger Friesz Jr. /CHPRC	JUL 10 2017 1520	SSU-1	JUL 10 2017 1630	* All VOA samples will be collected using EPA Method 5035A and will include 5 bottles for low level analysis.	
Janelle Zunker CHPRC	JUL 11 2017 0715	CHPRC	JUL 11 2017 0715	** The laboratory is to use one of the low level VOA bottles for moisture content determination.	
Janelle Zunker CHPRC	JUL 11 2017 1400	PEDEX	JUL 11 2017 1400	(1) 5035/8260_VOA: LOW LEVEL: COMMON {4-Methyl-2-pentanone};	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	



July 20, 2017

SAMPLE RECORD SHEET FOR VOC SAMPLE COLLECTION

Location:

200-DU-1 C 9513 CONC1 / F17-009-391

Sampler Initials and Date:

[Signature] 7-10-17
Roger Priesz Jr.
 /CHPRC

Sample Number ¹	Sample Suffix	Initial Weight ² (grams)	Total Weight ³ (grams)	Soil Weight ⁴ (grams)
B39W V2	K	29.01	35.49	6.48
↓	L	29.53	36.34	6.81
	M	29.46	35.27	5.81
	N	29.14	36.89	7.75
	P	29.28	35.43	6.15

¹ Enter sample number associated with the sampling event.

² Initial weight is to include all labels, stickers, bags, spin bars (for samples with suffix K, L, M, N and P) and anything else that will be associated with the bottle when it is weighed with the sample.

³ Ensure that everything weighed for the empty bottle and no additional items (besides the sample) is weighed.

⁴ Soil weight is the vial with sample minus Initial Weight.

A-6005-526 (REV 0)



Shipping Tracking Manage Learn

My Profile Support Locations English Search or tracking number Subr Login

FedEx® Tracking

779600211285

Ship date:

Tue 7/11/2017

RICHLAND, WA US

Actual delivery:

Wed 7/12/2017 9:08 am

EARTH CITY, MO US

Delivered

Signed for by: B.DANIELS

Travel History

Date/Time	Activity	Location
7/12/2017 - Wednesday		
9:08 am	Delivered	EARTH CITY, MO
7:47 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:39 am	At local FedEx facility	EARTH CITY, MO
5:20 am	At destination sort facility	BERKELEY, MO
4:35 am	Departed FedEx location	MEMPHIS, TN
12:22 am	Arrived at FedEx location	MEMPHIS, TN
7/11/2017 - Tuesday		
4:48 pm	Left FedEx origin facility	PASCO, WA
3:18 pm	Picked up	PASCO, WA
10:18 am	Shipment information sent to FedEx	

Shipment Facts

Tracking number	779600211285	Service	FedEx Standard Overnight
Weight	72 lbs / 32.66 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	72 lbs / 32.66 kgs
Terms	Recipient	Shipper reference	GWS-683
Packaging	Your Packaging	Special handling section	Deliver Weekday, Additional Handling Surcharge
Standard transit	7/12/2017 by 3:00 pm		



Search or tracking number Subr

- Customer Focus**
- New Customer Center
- Small Business Center
- Service Guide
- Customer Support
- Company Information**
- About FedEx
- Careers
- Investor Relations
- Subscribe to FedEx email

- Featured Services**
- FedEx Delivery Manager
- FedEx Critical Inventory Logistics
- FedEx SameDay
- FedEx Home Delivery
- FedEx TechConnect
- FedEx HealthCare Solutions
- Online Retail Solutions
- Packaging Services
- Ancillary Clearance Services

- Companies**
- FedEx Express
- FedEx Ground
- FedEx Office
- FedEx Freight
- FedEx Custom Critical
- FedEx Trade Networks
- FedEx Cross Border
- FedEx Supply Chain

Follow FedEx

United States - English

- Other Resources**
- FedEx Compatible
- Developer Resource Center
- FedEx Ship Manager Software
- FedEx Mobile

Ask FedEx

© FedEx 1995-2017

Careers | Global Home | Site Map | fedex.com Terms of Use | Security and Privacy

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
T	MS, MSD: Recovery exceeds upper or lower control limits.
U	Analyzed for but not detected.
y	Duplicate analysis not within control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL

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 SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



July 20, 2017
Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-23248-1	B39WV1	Soil	07/10/17 11:10	07/12/17 09:20
160-23248-2	B39WV2	Soil	07/10/17 10:52	07/12/17 09:20
160-23275-1	B39WX3	Soil	07/11/17 09:37	07/13/17 08:30
160-23275-2	B39WX1	Soil	07/11/17 09:24	07/13/17 08:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

July 20, 2017 Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: B39WV1
Date Collected: 07/10/17 11:10
Date Received: 07/12/17 09:20

Lab Sample ID: 160-23248-1
Matrix: Soil
Percent Solids: 98.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone (MIBK)	62	T	10	0.38	ug/Kg	☼	07/13/17 18:30	07/13/17 21:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		67 - 132				07/13/17 18:30	07/13/17 21:04	1
4-Bromofluorobenzene (Surr)	115		59 - 150				07/13/17 18:30	07/13/17 21:04	1
Dibromofluoromethane (Surr)	96		53 - 143				07/13/17 18:30	07/13/17 21:04	1
Toluene-d8 (Surr)	115		74 - 135				07/13/17 18:30	07/13/17 21:04	1

Client Sample ID: B39WV2
Date Collected: 07/10/17 10:52
Date Received: 07/12/17 09:20

Lab Sample ID: 160-23248-2
Matrix: Soil
Percent Solids: 100.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone (MIBK)	0.63	U T	17	0.63	ug/Kg	☼	07/13/17 18:30	07/13/17 21:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		67 - 132				07/13/17 18:30	07/13/17 21:28	1
4-Bromofluorobenzene (Surr)	91		59 - 150				07/13/17 18:30	07/13/17 21:28	1
Dibromofluoromethane (Surr)	85		53 - 143				07/13/17 18:30	07/13/17 21:28	1
Toluene-d8 (Surr)	95		74 - 135				07/13/17 18:30	07/13/17 21:28	1

Client Sample ID: B39WX3
Date Collected: 07/11/17 09:37
Date Received: 07/13/17 08:30

Lab Sample ID: 160-23275-1
Matrix: Soil
Percent Solids: 100.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone (MIBK)	0.59	U T	16	0.59	ug/Kg	☼	07/13/17 18:30	07/13/17 21:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	80		67 - 132				07/13/17 18:30	07/13/17 21:53	1
4-Bromofluorobenzene (Surr)	84		59 - 150				07/13/17 18:30	07/13/17 21:53	1
Dibromofluoromethane (Surr)	72		53 - 143				07/13/17 18:30	07/13/17 21:53	1
Toluene-d8 (Surr)	84		74 - 135				07/13/17 18:30	07/13/17 21:53	1

Client Sample ID: B39WX1
Date Collected: 07/11/17 09:24
Date Received: 07/13/17 08:30

Lab Sample ID: 160-23275-2
Matrix: Soil
Percent Solids: 87.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone (MIBK)	23	T	18	0.65	ug/Kg	☼	07/13/17 18:30	07/13/17 22:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		67 - 132				07/13/17 18:30	07/13/17 22:18	1
4-Bromofluorobenzene (Surr)	106		59 - 150				07/13/17 18:30	07/13/17 22:18	1
Dibromofluoromethane (Surr)	87		53 - 143				07/13/17 18:30	07/13/17 22:18	1
Toluene-d8 (Surr)	111		74 - 135				07/13/17 18:30	07/13/17 22:18	1

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 160-317314/1-A
Matrix: Solid
Analysis Batch: 317313

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317314

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone (MIBK)	0.73	U	20	0.73	ug/Kg		07/13/17 18:30	07/13/17 20:35	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		67 - 132				07/13/17 18:30	07/13/17 20:35	1
4-Bromofluorobenzene (Surr)	110		59 - 150				07/13/17 18:30	07/13/17 20:35	1
Dibromofluoromethane (Surr)	98		53 - 143				07/13/17 18:30	07/13/17 20:35	1
Toluene-d8 (Surr)	118		74 - 135				07/13/17 18:30	07/13/17 20:35	1

Lab Sample ID: LCS 160-317314/2-A
Matrix: Solid
Analysis Batch: 317313

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317314

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
4-Methyl-2-pentanone (MIBK)	50.0	57.6		ug/Kg		115	67 - 130
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	111		67 - 132				
4-Bromofluorobenzene (Surr)	99		59 - 150				
Dibromofluoromethane (Surr)	104		53 - 143				
Toluene-d8 (Surr)	112		74 - 135				

Lab Sample ID: LCSD 160-317314/3-A
Matrix: Solid
Analysis Batch: 317313

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 317314

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
4-Methyl-2-pentanone (MIBK)	50.0	55.6		ug/Kg		111	67 - 130	3	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	109		67 - 132						
4-Bromofluorobenzene (Surr)	99		59 - 150						
Dibromofluoromethane (Surr)	103		53 - 143						
Toluene-d8 (Surr)	110		74 - 135						

Lab Sample ID: 160-23275-1 MS
Matrix: Soil
Analysis Batch: 317313

Client Sample ID: B39WX3
Prep Type: Total/NA
Prep Batch: 317314

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
4-Methyl-2-pentanone (MIBK)	0.59	U T	36.8	38.8		ug/Kg	☼	106	73 - 125
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	111		67 - 132						
4-Bromofluorobenzene (Surr)	96		59 - 150						
Dibromofluoromethane (Surr)	102		53 - 143						
Toluene-d8 (Surr)	108		74 - 135						

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

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

Lab Sample ID: 160-23275-1 MSD
Matrix: Soil
Analysis Batch: 317313

Client Sample ID: B39WX3
Prep Type: Total/NA
Prep Batch: 317314

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
4-Methyl-2-pentanone (MIBK)	0.59	U T	36.3	50.1	T y	ug/Kg	⊛	138	73 - 125	25	20
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	116		67 - 132								
4-Bromofluorobenzene (Surr)	94		59 - 150								
Dibromofluoromethane (Surr)	98		53 - 143								
Toluene-d8 (Surr)	105		74 - 135								

July 20, 2017
QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
 SDG: SL2585

GC/MS VOA

Analysis Batch: 317313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23248-1	B39WV1	Total/NA	Soil	8260C	317314
160-23248-2	B39WV2	Total/NA	Soil	8260C	317314
160-23275-1	B39WX3	Total/NA	Soil	8260C	317314
160-23275-2	B39WX1	Total/NA	Soil	8260C	317314
MB 160-317314/1-A	Method Blank	Total/NA	Solid	8260C	317314
LCS 160-317314/2-A	Lab Control Sample	Total/NA	Solid	8260C	317314
LCSD 160-317314/3-A	Lab Control Sample Dup	Total/NA	Solid	8260C	317314
160-23275-1 MS	B39WX3	Total/NA	Soil	8260C	317314
160-23275-1 MSD	B39WX3	Total/NA	Soil	8260C	317314

Prep Batch: 317314

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23248-1	B39WV1	Total/NA	Soil	5035	
160-23248-2	B39WV2	Total/NA	Soil	5035	
160-23275-1	B39WX3	Total/NA	Soil	5035	
160-23275-2	B39WX1	Total/NA	Soil	5035	
MB 160-317314/1-A	Method Blank	Total/NA	Solid	5035	
LCS 160-317314/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 160-317314/3-A	Lab Control Sample Dup	Total/NA	Solid	5035	
160-23275-1 MS	B39WX3	Total/NA	Soil	5035	
160-23275-1 MSD	B39WX3	Total/NA	Soil	5035	

General Chemistry

Analysis Batch: 317804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-23248-1	B39WV1	Total/NA	Soil	Moisture	
160-23248-2	B39WV2	Total/NA	Soil	Moisture	
160-23275-1	B39WX3	Total/NA	Soil	Moisture	
160-23275-2	B39WX1	Total/NA	Soil	Moisture	
490-132645-B-2 DU	Duplicate	Total/NA	Solid	Moisture	

Client: CH2M Hill Plateau Remediation Company
Project/Site: F17-009

TestAmerica Job ID: 160-23248-1
SDG: SL2585

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Soil

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (67-132)	BFB (59-150)	DBFM (53-143)	TOL (74-135)
160-23248-1	B39WV1	108	115	96	115
160-23248-2	B39WV2	98	91	85	95
160-23275-1	B39WX3	80	84	72	84
160-23275-1 MS	B39WX3	111	96	102	108
160-23275-1 MSD	B39WX3	116	94	98	105
160-23275-2	B39WX1	103	106	87	111

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		12DCE (67-132)	BFB (59-150)	DBFM (53-143)	TOL (74-135)
LCS 160-317314/2-A	Lab Control Sample	111	99	104	112
LCSD 160-317314/3-A	Lab Control Sample Dup	109	99	103	110
MB 160-317314/1-A	Method Blank	107	110	98	118

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)