

8/11/2016

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: 160-18203-1

TestAmerica Sample Delivery Group: SL2253
Client Project/Site: X16-033

For:

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
8/11/2016 11:41:49 AM

Jayna Awalt, Project Manager II
(314)298-8566
jayna.awalt@testamericainc.com

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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.





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Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
SDG: SL2253

Job ID: 160-18203-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
August 11, 2016
Attention: Scot Fitzgerald

SDG	: SL2253
Number of Samples	: 2 samples
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: July 15, 2016

II. Introduction

On July 15, 2 samples were received by TestAmerica - St. Louis for chemical 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: X16-033

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 flagging unless otherwise noted in the case narrative.

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 (June 2014), Boron will be reported for Metals using method 6010. Boron will no longer be reported by method 6020.

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.

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
SDG: SL2253

Job ID: 160-18203-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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.

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.
- **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.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For Metals analyses, per standard practice, all solid 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. These dilutions do not necessitate qualification unless otherwise noted in the case narrative.
- **N** - For inorganics 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.
- **M** - For inorganic analyses, the precision was outside control 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.

There were no observations or non-conformances associated with the following methods:

DRO

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:

Jayna Awalt
St. Louis Project Manager

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-18203-1

SDG Number: SL2253

Login Number: 18203

List Number: 1

Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

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	0.7
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 $<6\text{mm}$ (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		S2253		C.O.C. # X16-033-145		Page 1 of 1	
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							
Collector	J.R. Aguilera/CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650		
SAF No.	X16-033	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303064		
Project Title	AQUIFER TUBES, JUNE 2016	Logbook No.	HNF-N-506 79/30	Ice Chest No.	GWS 359		
Shipped To (Lab)	TestAmerica St. Louis	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	77674980473D		
Protocol	CERCLA	Priority:	30 Days	Offsite Property No.	N/A		
POSSIBLE SAMPLE HAZARDS/REMARKS				SPECIAL INSTRUCTIONS			
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1				Hold Time			
				Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Sample No.	B35H13	Filter	N	No/Type Container	3x1-L aG	Sample Analysis	WTPH_DIESEL: COMMON
		Date	JUL 14 2016	Time	0833	Holding Time	14/40 Days
						Preservative	HCl to pH <2/Cool <=6C

Relinquished By	J.R. Aguilera/CHPRC	Print		Sign		Date/Time	JUL 14 2016	1155	Received By	Troy Bacon/CHPRC	Print	Troy L. Bacon	Sign		Date/Time	JUL 14 2016	1155
Relinquished By	Troy Bacon/CHPRC	Print		Sign		Date/Time	JUL 14 2016	1400	Received By	FEDEX	Print	FEDEX	Sign		Date/Time	JUL 14 2016	1400
Relinquished By		Print		Sign		Date/Time			Received By	JILL CLARKE	Print	Jill Clarke	Sign		Date/Time	7.15.16	0940
Relinquished By		Print		Sign		Date/Time			Received By		Print		Sign		Date/Time		



CH2M Hill Plateau Remediation Company 22253		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST C.O.C.# X16-033-150 Page 1 of 1	
Collector: J.R. Aguilar/CHPRC SAF No.: X16-033 Project Title: AQUIFER TUBES, JUNE 2016 Shipped To (Lab): TestAmerica St. Louis Protocol: CERCLA	Contact/Requester: Karen Waters-Husted Sampling Origin: Hanford Site Logbook No.: HNF-N-506 79/3D Method of Shipment: Commercial Carrier Priority: 30 Days SPECIAL INSTRUCTIONS: PRIORITY N/A	Telephone No.: 509-376-4650 Purchase Order/Charge Code: 303064 Ice Chest No.: GWS-359 Bill of Lading/Air Bill No.: 776749804722 Offsite Property No.: N/A	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hold Time:
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1	SPECIAL INSTRUCTIONS: N/A	Sample Analysis: COMMON	Preservative: HCl to pH <2/Cool <=6C
Sample No.: B35H19 Filter: N * Date: JUL 14 2016 Time: 1052 No/Type Container: 3x1-L aG WTPH_DIESEL: COMMON	Holding Time: 14/40 Days	Date/Time: JUL 14 2016 1155 Sign: <i>Troy Bacon</i> Print: Troy Bacon CHPRC	Date/Time: 1155 Sign: <i>Troy Bacon</i> Print: Troy Bacon CHPRC

Relinquished By: J.R. Aguilar/CHPRC Relinquished By: Troy Bacon/CHPRC Relinquished By:	Date/Time: JUL 14 2016 1155 Date/Time: JUL 14 2016 1400 Date/Time:	Sign: <i>Troy Bacon</i> Sign: <i>Troy Bacon</i> Sign:	Received By: Troy Bacon/CHPRC Received By: FEDEX Received By: JILL CLARK Received By:	Date/Time: JUL 14 2016 Date/Time: JUL 15 2016 Date/Time:	Sign: <i>Troy Bacon</i> Sign: <i>Jill Clark</i> Sign:	Matrix * S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By:		Date/Time:		
FINAL SAMPLE DISPOSITION		Disposed By:		Date/Time:		



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Delivered

Tracking No. or Nickname	Shipper city, state	Origin Terminal	Ship date	Status	Recipient city, state	Delivery date
776749825547	RICHLAND, WA	PASCO, WA	7/14/2016		EARTH CITY, MO	7/15/2016 9:29 am
776749804722	RICHLAND, WA	PASCO, WA	7/14/2016		EARTH CITY, MO	7/15/2016 9:29 am
776748137718	RICHLAND, WA	PASCO, WA	7/14/2016		EARTH CITY, MO	7/15/2016 9:29 am

Launch FedEx Tracking

776749804722

Ship date:

Thu 7/14/2016

RICHLAND, WA US

Actual delivery:

Fri 7/15/2016 9:29 am

EARTH CITY, MO US

Delivered

Signed for by: B.DANIELS

Travel History

Date/Time	Activity	Location
7/15/2016 - Friday		
9:29 am	Delivered	EARTH CITY, MO
7:20 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:12 am	At local FedEx facility	EARTH CITY, MO
4:57 am	At destination sort facility	BERWILLY, MO
4:12 am	Departed FedEx location	MEMPHIS, TN
12:35 am	Arrived at FedEx location	MEMPHIS, TN
7/14/2016 - Thursday		
4:48 pm	Left FedEx origin facility	PASCO, WA
3:37 pm	Shipment information sent to FedEx	PASCO, WA
3:21 pm	Picked up	PASCO, WA

Shipment Facts

Tracking number	776749804722	Service	FedEx Standard Overnight
Weight	87 lbs / 39.46 kgs	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	87 lbs / 39.46 kgs
Terms	Recipient	Shipper reference	gws-359
Packaging	Your Packaging	Special handling section	Deliver Weekday
Standard transit	7/15/2016 by 3:00 pm		

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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
SDG: SL2253

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.

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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
SDG: SL2253

Method	Method Description	Protocol	Laboratory
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL SL

Protocol References:

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



Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
SDG: SL2253

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-18203-1	B35H13	Water	07/14/16 08:33	07/15/16 09:40
160-18203-2	B35H19	Water	07/14/16 10:52	07/15/16 09:40

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

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
 SDG: SL2253

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: B35H13
 Date Collected: 07/14/16 08:33
 Date Received: 07/15/16 09:40

Lab Sample ID: 160-18203-1
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	0.017	U	0.49	0.017	mg/L		07/20/16 12:32	08/03/16 23:21	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl	88		47 - 136						
							Prepared	Analyzed	Dil Fac
							07/20/16 12:32	08/03/16 23:21	1

Client Sample ID: B35H19
 Date Collected: 07/14/16 10:52
 Date Received: 07/15/16 09:40

Lab Sample ID: 160-18203-2
 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	0.017	U	0.49	0.017	mg/L		07/20/16 12:32	08/04/16 00:41	1
Surrogate	%Recovery	Qualifier	Limits						
<i>o</i> -Terphenyl	86		47 - 136						
							Prepared	Analyzed	Dil Fac
							07/20/16 12:32	08/04/16 00:41	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
 SDG: SL2253

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 160-261428/1-A
 Matrix: Water
 Analysis Batch: 263204

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 261428

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	0.017	U	0.50	0.017	mg/L	-	07/20/16 12:32	08/03/16 22:28	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	109		47 - 136				07/20/16 12:32	08/03/16 22:28	1

Lab Sample ID: LCS 160-261428/2-A
 Matrix: Water
 Analysis Batch: 263204

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 261428

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Diesel Range Organics [C10-C28]	2.50	2.19		mg/L	-	87	30 - 100
Surrogate	LCS %Recovery	LCS Qualifier	Limits				%Rec.
<i>o</i> -Terphenyl	102		47 - 136				

Lab Sample ID: 160-18203-2 MS
 Matrix: Water
 Analysis Batch: 263204

Client Sample ID: B35H19
 Prep Type: Total/NA
 Prep Batch: 261428

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Diesel Range Organics [C10-C28]	0.017	U	2.46	2.40		mg/L	-	98	28 - 115
Surrogate	MS %Recovery	MS Qualifier	Limits					%Rec.	
<i>o</i> -Terphenyl	121		47 - 136						

Lab Sample ID: 160-18203-2 MSD
 Matrix: Water
 Analysis Batch: 263204

Client Sample ID: B35H19
 Prep Type: Total/NA
 Prep Batch: 261428

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	0.017	U	2.44	2.17		mg/L	-	89	28 - 115	10	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits					%Rec.			
<i>o</i> -Terphenyl	104		47 - 136								

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
 SDG: SL2253

GC Semi VOA

Prep Batch: 261428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18203-1	B35H13	Total/NA	Water	3510C	
160-18203-2	B35H19	Total/NA	Water	3510C	
MB 160-261428/1-A	Method Blank	Total/NA	Water	3510C	
LCS 160-261428/2-A	Lab Control Sample	Total/NA	Water	3510C	
160-18203-2 MS	B35H19	Total/NA	Water	3510C	
160-18203-2 MSD	B35H19	Total/NA	Water	3510C	

Analysis Batch: 263204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18203-1	B35H13	Total/NA	Water	8015B	261428
160-18203-2	B35H19	Total/NA	Water	8015B	261428
MB 160-261428/1-A	Method Blank	Total/NA	Water	8015B	261428
LCS 160-261428/2-A	Lab Control Sample	Total/NA	Water	8015B	261428
160-18203-2 MS	B35H19	Total/NA	Water	8015B	261428
160-18203-2 MSD	B35H19	Total/NA	Water	8015B	261428

Surrogate Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: X16-033

TestAmerica Job ID: 160-18203-1
SDG: SL2253

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTPH1 (47-136)
160-18203-1	B35H13	88
160-18203-2	B35H19	86
160-18203-2 MS	B35H19	121
160-18203-2 MSD	B35H19	104
LCS 160-261428/2-A	Lab Control Sample	102
MB 160-261428/1-A	Method Blank	109

Surrogate Legend

OTPH = o-Terphenyl