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: 160-18130-1
TestAmerica Sample Delivery Group: SL2247
Client Project/Site: W16-007

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 9:55:52 AM

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

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Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Job ID: 160-18130-1

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	: SL2247
Number of Samples	: 16 samples
Sample Matrix	: Water
Data Deliverable	: Summary
Date SDG Closed	: July 12, 2016

II. Introduction

On July 12, 16 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: W16-007

Samples B35PB0, B35PB1, B35PN0 and B35PN1 were received broken for TOX. There was insufficient volume remaining to perform this analysis. Per SIR16-498, this analysis was cancelled for these samples.

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

Case Narrative

Job ID: 160-18130-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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.

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.

TOX

Batch: 264096

The following samples in TOX preparation batch 160-262061 and analytical batch 160-264096 are bracketed by continuing calibration blanks (CCBs) that have results above the reporting limit (RL) of 5ppb: B35P98 (160-18130-2), B35ND0 (160-18130-3), B35P96 (160-18130-4), B35P99 (160-18130-5), B35ND2 (160-18130-8), B35ND4 (160-18130-9), B35PB3 (160-18130-10), B35PB2 (160-18130-11), B35PB4 (160-18130-12), B35PM9 (160-18130-15) and B35NW5 (160-18130-16). Most of the samples bracketed by these high CCBs are non-detect (ND) for TOX. However, sample 18130-16 has results above the RL. As the sample bottles now contain several hundred milliliters of headspace, re-analysis cannot be performed.

The following samples in TOX preparation batch 160-262061 and analytical batch 160-264096 were preserved by the lab with H2SO4 during the prep procedure, as the pH checks of these bottles showed them to have relatively neutral initial pHs: B35P99 (160-18130-5) and B35ND2 (160-18130-8).

The sample and its duplicate had a %RPD that was outside the acceptance limit of 20% in TOX batch 160-264096. However, RPD is not useful for values near the reporting limit. As the sample and its duplicate (had values less than 5x the reporting limit (RL) and are within +/- the RL of each other, the results are reported with this narrative. (Additionally, St. Louis does not consider RPD a valid parameter on TOX values less than 25 ppb.)

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Job ID: 160-18130-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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

TOC

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

SAMPLE ISSUE RESOLUTION

SIR NUM SIR16-498
REV NUM 0
DATE INITIATED 7/13/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) W16-007

OPERABLE UNIT(S) NONE

PROJECT(S) RCRA16

SAMPLE EVENT TITLE(S) RCRA16

LABORATORY TestAmerica St. Louis

SAMPLING INFORMATION

NUMBER OF SAMPLES 4

SAMPLE NUMBERS B35PB0, B35PB1, B35PN0, B35PN1

SAMPLE MATRIX WATER

COLLECTION DATE -

SDG NUM SL2247

ISSUE BACKGROUND

CLASS Field Sampling Issue

TYPE Broken Sample Bottle

DESCRIPTION Sample bottles were received broken for TOX analysis. There is insufficient volume remaining to run TOX. TOX was not logged in.

DISPOSITION

DESCRIPTION Proposed Resolution: Cancel TOX analysis for the effected samples and narrate.

JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Jayna Awalt DATE: 07/13/2016
ACCEPTED BY: Sarah Nagel DATE: 07/13/2016

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-18130-1
SDG Number: SL2247

Login Number: 18130
List Number: 1
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis

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	1.9°, 0.8°
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.	False	4 Samples received with broken TOX bottles. Insufficient volume to analyze.
Sample collection date/times are provided.	True	SIR submitted.
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	

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CH2MHill Plateau Remediation Company SL2214	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # W16-007-165 Page 1 of 1

Collector	Kevin Patterson CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W16-007	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JULY 2016	**Logbook No.**	HNF-N-506 82/85	**Ice Chest No.**	GWS-561
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7767 1629 1182
Protocol	RCRA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35P94	N	W	JUL 10 2016	0909	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35P94	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35P98	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35P98	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35ND0	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35ND0	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35P96	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35P96	N	W	JUL 10 2016	0909	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Kevin Patterson CHPRC			JUL 10 2016 1515		SSU #1		JUL 10 2016 1515
SSU #1			JUL 11 2016 1030	Troy Bacon CHPRC		Troy L. Bacon	JUL 11 2016 1030
Troy Bacon CHPRC		Troy L. Bacon	JUL 11 2016 1400	FEDEX			
FEDEX				JILL CLARKE		Jill Clarke	7.12.16 0910

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 5/26/2016 | FSR ID = FSR32446 | A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company SL2247	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # W16-007-166 Page 1 of 1

Collector	Kevin Patterson CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W16-007	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JULY 2016	**Logbook No.**	HNF-N-506 82/85	**Ice Chest No.**	GWS-514
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7767 1633 7501
Protocol	RCRA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐
N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35P99	N	W	JUL 10 2016	1059	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35P99	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PB0	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PB0	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PB1	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PB1	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35ND2	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35ND2	N	W	JUL 10 2016	1059	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

Relinquished By Kevin Patterson CHPRC — Print — Sign	Date/Time JUL 10 2016 1515	Received By Print SSU #1 Sign	Date/Time JUL 10 2016 1515
Relinquished By SSU #1	Date/Time JUL 11 2016 1030	Received By Troy Bacon CHPRC Troy L. Bacon	Date/Time JUL 11 2016 1030
Relinquished By Troy Bacon CHPRC Troy L. Bacon	Date/Time JUL 11 2016 1400	Received By FEDEX	Date/Time
Relinquished By FEDEX	Date/Time	Received By JILL CLARKE Jill Clarke 7-12-16 0910	Date/Time

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

PRINTED ON 5/26/2016 — FSR ID = FSR32844 — A-6004-842 (REV 2)

9116S

CH2MHill Plateau Remediation Company SL2247	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # W16-007-167 Page 1 of 1

Collector	Kevin Patterson CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W16-007	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JULY 2016	**Logbook No.**	HNF-N-506 82/85	**Ice Chest No.**	GWS-514
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7767 1633 7501
Protocol	RCRA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35ND4	N	W	JUL 10 2016	1155	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35ND4	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PB3	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PB3	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PB2	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PB2	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PB4	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PB4	N	W	JUL 10 2016	1155	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

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Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
Kevin Patterson CHPRC		JUL 10 2016 1515	SSU #1		JUL 10 2016 1515
SSU #1		JUL 11 2016 1030	Troy Bacon CHPRC	Troy L. Bacon	JUL 11 2016 1030
Troy Bacon CHPRC	Troy L. Bacon	JUL 11 2016 1400	FEDEX		
FEDEX			JILL CLARKE	Jill Clarke	7-12-16 0900

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

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CH2MHill Plateau Remediation Company SL2247

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # W16-007-182

Collector	Frank Hall /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	W16-007	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	RCRA, JULY 2016	**Logbook No.**	HNF-N-506 85/88/89	**Ice Chest No.**	GWS-514
Shipped To (Lab)	TestAmerica St. Louis	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	776716337501
Protocol	RCRA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	N/A

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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35PN0	N	W	7/10/16	1319	1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PN0	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PN1	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PN1	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35PM9	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35PM9	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35NW5	N	W			1x1-L aGs*	9020_TOX: COMMON	28 Days	H2SO4 to pH <2/Cool <=6C
B35NW5	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

	Print	Sign	Date/Time		Print	Sign	Date/Time
Relinquished By Frank Hall /CHPRC			JUL 10 2016 1530	Received By SSU #1			JUL 10 2016 1530
Relinquished By SSU #1			JUL 11 2016 1030	Received By Troy Bacon CHPRC		Troy L. Bacon	JUL 11 2016 1030
Relinquished By Troy Bacon CHPRC		Troy L. Bacon	JUL 11 2016 1400	Received By FEDEX			Date/Time
Relinquished By FEDEX			Date/Time	Received By JILL CLARKE		Jill Clarke	7.12.16 0910

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

FedEx ® Tracking

776716291182

Ship date:
Mon 7/11/2016

RICHLAND, WA US

Delivered
Signed for by: J.CLARKE

Actual delivery:
Tue 7/12/2016 9:07 am

EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
- 7/12/2016 - Tuesday		
9:07 am	Delivered	EARTH CITY, MO
7:24 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:18 am	At local FedEx facility	EARTH CITY, MO
5:27 am	At destination sort facility	BERKELEY, MO
4:42 am	Departed FedEx location	MEMPHIS, TN
12:39 am	Arrived at FedEx location	MEMPHIS, TN
- 7/11/2016 - Monday		
5:24 pm	Left FedEx origin facility	PASCO, WA
3:22 pm	Picked up	PASCO, WA
2:41 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking number	776716291182	**Service**	FedEx Standard Overnight
Weight	53 lbs / 24.04 kgs	**Dimensions**	16x16x17 in.
Delivered To	Shipping/Receiving	**Total pieces**	1
Total shipment weight	53 lbs / 24.04 kgs	**Terms**	Recipient
Shipper reference	GWS-561	**Packaging**	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge		

FedEx ® Tracking

776716337501

Ship date:
Mon 7/11/2016

RICHLAND, WA US

Delivered
Signed for by: J.CLARKE

Actual delivery:
Tue 7/12/2016 9:07 am

EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
▪ 7/12/2016 - Tuesday		
9:07 am	Delivered	EARTH CITY, MO
7:49 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:44 am	At local FedEx facility	EARTH CITY, MO
5:27 am	At destination sort facility	BERKELEY, MO
4:42 am	Departed FedEx location	MEMPHIS, TN
12:39 am	Arrived at FedEx location	MEMPHIS, TN
▪ 7/11/2016 - Monday		
5:24 pm	Left FedEx origin facility	PASCO, WA
3:22 pm	Picked up	PASCO, WA
2:46 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking number	776716337501	**Service**	FedEx Standard Overnight
Weight	91 lbs / 41.28 kgs	**Delivered To**	Shipping/Receiving
Total pieces	1	**Total shipment weight**	91 lbs / 41.28 kgs
Terms	Recipient	**Shipper reference**	GWS-514
Packaging	Your Packaging	**Special handling section**	Deliver Weekday

Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Qualifiers

General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.
B	Estimated result. Result is less than the RL, but greater than MDL
M	Sample duplicate precision not met.

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: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Method	Method Description	Protocol	Laboratory
9020B	Organic Halides, Total (TOX)	SW846	TAL SL
9060	Organic Carbon, Total (TOC)	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: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-18130-1	B35P94	Water	07/10/16 09:09	07/12/16 09:10
160-18130-2	B35P98	Water	07/10/16 09:09	07/12/16 09:10
160-18130-3	B35ND0	Water	07/10/16 09:09	07/12/16 09:10
160-18130-4	B35P96	Water	07/10/16 09:09	07/12/16 09:10
160-18130-5	B35P99	Water	07/10/16 10:59	07/12/16 09:10
160-18130-6	B35PB0	Water	07/10/16 10:59	07/12/16 09:10
160-18130-7	B35PB1	Water	07/10/16 10:59	07/12/16 09:10
160-18130-8	B35ND2	Water	07/10/16 10:59	07/12/16 09:10
160-18130-9	B35ND4	Water	07/10/16 11:55	07/12/16 09:10
160-18130-10	B35PB3	Water	07/10/16 11:55	07/12/16 09:10
160-18130-11	B35PB2	Water	07/10/16 11:55	07/12/16 09:10
160-18130-12	B35PB4	Water	07/10/16 11:55	07/12/16 09:10
160-18130-13	B35PN0	Water	07/10/16 13:19	07/12/16 09:10
160-18130-14	B35PN1	Water	07/10/16 13:19	07/12/16 09:10
160-18130-15	B35PM9	Water	07/10/16 13:19	07/12/16 09:10
160-18130-16	B35NW5	Water	07/10/16 13:19	07/12/16 09:10

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

General Chemistry

Client Sample ID: B35P94
Date Collected: 07/10/16 09:09
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**2.4**	**B M**	5.0	2.1	ug/L		07/22/16 12:00	07/25/16 14:04	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 02:25	1

Client Sample ID: B35P98
Date Collected: 07/10/16 09:09
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**4.0**	**B**	5.0	2.1	ug/L		07/22/16 13:00	07/25/16 15:51	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 03:04	1

Client Sample ID: B35ND0
Date Collected: 07/10/16 09:09
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**2.1**	**B**	5.0	2.1	ug/L		07/22/16 14:00	07/25/16 16:16	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 03:16	1

Client Sample ID: B35P96
Date Collected: 07/10/16 09:09
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	2.1	U	5.0	2.1	ug/L		07/22/16 14:00	07/25/16 17:04	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 03:30	1

Client Sample ID: B35P99
Date Collected: 07/10/16 10:59
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**3.4**	**B**	5.0	2.1	ug/L		07/22/16 15:00	07/25/16 17:29	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 03:41	1

Client Sample ID: B35PB0
Date Collected: 07/10/16 10:59
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 03:53	1

Client Sample ID: B35PB1
Date Collected: 07/10/16 10:59
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 04:04	1

Client Sample ID: B35ND2
Date Collected: 07/10/16 10:59
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	2.1	U	5.0	2.1	ug/L		07/22/16 15:00	07/25/16 17:53	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 04:16	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

General Chemistry

Client Sample ID: B35ND4
Date Collected: 07/10/16 11:55
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**3.5**	**B**	5.0	2.1	ug/L		07/22/16 16:00	07/25/16 18:43	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 04:27	1

Client Sample ID: B35PB3
Date Collected: 07/10/16 11:55
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	2.1	U	5.0	2.1	ug/L		07/22/16 16:00	07/25/16 19:09	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 04:38	1

Client Sample ID: B35PB2
Date Collected: 07/10/16 11:55
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-11
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**3.1**	**B**	5.0	2.1	ug/L		07/22/16 17:00	07/25/16 19:36	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 04:50	1

Client Sample ID: B35PB4
Date Collected: 07/10/16 11:55
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-12
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	2.1	U	5.0	2.1	ug/L		07/22/16 17:00	07/25/16 20:09	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 05:33	1

Client Sample ID: B35PN0
Date Collected: 07/10/16 13:19
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 05:45	1

Client Sample ID: B35PN1
Date Collected: 07/10/16 13:19
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 05:56	1

Client Sample ID: B35PM9
Date Collected: 07/10/16 13:19
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-15
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	2.1	U	5.0	2.1	ug/L		07/25/16 11:00	07/25/16 20:42	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 06:08	1

Client Sample ID: B35NW5
Date Collected: 07/10/16 13:19
Date Received: 07/12/16 09:10
Lab Sample ID: 160-18130-16
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	**17.7**		5.0	2.1	ug/L		07/25/16 11:00	07/25/16 21:36	1
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 06:19	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Method: 9020B - Organic Halides, Total (TOX)

Lab Sample ID: MB 160-262061/1-A
Matrix: Water
Analysis Batch: 264096

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 262061

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Halogens, Total Organic	2.1	U	5.0	2.1	ug/L		07/25/16 10:00	07/25/16 13:05	1

Lab Sample ID: LCS 160-262061/2-A
Matrix: Water
Analysis Batch: 264096

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 262061

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Halogens, Total Organic	100	98.08		ug/L		98	90 - 116

Lab Sample ID: 160-18130-1 MS
Matrix: Water
Analysis Batch: 264096

Client Sample ID: B35P94
Prep Type: Total/NA
Prep Batch: 262061

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Halogens, Total Organic	2.4	B M	100	102.3		ug/L		100	85 - 117

Lab Sample ID: 160-18130-1 DU
Matrix: Water
Analysis Batch: 264096

Client Sample ID: B35P94
Prep Type: Total/NA
Prep Batch: 262061

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Halogens, Total Organic	2.4	B M	4.14	B M	ug/L		52	20

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 160-260538/34
Matrix: Water
Analysis Batch: 260538

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.72	U	1.0	0.72	mg/L			07/14/16 01:53	1

Lab Sample ID: LCS 160-260538/35
Matrix: Water
Analysis Batch: 260538

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.50		mg/L		95	90 - 110

Lab Sample ID: 160-18130-1 MS
Matrix: Water
Analysis Batch: 260538

Client Sample ID: B35P94
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	0.72	U	5.00	4.89		mg/L		98	76 - 120

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

Method: 9060 - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 160-18130-16 MS
Matrix: Water
Analysis Batch: 260538

Client Sample ID: B35NW5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	0.72	U	5.00	5.02		mg/L		100	76 - 120		

Lab Sample ID: 160-18130-1 DU
Matrix: Water
Analysis Batch: 260538

Client Sample ID: B35P94
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	0.72	U		0.72	U	mg/L				NC	20

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

General Chemistry

Analysis Batch: 260538

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18130-1	B35P94	Total/NA	Water	9060	
160-18130-2	B35P98	Total/NA	Water	9060	
160-18130-3	B35ND0	Total/NA	Water	9060	
160-18130-4	B35P96	Total/NA	Water	9060	
160-18130-5	B35P99	Total/NA	Water	9060	
160-18130-6	B35PB0	Total/NA	Water	9060	
160-18130-7	B35PB1	Total/NA	Water	9060	
160-18130-8	B35ND2	Total/NA	Water	9060	
160-18130-9	B35ND4	Total/NA	Water	9060	
160-18130-10	B35PB3	Total/NA	Water	9060	
160-18130-11	B35PB2	Total/NA	Water	9060	
160-18130-12	B35PB4	Total/NA	Water	9060	
160-18130-13	B35PN0	Total/NA	Water	9060	
160-18130-14	B35PN1	Total/NA	Water	9060	
160-18130-15	B35PM9	Total/NA	Water	9060	
160-18130-16	B35NW5	Total/NA	Water	9060	
MB 160-260538/34	Method Blank	Total/NA	Water	9060	
LCS 160-260538/35	Lab Control Sample	Total/NA	Water	9060	
160-18130-1 MS	B35P94	Total/NA	Water	9060	
160-18130-16 MS	B35NW5	Total/NA	Water	9060	
160-18130-1 DU	B35P94	Total/NA	Water	9060	

Prep Batch: 262061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18130-1	B35P94	Total/NA	Water	Carbon Trap	
160-18130-2	B35P98	Total/NA	Water	Carbon Trap	
160-18130-3	B35ND0	Total/NA	Water	Carbon Trap	
160-18130-4	B35P96	Total/NA	Water	Carbon Trap	
160-18130-5	B35P99	Total/NA	Water	Carbon Trap	
160-18130-8	B35ND2	Total/NA	Water	Carbon Trap	
160-18130-9	B35ND4	Total/NA	Water	Carbon Trap	
160-18130-10	B35PB3	Total/NA	Water	Carbon Trap	
160-18130-11	B35PB2	Total/NA	Water	Carbon Trap	
160-18130-12	B35PB4	Total/NA	Water	Carbon Trap	
160-18130-15	B35PM9	Total/NA	Water	Carbon Trap	
160-18130-16	B35NW5	Total/NA	Water	Carbon Trap	
MB 160-262061/1-A	Method Blank	Total/NA	Water	Carbon Trap	
LCS 160-262061/2-A	Lab Control Sample	Total/NA	Water	Carbon Trap	
160-18130-1 MS	B35P94	Total/NA	Water	Carbon Trap	
160-18130-1 DU	B35P94	Total/NA	Water	Carbon Trap	

Analysis Batch: 264096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18130-1	B35P94	Total/NA	Water	9020B	262061
160-18130-2	B35P98	Total/NA	Water	9020B	262061
160-18130-3	B35ND0	Total/NA	Water	9020B	262061
160-18130-4	B35P96	Total/NA	Water	9020B	262061
160-18130-5	B35P99	Total/NA	Water	9020B	262061
160-18130-8	B35ND2	Total/NA	Water	9020B	262061
160-18130-9	B35ND4	Total/NA	Water	9020B	262061
160-18130-10	B35PB3	Total/NA	Water	9020B	262061

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: W16-007

TestAmerica Job ID: 160-18130-1
SDG: SL2247

General Chemistry (Continued)

Analysis Batch: 264096 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18130-11	B35PB2	Total/NA	Water	9020B	262061
160-18130-12	B35PB4	Total/NA	Water	9020B	262061
160-18130-15	B35PM9	Total/NA	Water	9020B	262061
160-18130-16	B35NW5	Total/NA	Water	9020B	262061
MB 160-262061/1-A	Method Blank	Total/NA	Water	9020B	262061
LCS 160-262061/2-A	Lab Control Sample	Total/NA	Water	9020B	262061
160-18130-1 MS	B35P94	Total/NA	Water	9020B	262061
160-18130-1 DU	B35P94	Total/NA	Water	9020B	262061