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February 19, 2018 Revision 0

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: 160-26608-1

TestAmerica Sample Delivery Group: SL2802

Client Project/Site: F17-019

For:

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

Attn: Mr. Scot Fitzgerald

Jayna Just

Authorized for release by: 2/19/2018 6:45:19 PM

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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February 19, 2018

Revision 0

TestAmerica Job ID: 160-26608-1 SDG: SL2802

Client: CH2M Hill Plateau Remediation Company Project/Site: F17-019

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TestAmerica Job ID: 160-26608-1

SDG: SL2802

Job ID: 160-26608-1

Project/Site: F17-019

Laboratory: TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company

P.O. Box 1600

Richland, Washington 99352

February 19, 2018

Attention: Scot Fitzgerald

SDG : SL2802

Number of Samples : 1 sample Sample Matrix : Water

Data Deliverable : Summary

Date SDG Closed : February 2, 2018

II. Introduction

On February 2, 1 sample was 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 lds to correspond with specific client lds. 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: F17-019

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

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TestAmerica Job ID: 160-26608-1

SDG: SL2802

Client: CH2M Hill Plateau Remediation Company

Project/Site: F17-019

Job ID: 160-26608-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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 above the MDL/RL and Method Blank is greater than 5% of the sample concentration.
- **B** For inorganics and radiochemistry, Method Blank reported above the MDC/MDL.
- J For organic analyses, the sample is estimated and less than the RL. If on Method Blank, indicates Method Blank
- C For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL/RL and Method Blank concentration is greater than 5% of the sample concentration.
- 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.

ICP Metals

Batch: 350529

Sodium was detected in method blank MB 160-350061/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "B". If the associated sample reported a result above the MDL and/or RL and MB is greater than 5% the sample concentration, the result has been flagged "C".

Batch: 351045

The following sample was diluted to bring the concentration of target analytes within the calibration range: B3H6R3 (160-26608-1). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

ICPMS Metals

Batch: 351406

Copper was detected in method blank MB 160-350065/1-A at a level that was above the method detection limit but below the reporting

2/19/2018

TestAmerica St. Louis



TestAmerica Job ID: 160-26608-1

SDG: SL2802

Job ID: 160-26608-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

Client: CH2M Hill Plateau Remediation Company

limit. The value should be considered an estimate, and has been flagged "B". If the associated sample reported a result above the MDL and/or RL and MB is greater than 5% the sample concentration, the result has been flagged "C".

Batch: 351588

Project/Site: F17-019

The following sample was diluted to bring the concentration of target analytes within the calibration range: B3H6R3 (160-26608-1). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

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

Volatiles Alkalinity

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: 160-26608-1

SDG Number: SL2802

List Source: TestAmerica St. Louis

Login Number: 26608 List Number: 1

Creator: Clarke, Jill C

Creator: Clarke, Jili C		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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	0.2
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

REQUIRED TAT METHOD OF SHIPMENT ORIGINAL FEDERAL EXPRESS F17-019-121 BILL OF LADING/AIR BILL NO.

STATE STATE STATE OF LOLD PURCHASE ORDER/CHARGE CODE PROJECT COORDINATOR SUMNER, LC F17-019 CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST HCI or H2SO4 to pH <2/Cool <=6C 14 Days ACTUAL SAMPLE DEPTH TELEPHONE NO. Cool <=6C 376-3922 ঠ HNO3 to pH 200W Pump & Treat - Perched Water Sampling 6 Months ŝ 11 15T- N-42H TYPE OF CONTAINER PROJECT DESIGNATION **DFFSITE PROPERTY NO.** HOLDING TIME PRESERVATION FIELD LOGBOOK NO. COMPANY CONTACT SUMNER, LC transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per POSSIBLE SAMPLE HAZARDS/ REMARKS concentrations that are not be regulated for SPECIAL HANDLING AND/OR STORAGE CH2MHill Plateau Remediation Company KATHY TURNER DISPOSAL METHOD CHPRC FINAL SAMPLE DISPOSAL ME
C DISPOSITION

PRINTED ON 1/16/2018 DOE Order 458.1. FILTERED X X TestAmerica St. Louis SAMPLING LOCATION CHPRCKAL 299-E33-344, YE28 ICE CHEST NO. SAMPLE NO. SSU-1 SHIPPED TO V=Vegetation W::Water WI=Wipe X=Other S≂Soil SE=Sediment Sample Sa Liquids DS=Drum Solids L=Liquid. O=Oil DL=Drum MATRIX* A=Air =Tissue

Sign In

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FedEx® Tracking

771384646825

Ship date: Thu 2/01/2018 Actual delivery: Fri 2/02/2018 9:09 am

Richland, WA US

Delivered Signed for by: J.CLARKE EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
- 2/02/2018	- Friday	
9:09 am	Delivered	EARTH CITY, MO
7:26 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:19 am	At local FedEx facility	EARTH CITY, MO
5:51 am	At destination sort facility	BERKELEY, MO
5:06 am	Departed FedEx location	MEMPHIS, TN
12:01 am	Arrived at FedEx location	MEMPHIS, TN
- 2/01/2018	- Thursday	
4:43 pm	Left FedEx origin facility	PASCO, WA
3:16 pm	Picked up	PASCO, WA
2:50 pm	Shipment information sent to FedEx	

Shipment Facts

Omprisoner dolo			
Tracking Number	771384646825	Service	FedEx Standard Overnight
Weight	41 lbs / 18.6 kgs	Dimensions	16x16x17 in.
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	41 lbs / 18.6 kgs	Terms	Recipient
Shipper reference	GWS-719	Packaging	Your Packaging
Special handling section Deliver Weekday, Additional Handling Surcharge		Standard transit	2/02/2018 by 3:00 pm
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TestAmerica Job ID: 160-26608-1

SDG: SL2802

Qualifiers

Project/Site: F17-019

GC/MS VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
X	See case narrative notes for explanation of the 'X' flag
D	The reported value is from a dilution.
U	Analyzed for but not detected.
В	Estimated result. Result is less than the RL, but greater than MDL
С	The analyte was detected in both the sample and the associated QC blank, and the sample concentration was = 5X the blank concentration.</td

General Chemistry

Qualifier	Qualifier Description
U	Analyzed for but not detected.

Client: CH2M Hill Plateau Remediation Company

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
a	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)



TestAmerica Job ID: 160-26608-1

SDG: SL2802

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL
6010C	Metals (ICP)	SW846	TAL SL
6020A	Metals (ICP/MS)	SW846	TAL SL
310.1	Alkalinity	MCAWW	TAL SL

Protocol References:

Project/Site: F17-019

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions. 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

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Project/Site: F17-019

Revision 0

TestAmerica Job ID: 160-26608-1

SDG: SL2802

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-26608-1	B3H6R3	Water	01/31/18 07:59	02/02/18 09:20

TestAmerica Job ID: 160-26608-1

SDG: SL2802

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

Client: CH2M Hill Plateau Remediation Company

Project/Site: F17-019

Client Sample ID: B3H6R3 Lab Sample ID: 160-26608-1 Date Collected: 01/31/18 07:59 **Matrix: Water** Date Received: 02/02/18 09:20 Result Qualifier RL **MDL** Unit Dil Fac Analyte D Prepared Analyzed Carbon tetrachloride 0.18 U 1.0 0.18 ug/L 02/12/18 16:02 02/12/18 16:02 1.0 0.10 ug/L Chloroform 0.24 J Chloromethane 0.10 U 2.0 0.10 ug/L 02/12/18 16:02 0.10 ug/L cis-1,2-Dichloroethylene 0.10 U 1.0 02/12/18 16:02 Methylene Chloride 0.27 U 1.0 0.27 ug/L 02/12/18 16:02 Trichloroethene 0.25 U 1.0 0.25 ug/L 02/12/18 16:02 Vinyl chloride 2.0 0.19 ug/L 0.19 U 02/12/18 16:02

Est. Result Qualifier CAS No. Tentatively Identified Compound Unit D RT Prepared Dil Fac Analyzed Isopropyl alcohol 25 ug/L 5.94 67-63-0 02/12/18 16:02 Tentatively Identified Compound None ug/L 02/12/18 16:02

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		75 - 129		02/12/18 16:02	1
4-Bromofluorobenzene (Surr)	87		81 - 130		02/12/18 16:02	1
Dibromofluoromethane (Surr)	96		81 - 124		02/12/18 16:02	1
Toluene-d8 (Surr)	97		87 - 128		02/12/18 16:02	1

Method: 6010C - Metals (ICP)

 Client Sample ID: B3H6R3
 Lab Sample ID: 160-26608-1

 Date Collected: 01/31/18 07:59
 Matrix: Water

 Date Received: 02/02/18 09:20
 Matrix: Water

Analyte Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac Boron 125 U D 500 125 ug/L 02/07/18 12:28 02/13/18 15:45 5000 1500 ug/L 02/07/18 12:28 02/13/18 15:45 5 **Calcium** 156000 D 5 Iron 150 U D 500 150 ug/L 02/07/18 12:28 02/13/18 15:45 56100 D 5000 1500 ug/L 02/07/18 12:28 02/13/18 15:45 5 Magnesium **Potassium** 11100 BD 25000 7500 ug/L 02/07/18 12:28 02/13/18 15:45 5 **Sodium** 285000 D 5000 1500 ug/L 02/07/18 12:28 02/13/18 15:45 5

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B3H6R3

Date Collected: 01/31/18 07:59

Matrix: Water

Date Received: 02/02/18 09:20

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32.7	B D	50.0	20.0	ug/L		02/07/18 12:30	02/15/18 16:57	2
Arsenic	8.9	B D	10.0	4.0	ug/L		02/07/18 12:30	02/15/18 16:57	2
Cadmium	0.20	U D	0.50	0.20	ug/L		02/07/18 12:30	02/15/18 16:57	2
Chromium	71.9	D	10.0	4.0	ug/L		02/07/18 12:30	02/15/18 16:57	2
Cobalt	0.90	U D	2.0	0.90	ug/L		02/07/18 12:30	02/15/18 16:57	2
Copper	3.5	DC	1.0	0.40	ug/L		02/07/18 12:30	02/15/18 16:57	2
Manganese	22.5	D	2.0	0.90	ug/L		02/07/18 12:30	02/15/18 16:57	2
Molybdenum	29.1	D	5.0	2.0	ug/L		02/07/18 12:30	02/15/18 16:57	2
Nickel	2.0	U D	5.0	2.0	ug/L		02/07/18 12:30	02/15/18 16:57	2
Selenium	11.9	D	5.0	2.0	ug/L		02/07/18 12:30	02/15/18 16:57	2
Uranium	52900	D	25.0	10.0	ug/L		02/07/18 12:30	02/16/18 11:42	50
Zinc	120	D	20.0	7.5	ug/L		02/07/18 12:30	02/15/18 16:57	2

TestAmerica St. Louis

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TestAmerica Job ID: 160-26608-1

SDG: SL2802

General Chemistry

Project/Site: F17-019

Client Sample ID: B3H6R3

Lab Sample ID: 160-26608-1

Date Collected: 01/31/18 07:59

Matrix: Water

Date Received: 02/02/18 09:20

Date Received: 02/02/18 09:20							
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	314	5.0	0.54 mg/L			02/12/18 21:21	1
Bicarbonate Alkalinity as CaCO3	314	5.0	0.54 mg/L			02/12/18 21:21	1
Carbonate Alkalinity as CaCO3	0.54 U	5.0	0.54 mg/L			02/12/18 21:21	1
Hydroxide Alkalinity	0.54 U	5.0	0.54 mg/L			02/12/18 21:21	1

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TestAmerica Job ID: 160-26608-1

SDG: SL2802

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

Lab Sample ID: MB 160-350626/7

Client: CH2M Hill Plateau Remediation Company

Matrix: Water

Project/Site: F17-019

Analysis Batch: 350626

Client Sample ID: Method Blank

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			02/12/18 12:44	1
Chloroform	0.10	U	1.0	0.10	ug/L			02/12/18 12:44	1
Chloromethane	0.10	U	2.0	0.10	ug/L			02/12/18 12:44	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			02/12/18 12:44	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			02/12/18 12:44	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			02/12/18 12:44	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			02/12/18 12:44	1

MB MB

CAS No. Tentatively Identified Compound Est. Result Qualifier Unit D RT Prepared Analyzed Dil Fac Tentatively Identified Compound None ug/L 02/12/18 12:44

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		75 - 129		02/12/18 12:44	1
4-Bromofluorobenzene (Surr)	92		81 - 130		02/12/18 12:44	1
Dibromofluoromethane (Surr)	95		81 - 124		02/12/18 12:44	1
Toluene-d8 (Surr)	98		87 - 128		02/12/18 12:44	1

Lab Sample ID: LCS 160-350626/4

Matrix: Water

Carbon tetrachloride

Analyte

Chloroform Chloromethane cis-1,2-Dichloroethylene Methylene Chloride Trichloroethene Vinyl chloride

Analysis Batch: 350626

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

Spike	LCS	LCS				%Rec.	
Added	Result	Qualifier	Unit	D	%Rec	Limits	
10.0	9.83		ug/L		98	83 - 125	
10.0	9.85		ug/L		98	80 - 120	
10.0	9.77		ug/L		98	72 - 124	
10.0	9.47		ug/L		95	80 - 120	
10.0	9.57		ug/L		96	80 - 120	
10.0	9.74		ug/L		97	80 - 120	
10.0	10.7		ug/L		107	77 - 122	

LCS LCS

Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		75 - 129
4-Bromofluorobenzene (Surr)	89		81 - 130
Dibromofluoromethane (Surr)	96		81 - 124
Toluene-d8 (Surr)	95		87 - 128

Lab Sample ID: LCSD 160-350626/5

Matrix: Water

Analysis Batch: 350626

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

_	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Carbon tetrachloride	10.0	10.1		ug/L		101	83 - 125	3	20
Chloroform	10.0	10.0		ug/L		100	80 - 120	2	20
Chloromethane	10.0	9.98		ug/L		100	72 - 124	2	20
cis-1,2-Dichloroethylene	10.0	9.51		ug/L		95	80 - 120	0	20
Methylene Chloride	10.0	9.61		ug/L		96	80 - 120	0	20
Trichloroethene	10.0	10.0		ug/L		100	80 - 120	3	20

TestAmerica St. Louis

TestAmerica Job ID: 160-26608-1

SDG: SL2802

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

Lab Sample ID: LCSD 160-350626/5

Client: CH2M Hill Plateau Remediation Company

Matrix: Water

Project/Site: F17-019

Analysis Batch: 350626

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

%Rec. RPD

Spike LCSD LCSD Analyte Added Result Qualifier Limits RPD Unit %Rec Limit Vinyl chloride 10.0 10.9 ug/L 109 77 - 122 2 20

	LCSD	LCSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	99		75 - 129
4-Bromofluorobenzene (Surr)	90		81 - 130
Dibromofluoromethane (Surr)	97		81 - 124
Toluene-d8 (Surr)	96		87 - 128

Lab Sample ID: 160-26608-1 MS Client Sample ID: B3H6R3 **Matrix: Water Prep Type: Total/NA**

Analysis Batch: 350626

Allalysis Datoll. 000020										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Carbon tetrachloride	0.18	U	10.0	9.89		ug/L		99	77 - 131	
Chloroform	0.24	J	10.0	10.4		ug/L		102	80 - 120	
Chloromethane	0.10	U	10.0	9.67		ug/L		97	62 - 132	
cis-1,2-Dichloroethylene	0.10	Ü	10.0	9.54		ug/L		95	80 - 120	
Methylene Chloride	0.27	U	10.0	9.71		ug/L		97	80 - 120	
Trichloroethene	0.25	U	10.0	10.0		ug/L		100	81 - 125	
Vinyl chloride	0.19	U	10.0	11.4		ug/L		114	70 - 129	

MS MS Surrogate %Recovery Qualifier Limits 1,2-Dichloroethane-d4 (Surr) 105 75 - 129 4-Bromofluorobenzene (Surr) 81 - 130 85 Dibromofluoromethane (Surr) 99 81 - 124 Toluene-d8 (Surr) 87 - 128 93

Analysis Batch: 350626

Lab Sample ID: 160-26608-1 MSD Client Sample ID: B3H6R3 **Matrix: Water** Prep Type: Total/NA

_	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Carbon tetrachloride	0.18	U	10.0	9.86		ug/L		99	77 - 131	0	20
Chloroform	0.24	J	10.0	10.3		ug/L		100	80 - 120	1	20
Chloromethane	0.10	U	10.0	9.81		ug/L		98	62 - 132	1	20
cis-1,2-Dichloroethylene	0.10	U	10.0	9.42		ug/L		94	80 - 120	1	20
Methylene Chloride	0.27	U	10.0	9.64		ug/L		96	80 - 120	1	20
Trichloroethene	0.25	U	10.0	9.87		ug/L		99	81 - 125	1	20
Vinyl chloride	0.19	U	10.0	11.3		ug/L		113	70 - 129	1	20

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	103		75 - 129
4-Bromofluorobenzene (Surr)	86		81 - 130
Dibromofluoromethane (Surr)	97		81 - 124
Toluene-d8 (Surr)	92		87 - 128

TestAmerica St. Louis

TestAmerica Job ID: 160-26608-1

SDG: SL2802

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-350061/1-A

Client: CH2M Hill Plateau Remediation Company

Matrix: Water

Project/Site: F17-019

Analysis Batch: 350529

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

Prep Batch: 350061

	MB	MR							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	25.0	U	100	25.0	ug/L		02/07/18 12:28	02/09/18 15:53	1
Calcium	300	U	1000	300	ug/L		02/07/18 12:28	02/09/18 15:53	1
Iron	30.0	U	100	30.0	ug/L		02/07/18 12:28	02/09/18 15:53	1
Magnesium	300	U	1000	300	ug/L		02/07/18 12:28	02/09/18 15:53	1
Potassium	1500	U	5000	1500	ug/L		02/07/18 12:28	02/09/18 15:53	1
Sodium	306.4	В	1000	300	ug/L		02/07/18 12:28	02/09/18 15:53	1

Lab Sample ID: LCS 160-350061/2-A

Matrix: Water

Analysis Batch: 350529

•	-
	Prep Type: Total/NA
	Prep Batch: 350061
	0/ Boo

Client Sample ID: Lab Control Sample

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Boron	200	201.2		ug/L		101	80 - 120	
Calcium	10000	10860		ug/L		109	80 - 120	
Iron	10000	10210		ug/L		102	80 - 120	
Magnesium	10000	9884		ug/L		99	80 - 120	
Potassium	10000	10180		ug/L		102	80 - 120	
Sodium	10000	10460		ug/L		105	80 - 120	

Lab Sample ID: 160-26607-B-1-B MS

Matrix: Water

Analysis Batch: 350529

Client Sample	D: Matrix Spik	e
The second secon	T T. (- 1/6)	•

Prep Type: Total/NA Prep Batch: 350061

_	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Boron	62.5	В	200	258.9		ug/L		98	75 - 125	
Calcium	71800		10000	83370	Χ	ug/L		116	75 - 125	
Iron	317		10000	10410		ug/L		101	75 - 125	
Magnesium	21200		10000	31280		ug/L		101	75 - 125	
Potassium	8490		10000	18710		ug/L		102	75 - 125	
Sodium	28000		10000	38300		ug/L		103	75 - 125	

Lab Sample ID: 160-26607-B-1-C MSD

Matrix: Water

Analysis Batch: 350529

Client S	sample	ID: I	Matrix	Spike	Dupl	icate
			Dror	Type	Tota	I/NIA

Prep Type: Total/NA Prep Batch: 350061

Alialysis Dalcii. 330323									Fieh De	illi. St	ו סטטכ
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	62.5	В	200	263.0		ug/L		100	75 - 125	2	20
Calcium	71800		10000	82590	Χ	ug/L		108	75 - 125	1	20
Iron	317		10000	10390		ug/L		101	75 - 125	0	20
Magnesium	21200		10000	31100		ug/L		99	75 - 125	1	20
Potassium	8490		10000	18530		ug/L		100	75 - 125	1	20
Sodium	28000		10000	37740		ug/L		97	75 - 125	1	20

TestAmerica Job ID: 160-26608-1

SDG: SL2802

Method: 6020A - Metals (ICP/MS)

Client: CH2M Hill Plateau Remediation Company

Lab Sample ID: MB 160-350065/1-A

Matrix: Water

Matrix: Water

Project/Site: F17-019

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

Analysis Batch: 351406	MD	МВ						Prep Batch:	350065
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	20.0	U D	50.0	20.0	ug/L		02/07/18 12:30	02/15/18 15:50	2
Arsenic	4.0	UD	10.0	4.0	ug/L		02/07/18 12:30	02/15/18 15:50	2
Cadmium	0.20	UD	0.50	0.20	ug/L		02/07/18 12:30	02/15/18 15:50	2
Chromium	4.0	UD	10.0	4.0	ug/L		02/07/18 12:30	02/15/18 15:50	2
Cobalt	0.90	UD	2.0	0.90	ug/L		02/07/18 12:30	02/15/18 15:50	2
Copper	0.710	BD	1.0	0.40	ug/L		02/07/18 12:30	02/15/18 15:50	2
Manganese	0.90	UD	2.0	0.90	ug/L		02/07/18 12:30	02/15/18 15:50	2
Molybdenum	2.0	UD	5.0	2.0	ug/L		02/07/18 12:30	02/15/18 15:50	2
Nickel	2.0	UD	5.0	2.0	ug/L		02/07/18 12:30	02/15/18 15:50	2
Selenium	2.0	UD	5.0	2.0	ug/L		02/07/18 12:30	02/15/18 15:50	2
Uranium	0.40	UD	1.0	0.40	ug/L		02/07/18 12:30	02/15/18 15:50	2
Zinc	7.5	UD	20.0	7.5	ug/L		02/07/18 12:30	02/15/18 15:50	2

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 350065 %Rec.

Analysis Batch: 351406 LCS LCS Spike **Analyte** Added Result Qualifier Unit D %Rec Limits Aluminum 10000 9366 D ug/L 94 80 - 120 Arsenic 1000 947.8 D ug/L 95 80 - 120 Cadmium 1000 967.0 D ug/L 97 80 - 120 Chromium 1000 1025 D 103 ug/L 80 - 120Cobalt 1000 1040 D ug/L 104 80 - 120 Copper 1000 1035 D ug/L 103 80 - 120 Manganese 1000 1030 D ug/L 103 80 - 120 Molybdenum 500 511.2 D ug/L 102 80 - 120 Nickel 1000 1068 D ug/L 107 80 - 120 430.7 D 80 - 120 Selenium 500 ug/L 86 Uranium 1000 1015 D ug/L 102 80 - 120 Zinc 1000 973.0 D ug/L 97 80 - 120

Lab Sample ID: 160-26607-B-1-E MS

Lab Sample ID: LCS 160-350065/2-A

Matrix: Water

Analysis Batch: 351406

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

Prep Batch: 350065

Alialysis batch. 331400	Sample	Sample	Spike	MS	MS				%Rec.
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Aluminum	20.0	U D	10000	9397	D	ug/L		94	75 - 125
Arsenic	4.0	B D	1000	963.4	D	ug/L		96	75 - 125
Cadmium	0.27	BD	1000	965.5	D	ug/L		96	75 - 125
Chromium	68.9	D	1000	1064	D	ug/L		99	75 - 125
Cobalt	0.90	U D	1000	994.6	D	ug/L		99	75 - 125
Copper	6.0	D	1000	993.7	D	ug/L		99	75 - 125
Manganese	7.5	D	1000	1011	D	ug/L		100	75 - 125
Molybdenum	7.5	D	500	523.3	D	ug/L		103	75 - 125
Nickel	32.9	D	1000	1038	D	ug/L		101	75 - 125
Selenium	7.7	D	500	441.3	D	ug/L		87	75 - 125
Uranium	8.7	D	1000	1052	D	ug/L		104	75 - 125
Zinc	7.5	UD	1000	962.0	D	ug/L		96	75 ₋ 125

TestAmerica St. Louis

TestAmerica Job ID: 160-26608-1

SDG: SL2802

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 160-26607-B-1-F MSD

Client: CH2M Hill Plateau Remediation Company

Matrix: Water

Project/Site: F17-019

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA 35

Analysis Batch: 351406									Prep Batch			
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Aluminum	20.0	U D	10000	9245	D	ug/L		92	75 - 125	2	20	
Arsenic	4.0	BD	1000	966.1	D	ug/L		96	75 - 125	0	20	
Cadmium	0.27	BD	1000	971.2	D	ug/L		97	75 - 125	1	20	
Chromium	68.9	D	1000	1066	D	ug/L		100	75 - 125	0	20	
Cobalt	0.90	U D	1000	1007	D	ug/L		101	75 - 125	1	20	
Copper	6.0	D	1000	1004	D	ug/L		100	75 - 125	1	20	
Manganese	7.5	D	1000	1022	D	ug/L		101	75 - 125	1	20	
Molybdenum	7.5	D	500	522.6	D	ug/L		103	75 - 125	0	20	
Nickel	32.9	D	1000	1028	D	ug/L		100	75 - 125	1	20	
Selenium	7.7	D	500	447.2	D	ug/L		88	75 - 125	1	20	
Uranium	8.7	D	1000	1031	D	ug/L		102	75 - 125	2	20	
Zinc	7.5	UD	1000	969.2	D	ug/L		97	75 - 125	1	20	

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-350645/1

Matrix: Water

Analysis Batch: 350645

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Client Sample ID: Lab Control Sample

90 - 110

Prep Type: Total/NA

Prep Type: Total/NA

	IVID	IAID							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	0.54	U	5.0	0.54	mg/L			02/12/18 20:33	1
Bicarbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			02/12/18 20:33	1
Carbonate Alkalinity as CaCO3	0.54	U	5.0	0.54	mg/L			02/12/18 20:33	1
Hydroxide Alkalinity	0.54	U	5.0	0.54	mg/L			02/12/18 20:33	1

MR MR

Lab Sample ID: HLCS 160-350645/3

Matrix: Water

Analysis Batch: 350645

7 maryolo Batolii 0000-10	Spike	HLCS	HLCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Alkalinity	400	384.0		mg/L		96	90 - 110	
Bicarbonate Alkalinity as CaCO3	400	384 0		ma/l		96	90 - 110	

Lab Sample ID: LCS 160-350645/2

Matrix: Water							Prep Type: Total/NA
Analysis Batch: 350645							
•	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Alkalinity	200	192.0		ma/L		96	90 - 110

192.0

200

mg/L

mg/L

Lab Sample ID: 160-26608-1 MS

Bicarbonate Alkalinity as CaCO3

Client Sample ID: B3H6R3 **Matrix: Water Prep Type: Total/NA Analysis Batch: 350645**

	Sample	Sample	Бріке	IVIS	IVIS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Alkalinity	314		100	418.0		mg/L		104	80 - 120	
Bicarbonate Alkalinity as CaCO3	314		100	418.0		mg/L		104	80 - 120	

TestAmerica St. Louis



TestAmerica Job ID: 160-26608-1

SDG: SL2802

Method: 310.1 - Alkalinity (Continued)

Client: CH2M Hill Plateau Remediation Company

Lab Sample ID: 160-26608-1 DU

Matrix: Water

Project/Site: F17-019

Analysis Batch: 350645

Client Sample ID: B3H6R3

Prep Type: Total/NA

-	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Alkalinity	314		320.0		mg/L		 2	20
Bicarbonate Alkalinity as CaCO3	314		320.0		mg/L		2	20
Carbonate Alkalinity as CaCO3	0.54	U	0.54	U	mg/L		NC	20
Hydroxide Alkalinity	0.54	U	0.54	Ü	mg/L		NC	20

TestAmerica Job ID: 160-26608-1

SDG: SL2802

GC/MS VOA

Project/Site: F17-019

Analysis Batch: 350626

Client: CH2M Hill Plateau Remediation Company

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	8260C	
MB 160-350626/7	Method Blank	Total/NA	Water	8260C	
LCS 160-350626/4	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-350626/5	Lab Control Sample Dup	Total/NA	Water	8260C	
160-26608-1 MS	B3H6R3	Total/NA	Water	8260C	
160-26608-1 MSD	B3H6R3	Total/NA	Water	8260C	

Metals

Prep Batch: 350061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	3010A	
MB 160-350061/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-350061/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-26607-B-1-B MS	Matrix Spike	Total/NA	Water	3010A	
160-26607-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3010A	

Prep Batch: 350065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	3010A	
MB 160-350065/1-A	Method Blank	Total/NA	Water	3010A	
LCS 160-350065/2-A	Lab Control Sample	Total/NA	Water	3010A	
160-26607-B-1-E MS	Matrix Spike	Total/NA	Water	3010A	
160-26607-B-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	3010A	

Analysis Batch: 350529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-350061/1-A	Method Blank	Total/NA	Water	6010C	350061
LCS 160-350061/2-A	Lab Control Sample	Total/NA	Water	6010C	350061
160-26607-B-1-B MS	Matrix Spike	Total/NA	Water	6010C	350061
160-26607-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	6010C	350061

Analysis Batch: 351045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	6010C	350061

Analysis Batch: 351406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	6020A	350065
MB 160-350065/1-A	Method Blank	Total/NA	Water	6020A	350065
LCS 160-350065/2-A	Lab Control Sample	Total/NA	Water	6020A	350065
160-26607-B-1-E MS	Matrix Spike	Total/NA	Water	6020A	350065
160-26607-B-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	6020A	350065

Analysis Batch: 351588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	6020A	350065

TestAmerica St. Louis

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TestAmerica Job ID: 160-26608-1

SDG: SL2802

General Chemistry

Project/Site: F17-019

Client: CH2M Hill Plateau Remediation Company

Analysis Batch: 350645

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-26608-1	B3H6R3	Total/NA	Water	310.1	
MB 160-350645/1	Method Blank	Total/NA	Water	310.1	
HLCS 160-350645/3	Lab Control Sample	Total/NA	Water	310.1	
LCS 160-350645/2	Lab Control Sample	Total/NA	Water	310.1	
160-26608-1 MS	B3H6R3	Total/NA	Water	310.1	
160-26608-1 DU	B3H6R3	Total/NA	Water	310.1	



TestAmerica Job ID: 160-26608-1

SDG: SL2802

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

Matrix: Water Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)				
		DCA	BFB	DBFM	TOL	
Lab Sample ID	Client Sample ID	(75-129)	(81-130)	(81-124)	(87-128)	
160-26608-1	B3H6R3	105	87	96	97	
160-26608-1 MS	B3H6R3	105	85	99	93	
160-26608-1 MSD	B3H6R3	103	86	97	92	
LCS 160-350626/4	Lab Control Sample	102	89	96	95	
LCSD 160-350626/5	Lab Control Sample Dup	99	90	97	96	
MB 160-350626/7	Method Blank	102	92	95	98	

Surrogate Legend

Project/Site: F17-019

DCA = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)