

July 19, 2017

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

4955 Yarrow Street

Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-98743-1

TestAmerica Sample Delivery Group: DN0163

Client Project/Site: S17-006

For:

CH2M Hill Plateau Remediation Company

PO BOX 1600, MS H8-41

Richland, Washington 99352

Attn: Mr. Scot Fitzgerald



Authorized for release by:

7/19/2017 4:02:38 PM

Jamie Ide, Project Manager I

(303)736-0126

jamie.ide@testamericainc.com

Designee for

Darlene Bandy, Project Manager I

(303)736-0100

darlene.bandy@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

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



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Chain of Custody	7
Definitions	10
Method Summary	11
Sample Summary	12
Client Sample Results	13
QC Sample Results	16
QC Association	25
Surrogate Summary	27



SAMPLE ISSUE RESOLUTION (SIR) REPORT	SIR Number: SIR17-0812
	Rev. Number: 0
	Date Initiated: 07/12/2017

<u>SAMPLE EVENT INFORMATION</u>	
SAF NUM(S):	S17-006
LABORATORY:	TADN

<u>SAMPLING INFORMATION</u>	
NUMBER OF SAMPLES:	1
SAMPLE NUMBERS:	B39WK9
SAMPLE MATRIX:	WATER
SDG NUM(S):	DN0163

<u>ISSUE BACKGROUND</u>	
CLASS:	Laboratory Issue
TYPE:	Quality Control Failure
DESCRIPTION:	Method NWTPH_Dx: Surrogate recovery was outside control limits (low) for the following sample: B39WK9 (280-98743-2). The sample had a surrogate recovery of 8 % (control limits = 50-140%). The sample result was non-detect. Matrix interference is not obvious. It can be noted that the MS/MSD performed on this sample exhibited % recoveries within control limits; the surrogate recovery was within control limits for the MS/MSD. The holding time for the extraction expired on 7/3/2017.

<u>RESOLUTION</u>	
PROPOSED RESOLUTION:	TADN proposes to re-extract the sample out of hold; there would be insufficient volume to re-extract an MS/MSD. OR Report the analysis and narrate the low surrogate recovery in the sample.
FINAL RESOLUTION:	Accept propssal to report and narrate the low surrogate recovery.

SUBMITTED BY:	
BANDY, DF _____	07/12/2017 _____
ACCEPTED BY:	
FITZGERALD, SL _____	07/12/2017 _____

Job ID: 280-98743-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: CH2M Hill Plateau Remediation Company

Project: S17-006

Report Number: 280-98743-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

For volatile organic and extractable analyses, the laboratory is not able to achieve project specified QC limits for several analytes. Per CHPRC direction, data have been evaluated using laboratory statistical limits in lieu of project specified limits. All analytes met laboratory statistical limits, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 6/27/2017 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.1° C.

VOLATILE PETROLEUM PRODUCTS

Sample B39WK9 (280-98743-2) was analyzed for Volatile Petroleum Products in accordance with NWTPH_Gx. The samples were analyzed on 06/29/2017.

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

SEMIVOLATILE PETROLEUM PRODUCTS

Sample B39WK9 (280-98743-2) was analyzed for Semivolatile Petroleum Products in accordance with NWTPH_Dx. The samples were prepared on 06/30/2017 and analyzed on 07/07/2017.

The Chain of Custody requests "WTPH_KEROSENE: COMMON" analysis. While TestAmerica Denver holds Washington State (WDOE) accreditation for method NWTPH-Dx, Kerosene is not on the accreditation certificate at this time. As instructed by the client, the laboratory proceeded with the requested analysis.

o-Terphenyl failed the surrogate recovery criteria low for B39WK9 (280-98743-2). The results have been reported per client request. The sample had a surrogate recovery of 8% while the MS/MSD performed on this sample were in control. There is no obvious matrix interference to explain the failure. The sample is out of hold; therefore, as instructed by the client, the data is being reported.

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

DISSOLVED METALS (ICP)

Sample B39RJ3 (280-98743-1) was analyzed for Dissolved Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared and analyzed on 06/30/2017.

Calcium, Iron and Sodium were detected in method blank MB 280-379131/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result

Job ID: 280-98743-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

above the MDL and/or RL, the result has been flagged.

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

TOTAL METALS (ICP)

Sample B39WK9 (280-98743-2) was analyzed for Total Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared and analyzed on 06/30/2017.

The instrument blank for analytical batch 280-379553 contained Iron at concentrations greater than the reporting limit (RL). The associated samples had concentrations below the RL; therefore, re-analysis was not performed. The data have been qualified and reported.

Sodium was detected in method blank MB 280-379130/1-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. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

DISSOLVED METALS (ICPMS)

Sample B39RJ3 (280-98743-1) was analyzed for dissolved metals (ICPMS) in accordance with EPA SW-846 Methods 6020A. The samples were prepared on 06/30/2017 and analyzed on 07/03/2017.

The Chain of Custody requests "6020_METALS_ICPMS: GW 01" analysis. Service List "6020_METALS_ICPMS: GW 01" includes Aluminum and Strontium, and while TestAmerica Denver holds Washington State (WDOE) accreditation for method 6020A, Aluminum and Strontium are currently listed on the certificate as having interim accreditation. TestAmerica Denver is pursuing full WDOE accreditation for these two elements. As instructed by the client, the laboratory proceeded with the requested Aluminum and Strontium analyses by method 6020A.

Zinc failed the recovery criteria low for the MS/MSD of sample B39RJ3 (280-98743-1). The associated LCS was in control; therefore, corrective action was not performed. Additionally, Strontium could not be reliably calculated because the concentrations were present above the instrument calibration range.

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

TOTAL METALS (ICPMS)

Sample B39WK9 (280-98743-2) was analyzed for total metals (ICPMS) in accordance with SW846 6020A. The samples were prepared on 06/30/2017 and analyzed on 07/03/2017.

The Chain of Custody requests "6020_METALS_ICPMS: GW 01" analysis. Service List "6020_METALS_ICPMS: GW 01" includes Aluminum and Strontium, and while TestAmerica Denver holds Washington State (WDOE) accreditation for method 6020A, Aluminum and Strontium are currently listed on the certificate as having interim accreditation. TestAmerica Denver is pursuing full WDOE accreditation for these two elements. As instructed by the client, the laboratory proceeded with the requested Aluminum and Strontium analyses by method 6020A.

Strontium could not be reliably calculated for the MS/MSD performed on sample B39WK9 (280-98743-2) because the concentrations were present above the instrument calibration range.

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

ALKALINITY

Sample B39WK9 (280-98743-2) was analyzed for Alkalinity in accordance with SM20 2320B. The samples were analyzed on 06/30/2017.

Alkalinity as CaCO3 was detected in method blank MB 280-379530/5 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. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.



Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Job ID: 280-98743-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

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

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:

Jamie Ide
Project Manager

1
2
3
4
5
6
7
8
9
10
11

July 19, 2017

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 280-98743-1

SDG Number: DN0163

Login Number: 98743

List Number: 1

Creator: True, Joshua A

List Source: TestAmerica Denver

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	4.1°C
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	

July 19, 2017

50165
CH2M Hill Plateau Remediation Company
 C.O.C.# **S17-006-534**
 Page 1 of 1

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: **KATHY TURNER** / **CHPRC** / **DN0163** / **DA0063** / **6-25-17**
 Telephone No. 509-376-4650
 Contact/Requester: **Karen Waters-Husted**
 Sampling Origin: **Hanford Site**
 Purchase Order/Charge Code: 300071

SAF No. S17-006
 Project Title: **SURV, JUNE 2017**
 Logbook No. **HNF-N-506** / **88886**
 Ice Chest No. **605-184**
 Method of Shipment: **Commercial Carrier**
 Bill of Lading/Air Bill No. **779494104083**
 Priority: **30 Days** / **PRIORITY**
 Offsite Property No. **8097**

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**
 Hold Time: _____
 Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39RJ3	Y	W	JUN 26 2017	1114	1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_CPMS: GW 01	6 Months	HNO3 to pH <2
B39WK9	N	W			1x250-mL G/P	2320_ALKALINITY: COMMON	14 Days	Cool <=6C
B39WK9	N	W			1x500-mL G/P	6010_METALS_ICP: GW 04; 6020_METALS_CPMS: GW 01	6 Months	HNO3 to pH <2
B39WK9	N	W			4x1-L aG	WTPH_DIESEL: COMMON	14/40 Days	HCl to pH <2/Cool <=6C
B39WK9	N	W			5x40-mL aGs*	WTPH_GASOLINE: COMMON	14 Days	HCl to pH <2/Cool <=6C



280-98743 Chain of Custody

4.1 + 0.0 IR #7 transferred by JT 6/27/17

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
KATHY TURNER CHPRC	<i>Kathy Turner</i>	<i>Kathy Turner</i>	JUN 26 2017 1103	Lesly Wall CHPRC	<i>Lesly Wall</i>	<i>Lesly Wall</i>	JUN 26 2017 1103	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drumm Solids, DL = Drumm Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By CHPRC	<i>Lesly Wall</i>	<i>Lesly Wall</i>	JUN 26 2017 1400	FEDEX	<i>Lesly Wall</i>	<i>Lesly Wall</i>	JUN 26 2017 1400	
Relinquished By				<i>Lesly Wall</i>	<i>Lesly Wall</i>	<i>Lesly Wall</i>	JUN 27 2017 0915	
Relinquished By				<i>Lesly Wall</i>	<i>Lesly Wall</i>	<i>Lesly Wall</i>	JUN 27 2017 0915	

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





Shipping | Tracking | Manage | Learn | FedEx Office®

My Profile | Support | Locations | English | Search or tracking number | Subr

Login

FedEx® Tracking

779494104083

Ship date: **Mon 6/26/2017** Actual delivery: **Tue 6/27/2017 9:07 am**

Richland, WA US **Delivered** ARVADA, CO US
Signed for by: J.TRUE

Travel History

Date/Time	Activity	Location
- 6/27/2017 - Tuesday		
9:07 am	Delivered	ARVADA, CO
8:32 am	On FedEx vehicle for delivery	ARVADA, CO
12:40 am	Arrived at FedEx location	MEMPHIS, TN
- 6/26/2017 - Monday		
5:03 pm	Left FedEx origin facility	PASCO, WA
3:15 pm	Picked up	PASCO, WA
2:52 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking number	779494104083	Service	FedEx Priority Overnight
Weight	50 lbs / 22.68 kgs	Dimensions	16x16x17 in.
Signature services	Direct signature required	Delivered To	Shipping/Receiving
Total pieces	1	Total shipment weight	50 lbs / 22.68 kgs
Terms	Third Party	Shipper reference	8094
Packaging	Your Packaging	Special handling section	Deliver Weekday, Additional Handling Surcharge, Direct Signature Required
Standard transit	6/27/2017 by 10:30 am		



Search or tracking number | Subr

<p>Customer Focus</p> <ul style="list-style-type: none"> New Customer Center Small Business Center Service Guide Customer Support <p>Company Information</p> <ul style="list-style-type: none"> About FedEx Careers Investor Relations Subscribe to FedEx email 	<p>Featured Services</p> <ul style="list-style-type: none"> FedEx Delivery Manager FedEx Critical Inventory Logistics FedEx SameDay FedEx Home Delivery FedEx TechConnect FedEx HealthCare Solutions Online Retail Solutions Packaging Services Ancillary Clearance Services <p>Other Resources</p> <ul style="list-style-type: none"> FedEx Compatible Developer Resource Center FedEx Ship Manager Software FedEx Mobile 	<p>Companies</p> <ul style="list-style-type: none"> FedEx Express FedEx Ground FedEx Office FedEx Freight FedEx Custom Critical FedEx Trade Networks FedEx Cross Border FedEx Supply Chain
---	---	---

Follow FedEx United States - English

Ask FedEx

Qualifiers

GC VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.
X	See case narrative notes for explanation of the 'X' flag

Metals

Qualifier	Qualifier Description
U	Analyzed for but not detected.
B	Estimated result. Result is less than the RL, but greater than MDL
N	Recovery exceeds upper or lower control limits
X	See case narrative notes for explanation of the 'X' flag

General Chemistry

Qualifier	Qualifier Description
B	Estimated result. Result is less than the RL, but greater than MDL

Glossary

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

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method	Method Description	Protocol	Laboratory
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC)	NWTPH	TAL DEN
NWTPH-Dx	Northwest - Semi-Volatile Petroleum Products (GC)	NWTPH	TAL DEN
6010C	Metals (ICP)	SW846	TAL DEN
6020A	Metals (ICP/MS)	SW846	TAL DEN
SM 2320B	Alkalinity	SM	TAL DEN

Protocol References:

NWTPH = Northwest Total Petroleum Hydrocarbon

SM = "Standard Methods For The Examination Of Water And Wastewater",

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

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100



July 19, 2017 Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-98743-1	B39RJ3	Water	06/26/17 11:14	06/27/17 09:10
280-98743-2	B39WK9	Water	06/26/17 11:14	06/27/17 09:10

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

July 19 2017 Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Client Sample ID: B39WK9
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	10	U	25	10	ug/L			06/29/17 20:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	90		60 - 140					06/29/17 20:29	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Client Sample ID: B39WK9
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel (C10-C28)	31	U	240	31	ug/L		06/30/17 09:26	07/07/17 20:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	8	X	50 - 140				06/30/17 09:26	07/07/17 20:07	1

Method: 6010C - Metals (ICP)

Client Sample ID: B39WK9
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	102		100	4.4	ug/L		06/30/17 13:50	06/30/17 22:11	1
Calcium	54800		200	34.5	ug/L		06/30/17 13:50	06/30/17 22:11	1
Iron	45.5	B	100	22.0	ug/L		06/30/17 13:50	06/30/17 22:11	1
Magnesium	10900		200	10.7	ug/L		06/30/17 13:50	06/30/17 22:11	1
Potassium	5610		3000	237	ug/L		06/30/17 13:50	06/30/17 22:11	1
Sodium	59600		1000	117	ug/L		06/30/17 13:50	06/30/17 22:11	1
Vanadium	6.5	B	10.0	1.1	ug/L		06/30/17 13:50	06/30/17 22:11	1

Method: 6010C - Metals (ICP) - Dissolved

Client Sample ID: B39RJ3
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	101		100	4.4	ug/L		06/30/17 07:00	06/30/17 17:39	1
Calcium	55500		200	34.5	ug/L		06/30/17 07:00	06/30/17 17:39	1
Iron	22.0	U	100	22.0	ug/L		06/30/17 07:00	06/30/17 17:39	1
Magnesium	11200		200	10.7	ug/L		06/30/17 07:00	06/30/17 17:39	1
Potassium	5630		3000	237	ug/L		06/30/17 07:00	06/30/17 17:39	1
Sodium	59500		1000	117	ug/L		06/30/17 07:00	06/30/17 17:39	1
Vanadium	6.4	B	10.0	1.1	ug/L		06/30/17 07:00	06/30/17 17:39	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: B39WK9
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	25.9	B	50.0	13.0	ug/L		06/30/17 13:50	07/03/17 16:22	1

TestAmerica Denver

July 19, 2017 Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

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

Client Sample ID: B39WK9
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.56	B	2.0	0.40	ug/L		06/30/17 13:50	07/03/17 16:22	1
Arsenic	2.1	B	5.0	0.33	ug/L		06/30/17 13:50	07/03/17 16:22	1
Barium	74.0		1.0	0.29	ug/L		06/30/17 13:50	07/03/17 16:22	1
Beryllium	0.080	U	1.0	0.080	ug/L		06/30/17 13:50	07/03/17 16:22	1
Cadmium	0.27	U	1.0	0.27	ug/L		06/30/17 13:50	07/03/17 16:22	1
Chromium	6.8		2.0	0.50	ug/L		06/30/17 13:50	07/03/17 16:22	1
Cobalt	0.084	B	1.0	0.054	ug/L		06/30/17 13:50	07/03/17 16:22	1
Copper	0.67	B	2.0	0.56	ug/L		06/30/17 13:50	07/03/17 16:22	1
Lead	0.18	U	1.0	0.18	ug/L		06/30/17 13:50	07/03/17 16:22	1
Manganese	1.7		1.0	0.31	ug/L		06/30/17 13:50	07/03/17 16:22	1
Molybdenum	3.7		2.0	0.14	ug/L		06/30/17 13:50	07/03/17 16:22	1
Nickel	0.98	B	2.0	0.30	ug/L		06/30/17 13:50	07/03/17 16:22	1
Selenium	1.4	B	5.0	0.70	ug/L		06/30/17 13:50	07/03/17 16:22	1
Silver	0.033	U	5.0	0.033	ug/L		06/30/17 13:50	07/03/17 16:22	1
Strontium	302		10.0	0.30	ug/L		06/30/17 13:50	07/03/17 16:22	1
Thallium	0.050	U	1.0	0.050	ug/L		06/30/17 13:50	07/03/17 16:22	1
Thorium	1.2	U	5.0	1.2	ug/L		06/30/17 13:50	07/03/17 16:22	1
Tin	0.77	U	10.0	0.77	ug/L		06/30/17 13:50	07/03/17 16:22	1
Uranium	4.1		1.0	0.050	ug/L		06/30/17 13:50	07/03/17 16:22	1
Zinc	2.0	U	10.0	2.0	ug/L		06/30/17 13:50	07/03/17 16:22	1

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

Client Sample ID: B39RJ3
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	13.0	U	50.0	13.0	ug/L		06/30/17 07:00	07/03/17 15:44	1
Antimony	0.62	B	2.0	0.40	ug/L		06/30/17 07:00	07/03/17 15:44	1
Arsenic	2.1	B	5.0	0.33	ug/L		06/30/17 07:00	07/03/17 15:44	1
Barium	73.6		1.0	0.29	ug/L		06/30/17 07:00	07/03/17 15:44	1
Beryllium	0.080	U	1.0	0.080	ug/L		06/30/17 07:00	07/03/17 15:44	1
Cadmium	0.27	U	1.0	0.27	ug/L		06/30/17 07:00	07/03/17 15:44	1
Chromium	6.2		2.0	0.50	ug/L		06/30/17 07:00	07/03/17 15:44	1
Cobalt	0.080	B	1.0	0.054	ug/L		06/30/17 07:00	07/03/17 15:44	1
Copper	0.59	B	2.0	0.56	ug/L		06/30/17 07:00	07/03/17 15:44	1
Lead	0.18	U	1.0	0.18	ug/L		06/30/17 07:00	07/03/17 15:44	1
Manganese	0.31	U	1.0	0.31	ug/L		06/30/17 07:00	07/03/17 15:44	1
Molybdenum	3.7		2.0	0.14	ug/L		06/30/17 07:00	07/03/17 15:44	1
Nickel	1.0	B	2.0	0.30	ug/L		06/30/17 07:00	07/03/17 15:44	1
Selenium	1.6	B	5.0	0.70	ug/L		06/30/17 07:00	07/03/17 15:44	1
Silver	0.033	U	5.0	0.033	ug/L		06/30/17 07:00	07/03/17 15:44	1
Strontium	304		10.0	0.30	ug/L		06/30/17 07:00	07/03/17 15:44	1
Thallium	0.050	U	1.0	0.050	ug/L		06/30/17 07:00	07/03/17 15:44	1
Thorium	1.2	U	5.0	1.2	ug/L		06/30/17 07:00	07/03/17 15:44	1
Tin	0.77	U	10.0	0.77	ug/L		06/30/17 07:00	07/03/17 15:44	1
Uranium	4.0		1.0	0.050	ug/L		06/30/17 07:00	07/03/17 15:44	1
Zinc	13.3	N	10.0	2.0	ug/L		06/30/17 07:00	07/03/17 15:44	1

TestAmerica Denver

July 19, 2017
Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

General Chemistry

Client Sample ID: B39WK9
Date Collected: 06/26/17 11:14
Date Received: 06/27/17 09:10

Lab Sample ID: 280-98743-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3	115000		5000	1070	ug/L			06/30/17 15:52	1

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

July 19, 2017 QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 280-379345/11
Matrix: Water
Analysis Batch: 379345

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	10	U	25	10	ug/L			06/29/17 15:29	1
Surrogate	%Recovery	MB Qualifier	Limits			D	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	92		60 - 140					06/29/17 15:29	1

Lab Sample ID: LCS 280-379345/12
Matrix: Water
Analysis Batch: 379345

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline	101	103		ug/L		103	70 - 149		
Surrogate	%Recovery	LCS Qualifier	Limits			D	%Rec	%Rec. Limits	RPD Limit
a,a,a-Trifluorotoluene	90		60 - 140						

Lab Sample ID: LCSD 280-379345/13
Matrix: Water
Analysis Batch: 379345

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	101	102		ug/L		101	70 - 149	1	27
Surrogate	%Recovery	LCSD Qualifier	Limits			D	%Rec	%Rec. Limits	RPD Limit
a,a,a-Trifluorotoluene	90		60 - 140						

Lab Sample ID: 280-98743-2 MS
Matrix: Water
Analysis Batch: 379345

Client Sample ID: B39WK9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline	10	U	101	109		ug/L		108	70 - 149		
Surrogate	%Recovery	MS Qualifier	Limits			D	%Rec	%Rec. Limits	RPD	RPD Limit	
a,a,a-Trifluorotoluene	84		60 - 140								

Lab Sample ID: 280-98743-2 MSD
Matrix: Water
Analysis Batch: 379345

Client Sample ID: B39WK9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	10	U	101	114		ug/L		113	70 - 149	5	27
Surrogate	%Recovery	MSD Qualifier	Limits			D	%Rec	%Rec. Limits	RPD	RPD Limit	
a,a,a-Trifluorotoluene	93		60 - 140								

TestAmerica Denver

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 280-379401/1-A
Matrix: Water
Analysis Batch: 380246

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 379401

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel (C10-C28)	33	U	250	33	ug/L		06/30/17 09:26	07/07/17 19:18	1
Surrogate	%Recovery	MB Qualifier	Limits			D	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	113		50 - 140				06/30/17 09:26	07/07/17 19:18	1

Lab Sample ID: LCS 280-379401/2-A
Matrix: Water
Analysis Batch: 380246

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 379401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	
Diesel (C10-C28)	2000	1760		ug/L		88	54 - 130	
Surrogate	%Recovery	LCS Qualifier	Limits			D	%Rec	Limits
<i>o</i> -Terphenyl	112		50 - 140					

Lab Sample ID: 280-98743-2 MS
Matrix: Water
Analysis Batch: 380246

Client Sample ID: B39WK9
Prep Type: Total/NA
Prep Batch: 379401

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Diesel (C10-C28)	31	U	1900	1570		ug/L		83	50 - 130
Surrogate	%Recovery	MS Qualifier	Limits			D	%Rec	Limits	
<i>o</i> -Terphenyl	95		50 - 140						

Lab Sample ID: 280-98743-2 MSD
Matrix: Water
Analysis Batch: 380246

Client Sample ID: B39WK9
Prep Type: Total/NA
Prep Batch: 379401

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Diesel (C10-C28)	31	U	1900	1720		ug/L		90	50 - 130	9	31
Surrogate	%Recovery	MSD Qualifier	Limits			D	%Rec	Limits	RPD	Limit	
<i>o</i> -Terphenyl	110		50 - 140								

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 280-379130/1-A
Matrix: Water
Analysis Batch: 379555

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 379130

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	4.4	U	100	4.4	ug/L		06/30/17 13:50	06/30/17 22:06	1
Calcium	34.5	U	200	34.5	ug/L		06/30/17 13:50	06/30/17 22:06	1
Iron	22.0	U	100	22.0	ug/L		06/30/17 13:50	06/30/17 22:06	1
Magnesium	10.7	U	200	10.7	ug/L		06/30/17 13:50	06/30/17 22:06	1
Potassium	237	U	3000	237	ug/L		06/30/17 13:50	06/30/17 22:06	1

TestAmerica Denver

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 280-379130/1-A
Matrix: Water
Analysis Batch: 379555

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 379130

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	159.8	B	1000	117	ug/L		06/30/17 13:50	06/30/17 22:06	1
Vanadium	1.1	U	10.0	1.1	ug/L		06/30/17 13:50	06/30/17 22:06	1

Lab Sample ID: LCS 280-379130/2-A
Matrix: Water
Analysis Batch: 379555

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 379130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1000	998.3		ug/L		100	80 - 120
Calcium	50000	48920		ug/L		98	80 - 120
Iron	1000	978.6		ug/L		98	80 - 120
Magnesium	50000	49780		ug/L		100	80 - 120
Potassium	50000	50550		ug/L		101	80 - 120
Sodium	50000	52500		ug/L		105	80 - 120
Vanadium	500	509.6		ug/L		102	80 - 120

Lab Sample ID: 280-98743-2 MS
Matrix: Water
Analysis Batch: 379555

Client Sample ID: B39WK9
Prep Type: Total/NA
Prep Batch: 379130

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	102		1000	1111		ug/L		101	75 - 125
Calcium	54800		50000	103700		ug/L		98	75 - 125
Iron	45.5	B	1000	1061		ug/L		102	75 - 125
Magnesium	10900		50000	60010		ug/L		98	75 - 125
Potassium	5610		50000	55840		ug/L		100	75 - 125
Sodium	59600		50000	112200		ug/L		105	75 - 125
Vanadium	6.5	B	500	514.9		ug/L		102	75 - 125

Lab Sample ID: 280-98743-2 MSD
Matrix: Water
Analysis Batch: 379555

Client Sample ID: B39WK9
Prep Type: Total/NA
Prep Batch: 379130

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	102		1000	1114		ug/L		101	75 - 125	0	20
Calcium	54800		50000	102200		ug/L		95	75 - 125	1	20
Iron	45.5	B	1000	1036		ug/L		99	75 - 125	2	20
Magnesium	10900		50000	59880		ug/L		98	75 - 125	0	20
Potassium	5610		50000	55570		ug/L		100	75 - 125	0	20
Sodium	59600		50000	110000		ug/L		101	75 - 125	2	20
Vanadium	6.5	B	500	516.7		ug/L		102	75 - 125	0	20

Lab Sample ID: MB 280-379131/1-A
Matrix: Water
Analysis Batch: 379553

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 379131

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	4.4	U	100	4.4	ug/L		06/30/17 07:00	06/30/17 17:34	1
Calcium	65.54	B	200	34.5	ug/L		06/30/17 07:00	06/30/17 17:34	1

TestAmerica Denver

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 280-379131/1-A
Matrix: Water
Analysis Batch: 379553

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 379131

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	42.31	B	100	22.0	ug/L		06/30/17 07:00	06/30/17 17:34	1
Magnesium	10.7	U	200	10.7	ug/L		06/30/17 07:00	06/30/17 17:34	1
Potassium	237	U	3000	237	ug/L		06/30/17 07:00	06/30/17 17:34	1
Sodium	217.2	B	1000	117	ug/L		06/30/17 07:00	06/30/17 17:34	1
Vanadium	1.1	U	10.0	1.1	ug/L		06/30/17 07:00	06/30/17 17:34	1

Lab Sample ID: LCS 280-379131/2-A
Matrix: Water
Analysis Batch: 379553

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 379131

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1000	998.3		ug/L		100	80 - 120
Calcium	50000	50210		ug/L		100	80 - 120
Iron	1000	1021		ug/L		102	80 - 120
Magnesium	50000	51480		ug/L		103	80 - 120
Potassium	50000	51390		ug/L		103	80 - 120
Sodium	50000	53420		ug/L		107	80 - 120
Vanadium	500	519.8		ug/L		104	80 - 120

Lab Sample ID: 280-98743-1 MS
Matrix: Water
Analysis Batch: 379553

Client Sample ID: B39RJ3
Prep Type: Dissolved
Prep Batch: 379131

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	101		1000	1109		ug/L		101	75 - 125
Calcium	55500		50000	105500		ug/L		100	75 - 125
Iron	22.0	U	1000	1007		ug/L		101	75 - 125
Magnesium	11200		50000	63160		ug/L		104	75 - 125
Potassium	5630		50000	56860		ug/L		102	75 - 125
Sodium	59500		50000	111600		ug/L		104	75 - 125
Vanadium	6.4	B	500	536.4		ug/L		106	75 - 125

Lab Sample ID: 280-98743-1 MSD
Matrix: Water
Analysis Batch: 379553

Client Sample ID: B39RJ3
Prep Type: Dissolved
Prep Batch: 379131

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	101		1000	1103		ug/L		100	75 - 125	1	20
Calcium	55500		50000	105600		ug/L		100	75 - 125	0	20
Iron	22.0	U	1000	981.9		ug/L		98	75 - 125	3	20
Magnesium	11200		50000	62440		ug/L		102	75 - 125	1	20
Potassium	5630		50000	56210		ug/L		101	75 - 125	1	20
Sodium	59500		50000	111300		ug/L		104	75 - 125	0	20
Vanadium	6.4	B	500	530.2		ug/L		105	75 - 125	1	20

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 280-379133/1-A
Matrix: Water
Analysis Batch: 379761

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 379133

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	13.0	U	50.0	13.0	ug/L		06/30/17 13:50	07/03/17 16:15	1
Antimony	0.40	U	2.0	0.40	ug/L		06/30/17 13:50	07/03/17 16:15	1
Arsenic	0.33	U	5.0	0.33	ug/L		06/30/17 13:50	07/03/17 16:15	1
Barium	0.29	U	1.0	0.29	ug/L		06/30/17 13:50	07/03/17 16:15	1
Beryllium	0.080	U	1.0	0.080	ug/L		06/30/17 13:50	07/03/17 16:15	1
Cadmium	0.27	U	1.0	0.27	ug/L		06/30/17 13:50	07/03/17 16:15	1
Chromium	0.50	U	2.0	0.50	ug/L		06/30/17 13:50	07/03/17 16:15	1
Cobalt	0.054	U	1.0	0.054	ug/L		06/30/17 13:50	07/03/17 16:15	1
Copper	0.56	U	2.0	0.56	ug/L		06/30/17 13:50	07/03/17 16:15	1
Lead	0.18	U	1.0	0.18	ug/L		06/30/17 13:50	07/03/17 16:15	1
Manganese	0.31	U	1.0	0.31	ug/L		06/30/17 13:50	07/03/17 16:15	1
Molybdenum	0.14	U	2.0	0.14	ug/L		06/30/17 13:50	07/03/17 16:15	1
Nickel	0.30	U	2.0	0.30	ug/L		06/30/17 13:50	07/03/17 16:15	1
Selenium	0.70	U	5.0	0.70	ug/L		06/30/17 13:50	07/03/17 16:15	1
Silver	0.033	U	5.0	0.033	ug/L		06/30/17 13:50	07/03/17 16:15	1
Strontium	0.30	U	10.0	0.30	ug/L		06/30/17 13:50	07/03/17 16:15	1
Thallium	0.050	U	1.0	0.050	ug/L		06/30/17 13:50	07/03/17 16:15	1
Thorium	1.2	U	5.0	1.2	ug/L		06/30/17 13:50	07/03/17 16:15	1
Tin	0.77	U	10.0	0.77	ug/L		06/30/17 13:50	07/03/17 16:15	1
Uranium	0.050	U	1.0	0.050	ug/L		06/30/17 13:50	07/03/17 16:15	1
Zinc	2.0	U	10.0	2.0	ug/L		06/30/17 13:50	07/03/17 16:15	1

Lab Sample ID: LCS 280-379133/2-A
Matrix: Water
Analysis Batch: 379761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 379133

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	400	404.4		ug/L		101	80 - 120
Antimony	40.0	38.59		ug/L		96	80 - 120
Arsenic	40.0	38.46		ug/L		96	80 - 120
Barium	40.0	39.00		ug/L		97	80 - 120
Beryllium	40.0	38.35		ug/L		96	80 - 120
Cadmium	40.0	39.31		ug/L		98	80 - 120
Chromium	40.0	40.03		ug/L		100	80 - 120
Cobalt	40.0	41.01		ug/L		103	80 - 120
Copper	40.0	40.06		ug/L		100	80 - 120
Lead	40.0	40.45		ug/L		101	80 - 120
Manganese	40.0	39.63		ug/L		99	80 - 120
Molybdenum	40.0	42.05		ug/L		105	80 - 120
Nickel	40.0	40.51		ug/L		101	80 - 120
Selenium	40.0	36.86		ug/L		92	80 - 120
Silver	40.0	40.30		ug/L		101	80 - 120
Strontium	40.0	40.33		ug/L		101	80 - 120
Thallium	40.0	38.87		ug/L		97	80 - 120
Thorium	40.0	40.64		ug/L		102	80 - 120
Tin	40.0	40.79		ug/L		102	80 - 120
Uranium	40.0	41.16		ug/L		103	80 - 120
Zinc	40.0	39.68		ug/L		99	80 - 120

TestAmerica Denver

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

Lab Sample ID: 280-98743-2 MS

Matrix: Water

Analysis Batch: 379761

Client Sample ID: B39WK9

Prep Type: Total/NA

Prep Batch: 379133

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aluminum	25.9	B	400	405.6		ug/L		95	75 - 125
Antimony	0.56	B	40.0	40.40		ug/L		100	75 - 125
Arsenic	2.1	B	40.0	40.96		ug/L		97	75 - 125
Barium	74.0		40.0	111.9		ug/L		95	75 - 125
Beryllium	0.080	U	40.0	41.86		ug/L		105	75 - 125
Cadmium	0.27	U	40.0	40.07		ug/L		100	75 - 125
Chromium	6.8		40.0	46.15		ug/L		98	75 - 125
Cobalt	0.084	B	40.0	39.63		ug/L		99	75 - 125
Copper	0.67	B	40.0	39.39		ug/L		97	75 - 125
Lead	0.18	U	40.0	39.34		ug/L		98	75 - 125
Manganese	1.7		40.0	42.11		ug/L		101	75 - 125
Molybdenum	3.7		40.0	45.25		ug/L		104	75 - 125
Nickel	0.98	B	40.0	40.20		ug/L		98	75 - 125
Selenium	1.4	B	40.0	38.58		ug/L		93	75 - 125
Silver	0.033	U	40.0	39.66		ug/L		99	75 - 125
Strontium	302		40.0	331.7	X	ug/L		75	75 - 125
Thallium	0.050	U	40.0	38.38		ug/L		96	75 - 125
Thorium	1.2	U	40.0	40.83		ug/L		102	75 - 125
Tin	0.77	U	40.0	41.76		ug/L		104	75 - 125
Uranium	4.1		40.0	46.22		ug/L		105	75 - 125
Zinc	2.0	U	40.0	40.26		ug/L		101	75 - 125

Lab Sample ID: 280-98743-2 MSD

Matrix: Water

Analysis Batch: 379761

Client Sample ID: B39WK9

Prep Type: Total/NA

Prep Batch: 379133

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aluminum	25.9	B	400	424.3		ug/L		100	75 - 125	5	20
Antimony	0.56	B	40.0	40.83		ug/L		101	75 - 125	1	20
Arsenic	2.1	B	40.0	41.30		ug/L		98	75 - 125	1	20
Barium	74.0		40.0	114.2		ug/L		101	75 - 125	2	20
Beryllium	0.080	U	40.0	41.07		ug/L		103	75 - 125	2	20
Cadmium	0.27	U	40.0	39.59		ug/L		99	75 - 125	1	20
Chromium	6.8		40.0	46.57		ug/L		99	75 - 125	1	20
Cobalt	0.084	B	40.0	39.80		ug/L		99	75 - 125	0	20
Copper	0.67	B	40.0	39.73		ug/L		98	75 - 125	1	20
Lead	0.18	U	40.0	38.89		ug/L		97	75 - 125	1	20
Manganese	1.7		40.0	42.17		ug/L		101	75 - 125	0	20
Molybdenum	3.7		40.0	46.05		ug/L		106	75 - 125	2	20
Nickel	0.98	B	40.0	40.04		ug/L		98	75 - 125	0	20
Selenium	1.4	B	40.0	38.68		ug/L		93	75 - 125	0	20
Silver	0.033	U	40.0	38.88		ug/L		97	75 - 125	2	20
Strontium	302		40.0	343.6	X	ug/L		104	75 - 125	4	20
Thallium	0.050	U	40.0	37.92		ug/L		95	75 - 125	1	20
Thorium	1.2	U	40.0	40.44		ug/L		101	75 - 125	1	20
Tin	0.77	U	40.0	41.06		ug/L		103	75 - 125	2	20
Uranium	4.1		40.0	45.94		ug/L		105	75 - 125	1	20
Zinc	2.0	U	40.0	40.09		ug/L		100	75 - 125	0	20

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

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

Lab Sample ID: MB 280-379132/1-A
Matrix: Water
Analysis Batch: 379761

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 379132

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	13.0	U	50.0	13.0	ug/L		06/30/17 07:00	07/03/17 15:37	1
Antimony	0.40	U	2.0	0.40	ug/L		06/30/17 07:00	07/03/17 15:37	1
Arsenic	0.33	U	5.0	0.33	ug/L		06/30/17 07:00	07/03/17 15:37	1
Barium	0.29	U	1.0	0.29	ug/L		06/30/17 07:00	07/03/17 15:37	1
Beryllium	0.080	U	1.0	0.080	ug/L		06/30/17 07:00	07/03/17 15:37	1
Cadmium	0.27	U	1.0	0.27	ug/L		06/30/17 07:00	07/03/17 15:37	1
Chromium	0.50	U	2.0	0.50	ug/L		06/30/17 07:00	07/03/17 15:37	1
Cobalt	0.054	U	1.0	0.054	ug/L		06/30/17 07:00	07/03/17 15:37	1
Copper	0.56	U	2.0	0.56	ug/L		06/30/17 07:00	07/03/17 15:37	1
Lead	0.18	U	1.0	0.18	ug/L		06/30/17 07:00	07/03/17 15:37	1
Manganese	0.31	U	1.0	0.31	ug/L		06/30/17 07:00	07/03/17 15:37	1
Molybdenum	0.14	U	2.0	0.14	ug/L		06/30/17 07:00	07/03/17 15:37	1
Nickel	0.30	U	2.0	0.30	ug/L		06/30/17 07:00	07/03/17 15:37	1
Selenium	0.70	U	5.0	0.70	ug/L		06/30/17 07:00	07/03/17 15:37	1
Silver	0.033	U	5.0	0.033	ug/L		06/30/17 07:00	07/03/17 15:37	1
Strontium	0.30	U	10.0	0.30	ug/L		06/30/17 07:00	07/03/17 15:37	1
Thallium	0.050	U	1.0	0.050	ug/L		06/30/17 07:00	07/03/17 15:37	1
Thorium	1.2	U	5.0	1.2	ug/L		06/30/17 07:00	07/03/17 15:37	1
Tin	0.77	U	10.0	0.77	ug/L		06/30/17 07:00	07/03/17 15:37	1
Uranium	0.050	U	1.0	0.050	ug/L		06/30/17 07:00	07/03/17 15:37	1
Zinc	2.0	U	10.0	2.0	ug/L		06/30/17 07:00	07/03/17 15:37	1

Lab Sample ID: LCS 280-379132/2-A
Matrix: Water
Analysis Batch: 379761

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 379132

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	400	400.8		ug/L		100	80 - 120
Antimony	40.0	38.70		ug/L		97	80 - 120
Arsenic	40.0	39.33		ug/L		98	80 - 120
Barium	40.0	40.25		ug/L		101	80 - 120
Beryllium	40.0	41.41		ug/L		104	80 - 120
Cadmium	40.0	40.89		ug/L		102	80 - 120
Chromium	40.0	41.06		ug/L		103	80 - 120
Cobalt	40.0	41.49		ug/L		104	80 - 120
Copper	40.0	41.15		ug/L		103	80 - 120
Lead	40.0	41.23		ug/L		103	80 - 120
Manganese	40.0	40.76		ug/L		102	80 - 120
Molybdenum	40.0	42.32		ug/L		106	80 - 120
Nickel	40.0	41.10		ug/L		103	80 - 120
Selenium	40.0	39.26		ug/L		98	80 - 120
Silver	40.0	41.53		ug/L		104	80 - 120
Strontium	40.0	41.22		ug/L		103	80 - 120
Thallium	40.0	40.04		ug/L		100	80 - 120
Thorium	40.0	41.47		ug/L		104	80 - 120
Tin	40.0	41.58		ug/L		104	80 - 120
Uranium	40.0	42.82		ug/L		107	80 - 120
Zinc	40.0	41.12		ug/L		103	80 - 120

TestAmerica Denver

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

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

Lab Sample ID: 280-98743-1 MS

Matrix: Water

Analysis Batch: 379761

Client Sample ID: B39RJ3

Prep Type: Dissolved

Prep Batch: 379132

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aluminum	13.0	U	400	407.6		ug/L		102	75 - 125
Antimony	0.62	B	40.0	40.02		ug/L		99	75 - 125
Arsenic	2.1	B	40.0	42.33		ug/L		101	75 - 125
Barium	73.6		40.0	115.6		ug/L		105	75 - 125
Beryllium	0.080	U	40.0	42.21		ug/L		106	75 - 125
Cadmium	0.27	U	40.0	39.75		ug/L		99	75 - 125
Chromium	6.2		40.0	46.44		ug/L		101	75 - 125
Cobalt	0.080	B	40.0	40.25		ug/L		100	75 - 125
Copper	0.59	B	40.0	40.04		ug/L		99	75 - 125
Lead	0.18	U	40.0	39.84		ug/L		100	75 - 125
Manganese	0.31	U	40.0	40.47		ug/L		101	75 - 125
Molybdenum	3.7		40.0	46.58		ug/L		107	75 - 125
Nickel	1.0	B	40.0	40.63		ug/L		99	75 - 125
Selenium	1.6	B	40.0	39.75		ug/L		95	75 - 125
Silver	0.033	U	40.0	39.85		ug/L		100	75 - 125
Strontium	304		40.0	344.9	X	ug/L		103	75 - 125
Thallium	0.050	U	40.0	38.99		ug/L		97	75 - 125
Thorium	1.2	U	40.0	40.96		ug/L		102	75 - 125
Tin	0.77	U	40.0	40.99		ug/L		102	75 - 125
Uranium	4.0		40.0	46.61		ug/L		106	75 - 125
Zinc	13.3	N	40.0	42.19	N	ug/L		72	75 - 125

Lab Sample ID: 280-98743-1 MSD

Matrix: Water

Analysis Batch: 379761

Client Sample ID: B39RJ3

Prep Type: Dissolved

Prep Batch: 379132

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aluminum	13.0	U	400	392.4		ug/L		98	75 - 125	4	20
Antimony	0.62	B	40.0	40.41		ug/L		99	75 - 125	1	20
Arsenic	2.1	B	40.0	42.50		ug/L		101	75 - 125	0	20
Barium	73.6		40.0	112.9		ug/L		98	75 - 125	2	20
Beryllium	0.080	U	40.0	42.69		ug/L		107	75 - 125	1	20
Cadmium	0.27	U	40.0	40.12		ug/L		100	75 - 125	1	20
Chromium	6.2		40.0	46.50		ug/L		101	75 - 125	0	20
Cobalt	0.080	B	40.0	40.67		ug/L		101	75 - 125	1	20
Copper	0.59	B	40.0	40.71		ug/L		100	75 - 125	2	20
Lead	0.18	U	40.0	40.76		ug/L		102	75 - 125	2	20
Manganese	0.31	U	40.0	41.22		ug/L		103	75 - 125	2	20
Molybdenum	3.7		40.0	46.39		ug/L		107	75 - 125	0	20
Nickel	1.0	B	40.0	41.14		ug/L		100	75 - 125	1	20
Selenium	1.6	B	40.0	40.17		ug/L		97	75 - 125	1	20
Silver	0.033	U	40.0	40.24		ug/L		101	75 - 125	1	20
Strontium	304		40.0	334.4	X	ug/L		77	75 - 125	3	20
Thallium	0.050	U	40.0	39.64		ug/L		99	75 - 125	2	20
Thorium	1.2	U	40.0	42.41		ug/L		106	75 - 125	3	20
Tin	0.77	U	40.0	40.90		ug/L		102	75 - 125	0	20
Uranium	4.0		40.0	47.86		ug/L		110	75 - 125	3	20
Zinc	13.3	N	40.0	41.33	N	ug/L		70	75 - 125	2	20

TestAmerica Denver

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-379530/5
Matrix: Water
Analysis Batch: 379530

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3	3020	B	5000	1070	ug/L			06/30/17 15:46	1

Lab Sample ID: LCS 280-379530/4
Matrix: Water
Analysis Batch: 379530

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity as CaCO3	200000	201100		ug/L		101	80 - 120

Lab Sample ID: 280-98743-2 DU
Matrix: Water
Analysis Batch: 379530

Client Sample ID: B39WK9
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity as CaCO3	115000		115700		ug/L		0.8	20

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

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

GC VOA

Analysis Batch: 379345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	NWTPH-Gx	
MB 280-379345/11	Method Blank	Total/NA	Water	NWTPH-Gx	
LCS 280-379345/12	Lab Control Sample	Total/NA	Water	NWTPH-Gx	
LCS 280-379345/13	Lab Control Sample Dup	Total/NA	Water	NWTPH-Gx	
280-98743-2 MS	B39WK9	Total/NA	Water	NWTPH-Gx	
280-98743-2 MSD	B39WK9	Total/NA	Water	NWTPH-Gx	

GC Semi VOA

Prep Batch: 379401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	3510C	
MB 280-379401/1-A	Method Blank	Total/NA	Water	3510C	
LCS 280-379401/2-A	Lab Control Sample	Total/NA	Water	3510C	
280-98743-2 MS	B39WK9	Total/NA	Water	3510C	
280-98743-2 MSD	B39WK9	Total/NA	Water	3510C	

Analysis Batch: 380246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	NWTPH-Dx	379401
MB 280-379401/1-A	Method Blank	Total/NA	Water	NWTPH-Dx	379401
LCS 280-379401/2-A	Lab Control Sample	Total/NA	Water	NWTPH-Dx	379401
280-98743-2 MS	B39WK9	Total/NA	Water	NWTPH-Dx	379401
280-98743-2 MSD	B39WK9	Total/NA	Water	NWTPH-Dx	379401

Metals

Prep Batch: 379130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	3010A	
MB 280-379130/1-A	Method Blank	Total/NA	Water	3010A	
LCS 280-379130/2-A	Lab Control Sample	Total/NA	Water	3010A	
280-98743-2 MS	B39WK9	Total/NA	Water	3010A	
280-98743-2 MSD	B39WK9	Total/NA	Water	3010A	

Prep Batch: 379131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-1	B39RJ3	Dissolved	Water	3005A	
MB 280-379131/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-379131/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-98743-1 MS	B39RJ3	Dissolved	Water	3005A	
280-98743-1 MSD	B39RJ3	Dissolved	Water	3005A	

Prep Batch: 379132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-1	B39RJ3	Dissolved	Water	3005A	
MB 280-379132/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-379132/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-98743-1 MS	B39RJ3	Dissolved	Water	3005A	
280-98743-1 MSD	B39RJ3	Dissolved	Water	3005A	

TestAmerica Denver

Metals (Continued)

Prep Batch: 379133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	3020A	
MB 280-379133/1-A	Method Blank	Total/NA	Water	3020A	
LCS 280-379133/2-A	Lab Control Sample	Total/NA	Water	3020A	
280-98743-2 MS	B39WK9	Total/NA	Water	3020A	
280-98743-2 MSD	B39WK9	Total/NA	Water	3020A	

Analysis Batch: 379553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-1	B39RJ3	Dissolved	Water	6010C	379131
MB 280-379131/1-A	Method Blank	Total Recoverable	Water	6010C	379131
LCS 280-379131/2-A	Lab Control Sample	Total Recoverable	Water	6010C	379131
280-98743-1 MS	B39RJ3	Dissolved	Water	6010C	379131
280-98743-1 MSD	B39RJ3	Dissolved	Water	6010C	379131

Analysis Batch: 379555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	6010C	379130
MB 280-379130/1-A	Method Blank	Total/NA	Water	6010C	379130
LCS 280-379130/2-A	Lab Control Sample	Total/NA	Water	6010C	379130
280-98743-2 MS	B39WK9	Total/NA	Water	6010C	379130
280-98743-2 MSD	B39WK9	Total/NA	Water	6010C	379130

Analysis Batch: 379761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-1	B39RJ3	Dissolved	Water	6020A	379132
280-98743-2	B39WK9	Total/NA	Water	6020A	379133
MB 280-379132/1-A	Method Blank	Total Recoverable	Water	6020A	379132
MB 280-379133/1-A	Method Blank	Total/NA	Water	6020A	379133
LCS 280-379132/2-A	Lab Control Sample	Total Recoverable	Water	6020A	379132
LCS 280-379133/2-A	Lab Control Sample	Total/NA	Water	6020A	379133
280-98743-1 MS	B39RJ3	Dissolved	Water	6020A	379132
280-98743-1 MSD	B39RJ3	Dissolved	Water	6020A	379132
280-98743-2 MS	B39WK9	Total/NA	Water	6020A	379133
280-98743-2 MSD	B39WK9	Total/NA	Water	6020A	379133

General Chemistry

Analysis Batch: 379530

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98743-2	B39WK9	Total/NA	Water	SM 2320B	
MB 280-379530/5	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-379530/4	Lab Control Sample	Total/NA	Water	SM 2320B	
280-98743-2 DU	B39WK9	Total/NA	Water	SM 2320B	

Client: CH2M Hill Plateau Remediation Company
Project/Site: S17-006

TestAmerica Job ID: 280-98743-1
SDG: DN0163

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TFT1 (60-140)
280-98743-2	B39WK9	90
280-98743-2 MS	B39WK9	84
280-98743-2 MSD	B39WK9	93
LCS 280-379345/12	Lab Control Sample	90
LCSD 280-379345/13	Lab Control Sample Dup	90
MB 280-379345/11	Method Blank	92

Surrogate Legend

TFT = a,a,a-Trifluorotoluene

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTPH (50-140)
280-98743-2	B39WK9	8 X
280-98743-2 MS	B39WK9	95
280-98743-2 MSD	B39WK9	110
LCS 280-379401/2-A	Lab Control Sample	112
MB 280-379401/1-A	Method Blank	113

Surrogate Legend

OTPH = o-Terphenyl