

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: 280-114135-1
TestAmerica Sample Delivery Group: DN0458
Client Project/Site: F18-026

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
9/24/2018 5:29:27 PM

Darlene Bandy, Project Manager I
(303)736-0188
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.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Receipt Checklists	4
Chain of Custody	5
Definitions	8
Method Summary	9
Sample Summary	10
Client Sample Results	11
QC Sample Results	12
QC Association	14
Surrogate Summary	15

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
SDG: DN0458

Job ID: 280-114135-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: CH2M Hill Plateau Remediation Company

Project: F18-026

Report Number: 280-114135-1

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.

RECEIPT

The samples were received on 9/8/2018 8:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9° C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples B3J7B8 (280-114135-1) and B3J7B4 (280-114135-2) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 09/19/2018.

No 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:

Darlene Bandy
Project Manager

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 280-114135-1

SDG Number: DN0458

Login Number: 114135**List Number: 1****Creator: Rhoades, Joseph P****List Source: TestAmerica Denver**

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	70 CPM
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	4.9 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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F18-026-186	PAGE 1 OF 1
COLLECTOR G.C. HOFFMAN/CHPRC	COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA	REQUIRED TAT 15 Days	
SAMPLING LOCATION C9922, OPTIONAL FXR	PROJECT DESIGNATION 100-KR-4 Long Term & Interm Action Monitoring - Water	FIELD LOGBOOK NO. HNF-N-645-13-18	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
ICE CHEST NO. GWS-348	ACTUAL SAMPLE DEPTH 72.23	OFFSITE PROPERTY NO. 9926	BILL OF LADING/AIR BILL NO. 773167818354	ORIGINAL	
SHIPPED TO TestAmerica Denver					

MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=Solids O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION HCl or H2SO4 to pH <2/Cool <=6C	HOLDING TIME 14 Days	TYPE OF CONTAINER aGS*	NO. OF CONTAINER(S) 5	VOLUME 40mL	SAMPLE ANALYSIS 8760 VOL GCN S: COPPER (Chlorination e)
SPECIAL HANDLING AND/OR STORAGE N/A							
SAMPLE NO. 83J788	FILTERED No	MATRIX* WATER	SAMPLE DATE SEP 07 2018	SAMPLE TIME 1226			



128
4.4 to 0.5 xel AP 9/8/18

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM G.C. HOFFMAN/CHPRC	DATE/TIME SEP 07 2018	SIGN/ PRINT NAMES RECEIVED BY/STORED IN Janelle Zupker CHPRC	DATE/TIME SEP 07 2018 1330	SPECIAL INSTRUCTIONS TRVL-18-104
Janelle Zupker CHPRC		Jessica Cant	9/8/18 1845	
FEDEX				
DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSED BY	DATE/TIME		



CH2MHill Plateau Remediation Company *62 lbs* **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** **PAGE 1 OF 1**

COLLECTOR C.C. HOFFMAN/CHPRC **COMPANY CONTACT** LYNCH, SA **TELEPHONE NO.** 373-5586 **PROJECT COORDINATOR** LYNCH, SA **REQUIRED TAT** 15 Days

SAMPLING LOCATION C9922, POST DEVELOPMENT **PROJECT DESIGNATION** 100-KR-4 Long Term & Interim Action Monitoring - Water **SAF NO.** F18-026 **METHOD OF SHIPMENT** ORIGINAL

ICE CHEST NO. CWS-395 **FIELD LOGBOOK NO.** HNF-N-645 13-18 **ACTUAL SAMPLE DEPTH** 72.23 **PURCHASE ORDER/CHARGE CODE** 304762

SHIPPED TO TestAmerica Denver **OFFSITE PROPERTY NO.** 99124 **BILL OF LADING/AIR BILL NO.** 7731 6781 8354

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS
A=Air DL=Drum L=Liquid DS=Drum S=Soil O=Oil SE=Sediment T=Tissue V=Vegetation W=Water WR=Wipe X=Other	*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	HCl or H2SO4 to pH <2/Cool <=6C	14 Days	aGS*	5	46mL	8260_VOA_GCM S1_COMMON (Trichloroethen e);

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3J7B4	No	WATER	SEP 07 2018	1226

CHAIN OF POSSESSION **RELINQUISHED BY/REMOVED FROM** **DATE/TIME** **SIGN/ PRINT NAMES** **RECEIVED BY/STORED IN** **DATE/TIME** **SPECIAL INSTRUCTIONS**

C.C. HOFFMAN/CHPRC *[Signature]* **SEP 07 2018** **1:50 PM** **Janelle Zunker** **CHPRC** **SEP 07 2018** **1:50 PM** **TRVL-18-104**

Janelle Zunker **CHPRC** **SEP 07 2018** **1:50 PM** **Jessica Quist** **FEDEX** **SEP 07 2018** **9:18 AM**

FINAL SAMPLE DISPOSITION **DISPOSAL METHOD** **DATE/TIME**

PRINTED ON 4/3/2018 **FSR ID = FSR59327** **TRVL NUM = TRVL-18-104** **A-6003-618 (REV 3)**





[Shipping](#)

[Tracking](#)

[Printing Services](#)

[Locations](#)

[Support](#)

[Sign In](#)

TRACK ANOTHER SHIPMENT

773167818354

Delivered
Saturday 9/08/2018 at 8:40 am

DELIVERED

Signed for by: A.PAUL

[GET STATUS UPDATES](#)
[OBTAIN PROOF OF DELIVERY](#)

FROM
Richland, WA US

TO
ARVADA, CO US

Travel History

Shipment Facts

9/08/2018 - Saturday

8:40 am

Delivered
ARVADA, CO

[Expand History](#)

9/07/2018 - Friday

3:03 pm

Picked up
PASCO, WA

Ask FedEx

OUR COMPANY

[About FedEx](#)
[Our Portfolio](#)
[Investor Relations](#)
[Careers](#)

[FedEx Blog](#)
[Corporate Responsibility](#)
[Newsroom](#)
[Contact Us](#)

MORE FROM FEDEX

[FedEx Compatible](#)
[Developer Resource Center](#)
[FedEx Cross Border](#)

LANGUAGE

[Change Country](#)

English

Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
SDG: DN0458

Qualifiers

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.

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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
SDG: DN0458

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN

Protocol References:

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



Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
SDG: DN0458

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-114135-1	B3J7B8	Water	09/07/18 12:26	09/08/18 08:45
280-114135-2	B3J7B4	Water	09/07/18 12:26	09/08/18 08:45

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
 SDG: DN0458

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

Client Sample ID: B3J7B8
Date Collected: 09/07/18 12:26
Date Received: 09/08/18 08:45

Lab Sample ID: 280-114135-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.16	U	1.0	0.16	ug/L			09/19/18 18:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 127					09/19/18 18:17	1
4-Bromofluorobenzene (Surr)	108		78 - 120					09/19/18 18:17	1
Dibromofluoromethane (Surr)	108		77 - 120					09/19/18 18:17	1
Toluene-d8 (Surr)	108		80 - 125					09/19/18 18:17	1

Client Sample ID: B3J7B4
Date Collected: 09/07/18 12:26
Date Received: 09/08/18 08:45

Lab Sample ID: 280-114135-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.59	J	1.0	0.16	ug/L			09/19/18 19:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	106		70 - 127					09/19/18 19:12	1
4-Bromofluorobenzene (Surr)	113		78 - 120					09/19/18 19:12	1
Dibromofluoromethane (Surr)	108		77 - 120					09/19/18 19:12	1
Toluene-d8 (Surr)	108		80 - 125					09/19/18 19:12	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
SDG: DN0458

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

Lab Sample ID: MB 280-430130/6
Matrix: Water
Analysis Batch: 430130

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.16	U	1.0	0.16	ug/L			09/19/18 12:26	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 127					09/19/18 12:26	1
4-Bromofluorobenzene (Surr)	108		78 - 120					09/19/18 12:26	1
Dibromofluoromethane (Surr)	94		77 - 120					09/19/18 12:26	1
Toluene-d8 (Surr)	101		80 - 125					09/19/18 12:26	1

Lab Sample ID: LCS 280-430130/4
Matrix: Water
Analysis Batch: 430130

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	5.00	5.10		ug/L		102	65 - 135
Surrogate	%Recovery	LCS Qualifier	Limits				
1,2-Dichloroethane-d4 (Surr)	86		70 - 127				
4-Bromofluorobenzene (Surr)	97		78 - 120				
Dibromofluoromethane (Surr)	90		77 - 120				
Toluene-d8 (Surr)	96		80 - 125				

Lab Sample ID: LCSD 280-430130/5
Matrix: Water
Analysis Batch: 430130

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
Trichloroethene	5.00	5.33		ug/L		107	65 - 135	4	20
Surrogate	%Recovery	LCSD Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	86		70 - 127						
4-Bromofluorobenzene (Surr)	93		78 - 120						
Dibromofluoromethane (Surr)	90		77 - 120						
Toluene-d8 (Surr)	94		80 - 125						

Lab Sample ID: 280-114135-1 MS
Matrix: Water
Analysis Batch: 430130

Client Sample ID: B3J7B8
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	0.16	U	10.0	9.32		ug/L		93	65 - 135
Surrogate	%Recovery	MS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	100		70 - 127						
4-Bromofluorobenzene (Surr)	103		78 - 120						
Dibromofluoromethane (Surr)	104		77 - 120						
Toluene-d8 (Surr)	102		80 - 125						

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
 SDG: DN0458

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

Lab Sample ID: 280-114135-1 MSD

Matrix: Water

Analysis Batch: 430130

Client Sample ID: B3J7B8

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichloroethene	0.16	U	10.0	9.41		ug/L		94	65 - 135	1	20
Surrogate	%Recovery	MSD Qualifier	MSD Limits								
1,2-Dichloroethane-d4 (Surr)	107		70 - 127								
4-Bromofluorobenzene (Surr)	104		78 - 120								
Dibromofluoromethane (Surr)	106		77 - 120								
Toluene-d8 (Surr)	102		80 - 125								

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
 SDG: DN0458

GC/MS VOA

Analysis Batch: 430130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-114135-1	B3J7B8	Total/NA	Water	8260B	
280-114135-2	B3J7B4	Total/NA	Water	8260B	
MB 280-430130/6	Method Blank	Total/NA	Water	8260B	
LCS 280-430130/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 280-430130/5	Lab Control Sample Dup	Total/NA	Water	8260B	
280-114135-1 MS	B3J7B8	Total/NA	Water	8260B	
280-114135-1 MSD	B3J7B8	Total/NA	Water	8260B	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

Surrogate Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-026

TestAmerica Job ID: 280-114135-1
 SDG: DN0458

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (70-127)	BFB (78-120)	DBFM (77-120)	TOL (80-125)
280-114135-1	B3J7B8	104	108	108	108
280-114135-1 MS	B3J7B8	100	103	104	102
280-114135-1 MSD	B3J7B8	107	104	106	102
280-114135-2	B3J7B4	106	113	108	108
LCS 280-430130/4	Lab Control Sample	86	97	90	96
LCSD 280-430130/5	Lab Control Sample Dup	86	93	90	94
MB 280-430130/6	Method Blank	91	108	94	101

Surrogate Legend

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

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)