

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: 160-27323-1

TestAmerica Sample Delivery Group: SL2823
Client Project/Site: F16-046

For:

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

Attn: Mr. Scot Fitzgerald



Authorized for release by:
3/22/2018 3:51:42 PM

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



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www.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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Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

Job ID: 160-27323-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
March 22, 2018
Attention: Scot Fitzgerald

SDG : SL2823
Number of Samples : 8 samples
Sample Matrix : Water
Data Deliverable : Summary
Date SDG Closed : March 14, 2018

II. Introduction

On March 14, 8 samples were 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 Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F16-046

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 non-conformance in the sections below.



Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

Job ID: 160-27323-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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 contamination.
- **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.

Volatiles

Batch: 356224

The sample B3HXR4 (160-27323-5) was received unpreserved. However it was run within 7 day hold time. VOA vials are not checked at the time of sample receipt due to the potential loss of volatile constituents.

The continuing calibration verification (CCV) associated with batch 160-356224 did not meet the minimum relative response factor QC limits for Acetone. A low level CCV was analyzed at the base reporting limit of 1ug/L and the affected analyte was detected. Target analytes recovering above the reporting limit will be qualified and reported. (CCVIS 160-356224/4).

The continuing calibration verification (CCV) associated with batch 160-356224 recovered above the upper control limit for Chloromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 160-356224/4).

The following samples were diluted due to the nature of the sample matrix: B3HXR9 (160-27323-2), B3HXV0 (160-27323-6) and B3HMT5 (160-27323-7). Elevated reporting limits (RLs) are provided. These analytes have been qualified accordingly with a "D" flag in the associated samples.

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

Job ID: 160-27323-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

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: 160-27323-1

SDG Number: SL2823

Login Number: 27323

List Source: TestAmerica St. Louis

List Number: 1

Creator: Daniels, Brian J

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ ($1/4''$).	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			F16-046-1623	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Effluent Tank, Valve V20-Y80 <i>C*</i> SL2823		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. <i>GWS-391</i>		FIELD LOGBOOK NO. <i>HNF-N-491 16/94</i>	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>9162</i>		BILL OF LADING/AIR BILL NO. <i>7800 3480 9037</i>		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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)	4
		VOLUME	40mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMV1	N/A	WATER	MAR 13 2018	0942	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
Kevin Patterson CHPRC	<i>[Signature]</i> MAR 13 2018 10:15	Mika Esparza CHPRC	<i>[Signature]</i> MAR 13 2018 10:15	TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
Mika Esparza CHPRC	<i>[Signature]</i> MAR 13 2018 14:00	FED EX		
	FED EX	<i>[Signature]</i> Brian Davis	3/14/18 0905	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1640	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC SL2823		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-TA, Pre Tc99IX Resin Tanks, Valve V11-Y20_* A		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. CWS-391		FIELD LOGBOOK NO. HNF-N-49116/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. N/A 9162		BILL OF LADING/AIR BILL NO. 7800 3480 9037		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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) 4
	VOLUME 40mL	
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
83HXR9	N/A	WATER	MAR 13 2018	0915	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
DATE/TIME	DATE/TIME	
Kevin Patterson CHPRC	Michelle Esperza CHPRC	TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
MAR 13 2018 1010	MAR 13 2018 1010	
Michelle Esperza CHPRC	FED EX	
MAR 13 2018 1400		
FED EX	B. J. Brauner 3/14/18 0905	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1652	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC SL2823	COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC		REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-TA, Post Tc99IX Resin Tanks, Valve V06-Y22 FXR	PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL		
ICE CHEST NO. GWS-391	FIELD LOGBOOK NO. HNF-N-49116/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO TestAmerica St. Louis	OFFSITE PROPERTY NO. N/A 3/13/18 9162		BILL OF LADING/AIR BILL NO. 78003480 9037			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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)	4
		VOLUME	40mL
	SPECIAL HANDLING AND/OR STORAGE	N/A	SAMPLE ANALYSIS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME
83HXV1	N/A	WATER	MAR 13 2018	0828 089 ^{MPC} 3/13/18

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
Kevin Patterson CHPRC	Mike Esperza CHPRC	TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
MAR 13 2018 0900	MAR 13 2018 0900	
Mike Esperza CHPRC	FEDEX	
MAR 13 2018 1400		
FEDEX	Brian Davis B J	
	3/14/18 0905	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1634	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC <i>SL2823</i>		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-TA, Pre UIX Resin Column, Valve V25-Y11A1		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. <i>GWS-391</i>		FIELD LOGBOOK NO. HNF-N-491 16/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>3/13/18</i> <i>W/A</i> <i>9162</i>		BILL OF LADING/AIR BILL NO. <i>7400 3480 9032</i>		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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*	
	SPECIAL HANDLING AND/OR STORAGE N/A		NO. OF CONTAINER(S)	4
			VOLUME	40mL
			SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HXR3	N/A	WATER	MAR 13 2018	0802	✓

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CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
Kevin Patterson CHPRC <i>[Signature]</i>	<i>MAR 13 2018</i>	SPECIAL INSTRUCTIONS TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
<i>Mike Esparza</i> CHPRC <i>[Signature]</i>	<i>MAR 13 2018</i>	
	FED EX	
	<i>[Signature]</i>	
	<i>[Signature]</i>	

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FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1635	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-TA, Pre UIX Resin Column, Valve V25-Y11A1 FTB		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. 765-391		FIELD LOGBOOK NO. HNF-N-491 16/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 3113118 9162		BILL OF LADING/AIR BILL NO. 780034809037		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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)	4
	VOLUME	40mL	
	SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
33HXR4	N/A	WATER	MAR 13 2018	0700	✓

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CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	Kevin Patterson CHPRC	MAR 13 2018 0900	Mike Esperza CHPRC	Mike Esperza CHPRC	MAR 13 2018 0900	TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
	Mike Esperza CHPRC	MAR 13 2018 1400		FEDEX		
				FEDEX	3/14/18 0905	

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FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1651	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC SL2823		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-TA, Post Tc99IX Resin Tanks, Valve V06-Y22		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. 765-391		FIELD LOGBOOK NO. HNF-N-491 16/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 58213/18 N/A 9162		BILL OF LADING/AIR BILL NO. 7800 3480 9037		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	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.	PRESERVATION	HCl or H2SO4 to pH <2/Cool <=6C
		HOLDING TIME	14 Days
		TYPE OF CONTAINER	aGs*
		NO. OF CONTAINER(S)	4
		VOLUME	40mL
	SPECIAL HANDLING AND/OR STORAGE	N/A	SAMPLE ANALYSIS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
3HXV0	N/A	WATER	MAR 13 2018	0828	✓

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	Kevin Patterson CHPRC	MAR 13 2018 0800	Mike Esparza CHPRC	Mike Esparza CHPRC	MAR 13 2018 0900	SPECIAL INSTRUCTIONS TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
	Mike Esparza CHPRC	MAR 13 2018 1400		FEDEX		
				Bill Brian Davies	3/14/18 0905	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1617	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC SL2823		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Influent Tank, Valve V12-Y30		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. BW-391		FIELD LOGBOOK NO. HNF-N-491 16/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. N/A 3/15/18 9/62		BILL OF LADING/AIR BILL NO. 7800 3480 9037		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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) 4
		VOLUME 40mL
	SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HMT5	N/A	WATER	MAR 13 2018	1015	✓

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03/22/2018

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	Kevin Patterson CHPRC	MAR 13 2018 1055	Frank Hill CHPRC		MAR 13 2018 1055	TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
	Frank Hill CHPRC	MAR 13 2018 1400	FEDEX			
		FED EX				

3/22/2018

REV.0

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-046-1629	PAGE 1 OF 1
COLLECTOR Kevin Patterson CHPRC SL2823		COMPANY CONTACT SUMNER, LC	TELEPHONE NO. 376-3922	PROJECT COORDINATOR SUMNER, LC	REQUIRED TAT 15 Days	
SAMPLING LOCATION 289-T, Effluent Tank, Valve V20-Y80 C DUP		PROJECT DESIGNATION 200W Pump & Treat - Treatment Plant Compliance Sampling - Water		SAF NO. F16-046	ORIGINAL	
ICE CHEST NO. 625-391		FIELD LOGBOOK NO. HNF-N-491 16/94	ACTUAL SAMPLE DEPTH N/A	PURCHASE ORDER/CHARGE CODE 304235	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 08-31210 N/A 9/162		BILL OF LADING/AIR BILL NO. 7800 3480 9037		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=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)	4
		VOLUME	40mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3HXP8	N/A	WATER	MAR 13 2018	0942	✓

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03/22/2018

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM Kevin Patterson - CHPRC Mike Esparza - CHPRC		DATE/TIME MAR 13 2018 1010 MAR 13 2018 1400	SIGN/ PRINT NAMES RECEIVED BY/STORED IN Mike Esparza - CHPRC FEDEX	DATE/TIME MAR 13 2018 1010 5/14/18 0805	SPECIAL INSTRUCTIONS TRVL-18-085 (1) 8260_VOA_GCMS: CH 01 {Chloromethane}; 8260_VOA_GCMS: COMMON {Acetone, Carbon tetrachloride, Chloroform, Methylene chloride, Trichloroethene, Vinyl chloride}; 8260_VOA_GCMS: COMMON (Add-on) {cis-1,2-Dichloroethylene};
Kevin Patterson - CHPRC Mike Esparza - CHPRC		MAR 13 2018 1010 MAR 13 2018 1400	FEDEX	MAR 13 2018 1010 5/14/18 0805	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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PRINTED ON 2/27/2018

FSR ID = FSR58215

TRVL NUM = TRVL-18-085

A-6003-618 (REV 3)



REV.0

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780034809037

Ship date:

Tue 3/13/2018

richland, WA US

Actual delivery:

Wed 3/14/2018 8:59 am

EARTH CITY, MO US

Delivered

Signed for by: J. CLARKE

Travel History

Date/Time	Activity	Location
3/14/2018 - Wednesday		
8:59 am	Delivered	EARTH CITY, MO
7:13 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:07 am	At local FedEx facility	EARTH CITY, MO
5:29 am	At destination sort facility	BERKELEY, MO
4:44 am	Departed FedEx location	MEMPHIS, TN
12:34 am	Arrived at FedEx location	MEMPHIS, TN
3/13/2018 - Tuesday		
4:48 pm	Left FedEx origin facility	PASCO, WA
3:17 pm	Picked up	PASCO, WA
2:41 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking Number	780034809037	Service	FedEx Priority Overnight
Weight	55 lbs / 24.95 kgs	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	55 lbs / 24.95 kgs	Terms	Third Party
Shipper reference	ptr# 9162	Packaging	Your Packaging
Special handling section	Deliver Weekday, Additional Handling Surcharge, Direct Signature Required	Standard transit	3/14/2018 by 10:30 am

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Client: CH2M Hill Plateau Remediation Company
 Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
 SDG: SL2823

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.
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
T	MS, MSD: Recovery exceeds upper or lower control limits.
N	Presumptive evidence of material.
J	Indicates an Estimated Value for TICs

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: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL

Protocol References:

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

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-27323-1	B3HMV1	Water	03/13/18 09:42	03/14/18 09:05
160-27323-2	B3HXR9	Water	03/13/18 09:15	03/14/18 09:05
160-27323-3	B3HXV1	Water	03/13/18 08:28	03/14/18 09:05
160-27323-4	B3HXR3	Water	03/13/18 08:02	03/14/18 09:05
160-27323-5	B3HXR4	Water	03/13/18 07:00	03/14/18 09:05
160-27323-6	B3HXV0	Water	03/13/18 08:28	03/14/18 09:05
160-27323-7	B3HMT5	Water	03/13/18 10:15	03/14/18 09:05
160-27323-8	B3HXP8	Water	03/13/18 09:42	03/14/18 09:05



Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

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

Client Sample ID: B3HMV1
Date Collected: 03/13/18 09:42
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	5.1		2.0	0.55	ug/L			03/19/18 10:49	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/19/18 10:49	1
Chloroform	0.12	J	1.0	0.10	ug/L			03/19/18 10:49	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 10:49	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 10:49	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			03/19/18 10:49	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/19/18 10:49	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 10:49	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
<i>Isopropyl alcohol</i>	20	T	ug/L		6.01	67-63-0		03/19/18 10:49	1
<i>2-Butanone (MEK)</i>	3.7	J	ug/L		8.18	78-93-3		03/19/18 10:49	1
<i>Tentatively Identified Compound</i>	None		ug/L					03/19/18 10:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>1,2-Dichloroethane-d4 (Surr)</i>	87		75 - 129		03/19/18 10:49	1
<i>4-Bromofluorobenzene (Surr)</i>	111		81 - 130		03/19/18 10:49	1
<i>Dibromofluoromethane (Surr)</i>	94		81 - 124		03/19/18 10:49	1
<i>Toluene-d8 (Surr)</i>	108		87 - 128		03/19/18 10:49	1

Client Sample ID: B3HXR9
Date Collected: 03/13/18 09:15
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.55	U	2.0	0.55	ug/L			03/19/18 15:28	1
Carbon tetrachloride	280	D	10	1.8	ug/L			03/19/18 12:30	10
Chloroform	3.4		1.0	0.10	ug/L			03/19/18 15:28	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 15:28	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 15:28	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			03/19/18 15:28	1
Trichloroethene	1.8		1.0	0.25	ug/L			03/19/18 15:28	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 15:28	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
<i>Unknown</i>	4.0	N	ug/L		8.11			03/19/18 15:28	1
<i>Tentatively Identified Compound</i>	None		ug/L					03/19/18 12:30	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>1,2-Dichloroethane-d4 (Surr)</i>	90		75 - 129		03/19/18 12:30	10
<i>1,2-Dichloroethane-d4 (Surr)</i>	94		75 - 129		03/19/18 15:28	1
<i>4-Bromofluorobenzene (Surr)</i>	111		81 - 130		03/19/18 12:30	10
<i>4-Bromofluorobenzene (Surr)</i>	115		81 - 130		03/19/18 15:28	1
<i>Dibromofluoromethane (Surr)</i>	95		81 - 124		03/19/18 12:30	10
<i>Dibromofluoromethane (Surr)</i>	107		81 - 124		03/19/18 15:28	1
<i>Toluene-d8 (Surr)</i>	105		87 - 128		03/19/18 12:30	10
<i>Toluene-d8 (Surr)</i>	105		87 - 128		03/19/18 15:28	1

03/22/2018
Client Sample Results

REV.0

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

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

Client Sample ID: B3HXV1
Date Collected: 03/13/18 08:28
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.55	U	2.0	0.55	ug/L			03/19/18 12:56	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/19/18 12:56	1
Chloroform	0.10	U	1.0	0.10	ug/L			03/19/18 12:56	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 12:56	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 12:56	1
Methylene Chloride	4.5		1.0	0.27	ug/L			03/19/18 12:56	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/19/18 12:56	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 12:56	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					03/19/18 12:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 129		03/19/18 12:56	1
4-Bromofluorobenzene (Surr)	110		81 - 130		03/19/18 12:56	1
Dibromofluoromethane (Surr)	93		81 - 124		03/19/18 12:56	1
Toluene-d8 (Surr)	104		87 - 128		03/19/18 12:56	1

Client Sample ID: B3HXR3
Date Collected: 03/13/18 08:02
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	2.3		2.0	0.55	ug/L			03/19/18 13:21	1
Carbon tetrachloride	35		1.0	0.18	ug/L			03/19/18 13:21	1
Chloroform	1.7		1.0	0.10	ug/L			03/19/18 13:21	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 13:21	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 13:21	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			03/19/18 13:21	1
Trichloroethene	0.87	J	1.0	0.25	ug/L			03/19/18 13:21	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 13:21	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					03/19/18 13:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	89		75 - 129		03/19/18 13:21	1
4-Bromofluorobenzene (Surr)	112		81 - 130		03/19/18 13:21	1
Dibromofluoromethane (Surr)	96		81 - 124		03/19/18 13:21	1
Toluene-d8 (Surr)	105		87 - 128		03/19/18 13:21	1

Client Sample ID: B3HXR4
Date Collected: 03/13/18 07:00
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.55	U	2.0	0.55	ug/L			03/19/18 13:47	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/19/18 13:47	1
Chloroform	0.10	U	1.0	0.10	ug/L			03/19/18 13:47	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 13:47	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 13:47	1
Methylene Chloride	2.4		1.0	0.27	ug/L			03/19/18 13:47	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/19/18 13:47	1

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

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

Client Sample ID: B3HXR4
Date Collected: 03/13/18 07:00
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 13:47	1
Tentatively Identified Compound									
Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					03/19/18 13:47	1
Surrogate									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 129					03/19/18 13:47	1
4-Bromofluorobenzene (Surr)	115		81 - 130					03/19/18 13:47	1
Dibromofluoromethane (Surr)	92		81 - 124					03/19/18 13:47	1
Toluene-d8 (Surr)	104		87 - 128					03/19/18 13:47	1

Client Sample ID: B3HXV0
Date Collected: 03/13/18 08:28
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	1.4	U D	5.0	1.4	ug/L			03/19/18 15:53	2.5
Carbon tetrachloride	170	D	25	4.5	ug/L			03/19/18 14:12	25
Chloroform	3.2	D	2.5	0.25	ug/L			03/19/18 15:53	2.5
Chloromethane	0.26	U D	5.0	0.26	ug/L			03/19/18 15:53	2.5
cis-1,2-Dichloroethylene	0.25	U D	2.5	0.25	ug/L			03/19/18 15:53	2.5
Methylene Chloride	0.68	U D	2.5	0.68	ug/L			03/19/18 15:53	2.5
Trichloroethene	1.9	J D	2.5	0.63	ug/L			03/19/18 15:53	2.5
Vinyl chloride	0.49	U D	5.0	0.49	ug/L			03/19/18 15:53	2.5
Tentatively Identified Compound									
Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Dimethyl ether	96	N J	ug/L		3.28	115-10-6		03/19/18 14:12	25
Unknown	35	N	ug/L		4.27			03/19/18 14:12	25
Unknown	4.6	N	ug/L		8.11			03/19/18 15:53	2.5
Surrogate									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	90		75 - 129					03/19/18 14:12	25
1,2-Dichloroethane-d4 (Surr)	90		75 - 129					03/19/18 15:53	2.5
4-Bromofluorobenzene (Surr)	110		81 - 130					03/19/18 14:12	25
4-Bromofluorobenzene (Surr)	111		81 - 130					03/19/18 15:53	2.5
Dibromofluoromethane (Surr)	94		81 - 124					03/19/18 14:12	25
Dibromofluoromethane (Surr)	100		81 - 124					03/19/18 15:53	2.5
Toluene-d8 (Surr)	106		87 - 128					03/19/18 14:12	25
Toluene-d8 (Surr)	104		87 - 128					03/19/18 15:53	2.5

Client Sample ID: B3HMT5
Date Collected: 03/13/18 10:15
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	5.0	D	5.0	1.4	ug/L			03/19/18 16:19	2.5
Carbon tetrachloride	320	D	25	4.5	ug/L			03/19/18 14:37	25
Chloroform	4.8	D	2.5	0.25	ug/L			03/19/18 16:19	2.5
Chloromethane	0.26	U D	5.0	0.26	ug/L			03/19/18 16:19	2.5
cis-1,2-Dichloroethylene	0.25	U D	2.5	0.25	ug/L			03/19/18 16:19	2.5
Methylene Chloride	0.68	U D	2.5	0.68	ug/L			03/19/18 16:19	2.5
Trichloroethene	2.9	D	2.5	0.63	ug/L			03/19/18 16:19	2.5
Vinyl chloride	0.49	U D	5.0	0.49	ug/L			03/19/18 16:19	2.5

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
 SDG: SL2823

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

<i>Tentatively Identified Compound</i>	<i>Est. Result</i>	<i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>RT</i>	<i>CAS No.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Unknown	67	N	ug/L		3.28			03/19/18 14:37	25
Unknown	30	N	ug/L		4.25			03/19/18 14:37	25
Unknown	7.7	N	ug/L		8.11			03/19/18 16:19	2.5

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2-Dichloroethane-d4 (Surr)	90		75 - 129		03/19/18 14:37	25
1,2-Dichloroethane-d4 (Surr)	93		75 - 129		03/19/18 16:19	2.5
4-Bromofluorobenzene (Surr)	111		81 - 130		03/19/18 14:37	25
4-Bromofluorobenzene (Surr)	121		81 - 130		03/19/18 16:19	2.5
Dibromofluoromethane (Surr)	95		81 - 124		03/19/18 14:37	25
Dibromofluoromethane (Surr)	104		81 - 124		03/19/18 16:19	2.5
Toluene-d8 (Surr)	107		87 - 128		03/19/18 14:37	25
Toluene-d8 (Surr)	111		87 - 128		03/19/18 16:19	2.5

Client Sample ID: B3HXP8
Date Collected: 03/13/18 09:42
Date Received: 03/14/18 09:05

Lab Sample ID: 160-27323-8
Matrix: Water

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Acetone	6.4		2.0	0.55	ug/L			03/19/18 15:03	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/19/18 15:03	1
Chloroform	0.13	J	1.0	0.10	ug/L			03/19/18 15:03	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 15:03	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 15:03	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			03/19/18 15:03	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/19/18 15:03	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 15:03	1

<i>Tentatively Identified Compound</i>	<i>Est. Result</i>	<i>Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>RT</i>	<i>CAS No.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Tentatively Identified Compound</i>	<i>None</i>		<i>ug/L</i>					03/19/18 15:03	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,2-Dichloroethane-d4 (Surr)	89		75 - 129		03/19/18 15:03	1
4-Bromofluorobenzene (Surr)	109		81 - 130		03/19/18 15:03	1
Dibromofluoromethane (Surr)	94		81 - 124		03/19/18 15:03	1
Toluene-d8 (Surr)	105		87 - 128		03/19/18 15:03	1

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

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

Lab Sample ID: MB 160-356224/8
Matrix: Water
Analysis Batch: 356224

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	0.55	U	2.0	0.55	ug/L			03/19/18 10:24	1
Carbon tetrachloride	0.18	U	1.0	0.18	ug/L			03/19/18 10:24	1
Chloroform	0.10	U	1.0	0.10	ug/L			03/19/18 10:24	1
Chloromethane	0.10	U	2.0	0.10	ug/L			03/19/18 10:24	1
cis-1,2-Dichloroethylene	0.10	U	1.0	0.10	ug/L			03/19/18 10:24	1
Methylene Chloride	0.27	U	1.0	0.27	ug/L			03/19/18 10:24	1
Trichloroethene	0.25	U	1.0	0.25	ug/L			03/19/18 10:24	1
Vinyl chloride	0.19	U	2.0	0.19	ug/L			03/19/18 10:24	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L					03/19/18 10:24	1
n-Nonyl Aldehyde	0.828	J	ug/L		15.03	124-19-6		03/19/18 10:24	1
Hexachlorobutadiene	0.189	J	ug/L		15.68	87-68-3		03/19/18 10:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	92		75 - 129		03/19/18 10:24	1
4-Bromofluorobenzene (Surr)	108		81 - 130		03/19/18 10:24	1
Dibromofluoromethane (Surr)	94		81 - 124		03/19/18 10:24	1
Toluene-d8 (Surr)	102		87 - 128		03/19/18 10:24	1

Lab Sample ID: LCS 160-356224/5
Matrix: Water
Analysis Batch: 356224

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10.0	8.29		ug/L		83	69 - 129
Carbon tetrachloride	10.0	10.2		ug/L		102	83 - 125
Chloroform	10.0	9.42		ug/L		94	80 - 120
Chloromethane	10.0	11.9		ug/L		119	72 - 124
cis-1,2-Dichloroethylene	10.0	9.58		ug/L		96	80 - 120
Methylene Chloride	10.0	9.51		ug/L		95	80 - 120
Trichloroethene	10.0	9.56		ug/L		96	80 - 120
Vinyl chloride	10.0	11.0		ug/L		110	77 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		75 - 129
4-Bromofluorobenzene (Surr)	90		81 - 130
Dibromofluoromethane (Surr)	94		81 - 124
Toluene-d8 (Surr)	99		87 - 128

Lab Sample ID: LCSD 160-356224/6
Matrix: Water
Analysis Batch: 356224

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
Acetone	10.0	9.99		ug/L		100	69 - 129	19	20
Carbon tetrachloride	10.0	10.1		ug/L		101	83 - 125	1	20

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

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

Lab Sample ID: LCSD 160-356224/6

Client Sample ID: Lab Control Sample Dup

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 356224

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	10.0	9.59		ug/L		96	80 - 120	2	20
Chloromethane	10.0	11.7		ug/L		117	72 - 124	2	20
cis-1,2-Dichloroethylene	10.0	9.53		ug/L		95	80 - 120	1	20
Methylene Chloride	10.0	9.38		ug/L		94	80 - 120	1	20
Trichloroethene	10.0	9.63		ug/L		96	80 - 120	1	20
Vinyl chloride	10.0	10.8		ug/L		108	77 - 122	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
1,2-Dichloroethane-d4 (Surr)	94		75 - 129
4-Bromofluorobenzene (Surr)	90		81 - 130
Dibromofluoromethane (Surr)	95		81 - 124
Toluene-d8 (Surr)	99		87 - 128

Lab Sample ID: 160-27323-1 MS

Client Sample ID: B3HMV1

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 356224

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	5.1		10.0	14.9		ug/L		98	50 - 137
Carbon tetrachloride	0.18	U	10.0	10.4		ug/L		104	77 - 131
Chloroform	0.12	J	10.0	9.56		ug/L		94	80 - 120
Chloromethane	0.10	U	10.0	11.6		ug/L		116	62 - 132
cis-1,2-Dichloroethylene	0.10	U	10.0	9.42		ug/L		94	80 - 120
Methylene Chloride	0.27	U	10.0	9.27		ug/L		93	80 - 120
Trichloroethene	0.25	U	10.0	9.43		ug/L		94	81 - 125
Vinyl chloride	0.19	U	10.0	10.3		ug/L		103	70 - 129

Surrogate	MS %Recovery	MS Qualifier	MS Limits
1,2-Dichloroethane-d4 (Surr)	92		75 - 129
4-Bromofluorobenzene (Surr)	87		81 - 130
Dibromofluoromethane (Surr)	97		81 - 124
Toluene-d8 (Surr)	100		87 - 128

Lab Sample ID: 160-27323-1 MSD

Client Sample ID: B3HMV1

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 356224

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	5.1		10.0	14.0		ug/L		89	50 - 137	6	20
Carbon tetrachloride	0.18	U	10.0	10.2		ug/L		102	77 - 131	2	20
Chloroform	0.12	J	10.0	9.48		ug/L		94	80 - 120	1	20
Chloromethane	0.10	U	10.0	11.5		ug/L		115	62 - 132	1	20
cis-1,2-Dichloroethylene	0.10	U	10.0	9.40		ug/L		94	80 - 120	0	20
Methylene Chloride	0.27	U	10.0	9.26		ug/L		93	80 - 120	0	20
Trichloroethene	0.25	U	10.0	9.35		ug/L		93	81 - 125	1	20
Vinyl chloride	0.19	U	10.0	10.7		ug/L		107	70 - 129	4	20

TestAmerica St. Louis

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
SDG: SL2823

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

Lab Sample ID: 160-27323-1 MSD
Matrix: Water
Analysis Batch: 356224

Client Sample ID: B3HMV1
Prep Type: Total/NA

Surrogate	MSD		Limits
	%Recovery	Qualifier	
1,2-Dichloroethane-d4 (Surr)	95		75 - 129
4-Bromofluorobenzene (Surr)	91		81 - 130
Dibromofluoromethane (Surr)	96		81 - 124
Toluene-d8 (Surr)	99		87 - 128

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03/22/2018
QC Association Summary

REV.0

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
 SDG: SL2823

GC/MS VOA

Analysis Batch: 356224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27323-1	B3HMV1	Total/NA	Water	8260C	
160-27323-2	B3HXR9	Total/NA	Water	8260C	
160-27323-2	B3HXR9	Total/NA	Water	8260C	
160-27323-3	B3HXV1	Total/NA	Water	8260C	
160-27323-4	B3HXR3	Total/NA	Water	8260C	
160-27323-5	B3HXR4	Total/NA	Water	8260C	
160-27323-6	B3HXV0	Total/NA	Water	8260C	
160-27323-6	B3HXV0	Total/NA	Water	8260C	
160-27323-7	B3HMT5	Total/NA	Water	8260C	
160-27323-7	B3HMT5	Total/NA	Water	8260C	
160-27323-8	B3HXP8	Total/NA	Water	8260C	
MB 160-356224/8	Method Blank	Total/NA	Water	8260C	
LCS 160-356224/5	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-356224/6	Lab Control Sample Dup	Total/NA	Water	8260C	
160-27323-1 MS	B3HMV1	Total/NA	Water	8260C	
160-27323-1 MSD	B3HMV1	Total/NA	Water	8260C	

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Client: CH2M Hill Plateau Remediation Company
 Project/Site: F16-046

TestAmerica Job ID: 160-27323-1
 SDG: SL2823

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (75-129)	BFB (81-130)	DBFM (81-124)	TOL (87-128)
160-27323-1	B3HMV1	87	111	94	108
160-27323-1 MS	B3HMV1	92	87	97	100
160-27323-1 MSD	B3HMV1	95	91	96	99
160-27323-2	B3HXR9	90	111	95	105
160-27323-2	B3HXR9	94	115	107	105
160-27323-3	B3HXV1	91	110	93	104
160-27323-4	B3HXR3	89	112	96	105
160-27323-5	B3HXR4	95	115	92	104
160-27323-6	B3HXV0	90	110	94	106
160-27323-6	B3HXV0	90	111	100	104
160-27323-7	B3HMT5	90	111	95	107
160-27323-7	B3HMT5	93	121	104	111
160-27323-8	B3HXP8	89	109	94	105
LCS 160-356224/5	Lab Control Sample	91	90	94	99
LCSD 160-356224/6	Lab Control Sample Dup	94	90	95	99
MB 160-356224/8	Method Blank	92	108	94	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
 BFB = 4-Bromofluorobenzene (Surr)
 DBFM = Dibromofluoromethane (Surr)
 TOL = Toluene-d8 (Surr)