

March 19, 2018

March 15, 2018

Mr. Scot Fitzgerald  
CH2MHill Plateau Remediation Company  
MSIN R3-50 CHPRC  
PO Box 1600  
Richland, Washington 99352

Re: CHPRC SAF S18-002  
Work Order: 443944  
SDG: GEL443944

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 16, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,



Heather Shaffer  
Project Manager

Purchase Order: 300071 - 7H

Chain of Custody: S18-002-182, S18-002-187, S18-002-222, S18-002-225, S18-002-226, S18-002-230, S18-002-233, S18-002-234, S18-002-235, S18-002-427, S18-002-432, S18-002-433, S18-002-443, S18-002-460, S18-002-462, S18-002-464, S18-002-472, S18-002-475, S18-002-564, S18-002-565, S18-002-624, S18-002-656, S18-002-677, S18-002-678 and S18-002-679

Enclosures



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# Case Narrative

**General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF S18-002  
SDG: GEL443944**

**March 15, 2018**

**Laboratory Identification:**

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt**

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on February 16, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

**Items of Note** All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

**Sample Identification**

The laboratory received the following samples:

<b>Laboratory Identification</b>	<b>Sample Description</b>
443944001	B3H6H0
443944002	B3H6J6
443944003	B3H6J7
443944004	B3H5Y8
443944005	B3H4B4
443944006	B3H4C0
443944007	B3H4C1
443944008	B3H672
443944009	B3H673
443944010	B3H6V1
443944011	B3HBY2
443944012	B3H4B6
443944013	B3H4B3
443944014	B3H4B8
443944015	B3H5L7
443944016	B3H652
443944017	B3H4B9
443944018	B3H405
443944019	B3H442
443944020	B3H6F9
443944021	B3H6J4
443944022	B3H6J5

443944023 B3H5Y7  
443944024 B3H6V2  
443944025 B3H873  
443944026 B3HCK6  
443944027 B3HCK7  
443944028 B3HCK8

**Case Narrative**

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Data Package**

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC/MS Volatile, General Chemistry, Metals and Radiochemistry.

We certify that this 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 signatures on this report.



Heather Shaffer  
Project Manager

**Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL443944  
Work Order #: 443944**

**GC/MS Volatile**

**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information**

**Continuing Calibration Verification Requirements**

The calibration verification standard requirements were not all met for samples 443944013 (B3H4B3), 443944014 (B3H4B8) and 443944017 (B3H4B9). Dichlorodifluoromethane recovered at 21.9%D and Trichlorofluoromethane recovered at 20.9%D in the daily CCV analyzed on 2/19/18. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

**Quality Control (QC) Information**

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits.

Sample	Analyte	Value
1203973337 (Non SDG 443833001PSD)	2-Butanone	64* (70%-130%)

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203973336 (Non SDG 443833001PS)	Acetone	53* (70%-130%)
1203973337 (Non SDG 443833001PSD)	Acetone	49* (70%-130%)

**Technical Information**

**Sample Dilutions/Methanol Dilutions**

Samples 443944013 (B3H4B3) and 443944017 (B3H4B9) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944	
	013	017
Carbon tetrachloride	4X	2X

**Metals**

**Determination of Metals by ICP-MS**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**General Chemistry**

**Ion Chromatography**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information**

**Sample Dilutions**

The following samples 1203973201 (B3H6H0DUP), 1203973202 (B3H6H0PS), 443944001 (B3H6H0), 443944003 (B3H6J7), 443944004 (B3H5Y8) and 443944005 (B3H4B4) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944			
	001	003	004	005
Several	100X 1X	5X 1X	10X 1X	5X 1X

**Miscellaneous Information**

**Manual Integrations**

Samples 443944002 (B3H6J6), 443944003 (B3H6J7), 443944004 (B3H5Y8) and 443944005 (B3H4B4) were manually integrated to correctly position the baseline as set in the calibration standards.

**Ion Chromatography**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information**

**Holding Times**

Samples (See Below) were analyzed outside of the method specified holding time due to instrument problems delaying the analysis. The analysis was performed as soon as possible by the analyst. The data is qualified.

Sample	Analyte	Value
1203973213 (B3HBY2DUP)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
1203973214 (B3HBY2PS)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944007 (B3H4C1)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944008 (B3H672)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944009 (B3H673)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944011 (B3HBY2)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18

**Sample Dilutions**

The following samples 1203973213 (B3HBY2DUP), 1203973214 (B3HBY2PS), 443944007 (B3H4C1), 443944008 (B3H672), 443944009 (B3H673) and 443944011 (B3HBY2) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443944			
	007	008	009	011
Chloride	20X	1X	1X	10X
Nitrate	20X	20X	20X	10X
Sulfate	20X	20X	20X	10X

**Radiochemistry**

**I129LL\_SEP\_LEPS\_GS: COMMON (low level)**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information**

**Sample Re-prep/Re-analysis**

Samples were reprepared due to high LCS recovery. The re-analysis is being reported.

**9310\_ALPHABETA\_GPC: Gross Beta**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information****Gross Alpha/Beta Preparation Information**

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

**Recounts**

Samples 1203974609 (B3H405DUP) and 443944018 (B3H405) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

**Miscellaneous Information****Additional Comments**

The matrix spike and matrix spike duplicate, 1203974610 (B3H405MS) and 1203974611 (B3H405MSD), aliquots were reduced to conserve sample volume.

**TRITIUM\_DIST\_LSC: COMMON**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Miscellaneous Information****Additional Comments**

The matrix spike, 1203973173 (Non SDG 443932001MS), aliquot was reduced to conserve sample volume.

**TC99\_EIE\_LSC: COMMON**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

# **Chain of Custody and Supporting Documentation**

CH2MHill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <i>443944</i>				C.O.C.# <b>S18-002-427</b>
						Page 1 of 1
<b>Collector:</b>	Juan Agullar /CHPRC	<b>Contact/Requester:</b>	Karen Waters-Husted		<b>Telephone No.:</b>	509-376-4650
<b>SAF No.:</b>	S18-002	<b>Sampling Origin:</b>	Hanford Site		<b>Purchase Order/Charge Code:</b>	300071
<b>Project Title:</b>	Sitewide Surv, February 2018	<b>Logbook No.:</b>	HNF-N-506-98140		<b>Ice Chest No.:</b>	<i>TLP N/A 2-15-18</i> GWS-738
<b>Shipped To (Lab):</b>	TestAmerica Incorporated, Rich	<b>Method of Shipment</b>	GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b>	<i>TLP N/A 2-15-18</i> 771492104858
<b>Protocol</b>	SURV <i>GEL KS 2/14/18</i>	<b>Priority:</b>	30 Days		<b>Offsite Property No.:</b>	<i>TLP N/A 2-15-18</i> 9067
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A		

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H6H0	N	W	2-15-18	0926	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: <i>Juan Agullar</i> Print First and Last Name: <i>Juan Agullar</i> Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1125	Received By: <i>Troy Bacon</i> Print First and Last Name: <i>Troy Bacon</i> Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1125	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: <i>Troy Bacon</i> Print First and Last Name: <i>Troy Bacon</i> Signature: <i>[Signature]</i> Date/Time: FEB 15 2018 1400	Received By: <b>FEDEX</b> Print First and Last Name: Signature: Date/Time:		
Relinquished By: <b>FEDEX</b> Print First and Last Name: Signature: Date/Time:	Received By: <i>C. Tomlin</i> Print First and Last Name: <i>C. Tomlin</i> Signature: <i>[Signature]</i> Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:		
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Rev 1

CH2MHill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <i>443944</i>			C.O.C.# <b>S18-002-432</b>			
					Page 1 of 1			
<b>Collector:</b> Juan Aguilar /CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <i>48/40</i>		<b>Ice Chest No.:</b> <i>N/A</i> <i>2-15-18</i> <b>GWS-738</b>				
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <i>N/A</i> <i>2-15-18</i> <b>771492618585</b>				
<b>Protocol:</b> SURV <i>GEL</i> <i>CS 2/14/18</i>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <i>N/A</i> <i>2-15-18</i> <i>FLB</i> <b>9067</b>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A				
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H6J6	N	W	2-15-18	0815	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: <i>Juan Aguilar</i> CHPRC Signature: _____ Date/Time: FEB 15 2018 1125		Received By: Troy Bacon CHPRC Signature: <i>Troy L. Bacon</i> Date/Time: FEB 15 2018 1125		Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: Troy Bacon CHPRC Signature: <i>Troy L. Bacon</i> Date/Time: FEB 15 2018 1400		Received By: FEDEX Signature: _____ Date/Time: _____			
Relinquished By: FedEx Signature: _____ Date/Time: _____		Received By: C. Tomplin Signature: <i>C. Tomplin</i> Date/Time: 2/16/18 0845			
Relinquished By: _____ Signature: _____ Date/Time: _____		Received By: _____ Signature: _____ Date/Time: _____			
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):			Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">442944</span>				C.O.C. # <b>S18-002-433</b>		
						Page 1 of 1		
<b>Collector:</b> Juan Aguilar CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 - 98140		<b>Ice Chest No.:</b> <sup>TJB</sup> <del>N/A</del> <sup>2-15-18</sup> GWS-738				
<b>Shipped To (Lab):</b> TestAmerica Incorporated, Rich		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <sup>TJB</sup> <del>N/A</del> <sup>2-15-18</sup> 771492648585				
<b>Protocol:</b> SURV		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <sup>TJB</sup> <del>N/A</del> <sup>2-15-18</sup> 9067				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A				
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H6J7	N	W	2-15-18	1042	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: Print First and Last Name: Juan Aguilar Signature: Date/Time: FEB 15 2018 1125	Received By: Troy Bacon Print First and Last Name: Troy L Bacon Signature: Date/Time: FEB 15 2018 1125	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other		
Relinquished By: Troy Bacon Print First and Last Name: Troy L Bacon Signature: Date/Time: FEB 15 2018 1400	Received By: PEDEX Print First and Last Name: PEDEX Signature: Date/Time:			
Relinquished By: FedEx Print First and Last Name: FedEx Signature: Date/Time:	Received By: C. Taylor Print First and Last Name: C. Taylor Signature: Date/Time: 2/16/18 0845			
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:			
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <i>443944</i>				C.O.C. # <b>S18-002-443</b>		
						Page 1 of 1		
<b>Collector:</b> Juan Aguilar /CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 -98140		<b>Ice Chest No.:</b> <del>N/A</del> <sup>FOR</sup> <i>GWS-738</i>				
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <del>N/A</del> <sup>TLB</sup> <i>771492198585</i>				
<b>Protocol:</b> SURV <i>GEL</i>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <del>N/A</del> <sup>TLB</sup> <i>9067</i>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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					<b>SPECIAL INSTRUCTIONS</b> N/A			
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H5Y8	N	W	2-15-18	1007	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: <i>Juan Aguilar</i> /CHPRC		FEB 15 2018 1125		Received By: <i>Troy Bacon</i> CHPRC		FEB 15 2018 1125		<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment   DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge     WI = Wipe W = Water       L = Liquid O = Oil           V = Vegetation A = Air            X = Other	
<i>Juan Aguilar</i>		<i>Juan Aguilar</i>		<i>Troy Bacon</i>		<i>Troy Bacon</i>			
Print First and Last Name		Signature		Print First and Last Name		Signature			
Date/Time		Date/Time		Date/Time		Date/Time			
Relinquished By:		FEB 15 2018 1400		Received By: FEDEX					
<i>Troy Bacon</i>		<i>Troy Bacon</i>							
Print First and Last Name		Signature		Print First and Last Name		Signature			
Date/Time		Date/Time		Date/Time		Date/Time			
Relinquished By:				Received By:		2/16/18			
<i>Fedex</i>				<i>C. Tomlin</i>		<i>C. Tomlin</i>			
Print First and Last Name		Signature		Print First and Last Name		Signature			
Date/Time		Date/Time		Date/Time		Date/Time			
Relinquished By:				Received By:					
Print First and Last Name		Signature		Print First and Last Name		Signature			
Date/Time		Date/Time		Date/Time		Date/Time			
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):					Disposed By:		Date/Time:	

Rev 1

CH2MHill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>			C.O.C.# <b>S18-002-460</b>
					Page 1 of 1
<b>Collector:</b> Malcom Chunn CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650	
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071	
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <span style="font-size: 1.5em;">95/96</span>		<b>Ice Chest No.:</b> <span style="font-size: 1.5em;">N/A</span> <span style="font-size: 1.5em;">6605-422</span>	
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <span style="font-size: 1.5em;">N/A</span> <span style="font-size: 1.5em;">7714 96298460</span>	
<b>Protocol:</b> SURV <span style="font-size: 1.5em;">GEL</span> <span style="font-size: 1.5em;">2/14/18</span>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <span style="font-size: 1.5em;">N/A</span> <span style="font-size: 1.5em;">9067</span>	
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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			<b>SPECIAL INSTRUCTIONS</b> N/A		

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H4B4	N	W	FEB 15 2018	1123	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: <span style="font-size: 1.5em;">MR Ch</span> Malcom Chunn CHPRC Print First and Last Name      Signature      Date/Time FEB 15 2018 1240	Received By: <span style="font-size: 1.5em;">[Signature]</span> Chris Fulton CHPRC Print First and Last Name      Signature      Date/Time FEB 15 2018 1240	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: <span style="font-size: 1.5em;">[Signature]</span> Chris Fulton CHPRC Print First and Last Name      Signature      Date/Time FEB 15 2018 1400	Received By: <span style="font-size: 1.5em;">FEDEX</span> Print First and Last Name      Signature      Date/Time		
Relinquished By: <span style="font-size: 1.5em;">FedEx</span> Print First and Last Name      Signature      Date/Time	Received By: <span style="font-size: 1.5em;">[Signature]</span> C. Tarplin Print First and Last Name      Signature      Date/Time 2/14/18 0845		
Relinquished By: Print First and Last Name      Signature      Date/Time	Received By: Print First and Last Name      Signature      Date/Time		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Rev 1

CH2MHill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: red;">443944</span>				C.O.C.# <b>S18-002-462</b>	
						Page 1 of 1	
<b>Collector:</b> Malcom Chunn CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650			
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071			
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <span style="font-size: 1.5em;">95/96</span>		<b>Ice Chest No.:</b> <span style="font-size: 1.5em;">605-422</span>			
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <span style="font-size: 1.5em;">7714 96298466</span>			
<b>Protocol:</b> SURV <span style="font-size: 1.5em;">GEL KS 2/14/18</span>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> N/A <span style="font-size: 1.5em;">9067</span>			
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A			

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H4C0	N	W	FEB 15 2018	0835	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

<b>Relinquished By:</b> <span style="font-size: 1.5em;">MR Chunn</span> <small>Malcom Chunn CHPRC</small> Print First and Last Name      Signature      Date/Time FEB 15 2018 1200	<b>Received By:</b> <span style="font-size: 1.5em;">Chris Fulton</span> <small>Chris Fulton CHPRC</small> Print First and Last Name      Signature      Date/Time FEB 15 2018 1200	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
<b>Relinquished By:</b> <span style="font-size: 1.5em;">Chris Fulton</span> <small>Chris Fulton CHPRC</small> Print First and Last Name      Signature      Date/Time FEB 15 2018 1400	<b>Received By:</b> <span style="font-size: 1.5em;">FEDEX</span> Print First and Last Name      Signature      Date/Time		
<b>Relinquished By:</b> <span style="font-size: 1.5em;">FedEx</span> Print First and Last Name      Signature      Date/Time FEB 15 2018 0845	<b>Received By:</b> <span style="font-size: 1.5em;">C. Taylor</span> <small>C. Taylor</small> Print First and Last Name      Signature      Date/Time 2/16/18 0845		
<b>Relinquished By:</b> Print First and Last Name      Signature      Date/Time	<b>Received By:</b> Print First and Last Name      Signature      Date/Time		
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>				C.O.C.# <b>S18-002-464</b>
						Page 1 of 1
<b>Collector:</b> Malcom Chunn CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650		
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071		
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <span style="font-size: 1.5em;">95/96</span>		<b>Ice Chest No.:</b> <span style="font-size: 1.5em;">6WS-422</span>		
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <span style="font-size: 1.5em;">777496298460</span>		
<b>Protocol:</b> SURV <span style="font-size: 1.5em;">GEL</span> <span style="font-size: 1.5em;">KS 2/14/18</span>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <span style="font-size: 1.5em;">9067</span>		
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A <span style="font-size: 1.5em;">DO. 2/15/18</span>		

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H4C1	N	W	FEB 15 2018	0944	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: <span style="font-size: 1.5em;">MR Chunn</span> Print First and Last Name: <span style="font-size: 1.5em;">MR Chunn</span> Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: <span style="font-size: 1.5em;">FEB 15 2018 1240</span>	Received By: Chris Fulton Print First and Last Name: <span style="font-size: 1.5em;">[Signature]</span> Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: <span style="font-size: 1.5em;">FEB 15 2018 1240</span>	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: Chris Fulton Print First and Last Name: <span style="font-size: 1.5em;">[Signature]</span> Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: <span style="font-size: 1.5em;">FEB 15 2018 1400</span>	Received By: FEDEX Print First and Last Name: _____ Signature: _____ Date/Time: _____		
Relinquished By: FedEx Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: C. Carlin Print First and Last Name: <span style="font-size: 1.5em;">[Signature]</span> Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: <span style="font-size: 1.5em;">2/16/18 0845</span>		
Relinquished By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____	Date/Time: _____

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <i>443944</i>			C.O.C.# <b>S18-002-472</b>			
					Page 1 of 1			
<b>Collector:</b> Malcom Chunn CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <i>95/96</i>		<b>Ice Chest No.:</b> <i>605-422</i>				
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <i>1714 9629 8460</i>				
<b>Protocol:</b> SURV <i>GEL KS 2/14/18</i>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <i>N/A 9067</i>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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			<b>SPECIAL INSTRUCTIONS</b> N/A <i>REV. 2/15/18</i>					
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H672	N	W	FEB 15 2018	<i>1254</i>	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

<b>Relinquished By:</b> <i>MCH</i> Malcom Chunn CHPRC <i>Signature</i>	<b>Received By:</b> Chris Fulton CHPRC <i>Signature</i>	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
<b>Relinquished By:</b> <i>CF</i> Chris Fulton CHPRC <i>Signature</i>	<b>Received By:</b> FEDEX <i>Signature</i>		
<b>Relinquished By:</b> FedEx <i>Signature</i>	<b>Received By:</b> <i>C. Tomplin</i> C. Tomplin <i>Signature</i>		
<b>Relinquished By:</b> <i>Signature</i>	<b>Received By:</b> <i>Signature</i>		
<b>FINAL SAMPLE DISPOSITION</b>	<b>Disposal Method (e.g., Return to customer, per lab procedure, used in process):</b>	<b>Disposed By:</b>	<b>Date/Time:</b>

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <i>443944</i>			C.O.C.# <b>S18-002-475</b>			
					Page 1 of 1			
<b>Collector:</b> Malcom Chunn CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <i>95/96</i>		<b>Ice Chest No.:</b> <i>N/A</i>				
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <i>N/A 771496298460</i>				
<b>Protocol:</b> SURV <i>GEL</i>		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <i>N/A 90607</i>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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			<b>SPECIAL INSTRUCTIONS</b> N/A					
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H673	N	W	FEB 15 2018	1254	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

<b>Relinquished By:</b> <i>Malcom Chunn</i> Print First and Last Name	<i>Signature</i>	FEB 15 2018 <i>1300</i> Date/Time	<b>Received By:</b> Chris Fulton Print First and Last Name	<i>Signature</i>	FEB 15 2018 <i>1300</i> Date/Time	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
<b>Relinquished By:</b> Chris Fulton Print First and Last Name	<i>Signature</i>	FEB 15 2018 <i>1400</i> Date/Time	<b>Received By:</b> FEDEX Print First and Last Name	<i>Signature</i>	Date/Time	
<b>Relinquished By:</b> Fedex Print First and Last Name	<i>Signature</i>	Date/Time	<b>Received By:</b> C-Tarplin Print First and Last Name	<i>Signature</i>	2/14/18 0845 Date/Time	
<b>Relinquished By:</b> Print First and Last Name	<i>Signature</i>	Date/Time	<b>Received By:</b> Print First and Last Name	<i>Signature</i>	Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):				Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>				C.O.C. # <b>S18-002-564</b>		
						Page 1 of 1		
<b>Collector:</b> Juan Aguilar ICHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 - 98/40		<b>Ice Chest No.:</b> <sup>FEB</sup> <del>N/A</del> <sup>2-15-18</sup> GWS-738				
<b>Shipped To (Lab):</b> <del>TestAmerica Incorporated, Rich</del>		<b>Method of Shipment:</b> GOVERNMENT VEHICLE		<b>Bill of Lading/Air Bill No.:</b> <sup>FEB</sup> <del>N/A</del> <sup>2-15-18</sup> 771492198586				
<b>Protocol:</b> SURV		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <sup>FEB</sup> <del>N/A</del> <sup>2-15-18</sup> 9067				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A				
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H6V1	N	W	2-15-18	0830	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: Juan Aguilar ICHPRC <i>[Signature]</i> FEB 15 2018 1125 <small>Print First and Last Name      Signature      Date/Time</small>	Received By: Troy Bacon CHPRC <i>[Signature]</i> FEB 15 2018 1125 <small>Print First and Last Name      Signature      Date/Time</small>	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other		
Relinquished By: Troy Bacon CHPRC <i>[Signature]</i> FEB 15 2018 1400 <small>Print First and Last Name      Signature      Date/Time</small>	Received By: FEDEX <small>Print First and Last Name      Signature      Date/Time</small>			
Relinquished By: FedEx <small>Print First and Last Name      Signature      Date/Time</small>	Received By: C-Tarplin <i>[Signature]</i> 2/16/18 0845 <small>Print First and Last Name      Signature      Date/Time</small>			
Relinquished By: <small>Print First and Last Name      Signature      Date/Time</small>	Received By: <small>Print First and Last Name      Signature      Date/Time</small>			
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 1.5em; color: blue;">4439144</span>			C.O.C.# <b>S18-002-656</b>			
Collector: <u>Juan Aguilar</u> /CHPRC		Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650					
SAF No.: S18-002		Sampling Origin: Hanford Site	Purchase Order/Charge Code: 300071					
Project Title: Sitewide Surv, February 2018		Logbook No.: HNF-N-506-98140	Ice Chest No.: <del>N/A</del> <sup>TJB</sup> <del>2-15-18</del> GWS-738					
Shipped To (Lab): <u>TestAmerica Incorporated, Rich</u>		Method of Shipment: GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.: <del>N/A</del> <sup>TJB</sup> <del>2-15-18</del> 771492698385					
Protocol: SURV <span style="margin-left: 100px;">GEL KS 2/14/18</span>		Priority: 30 Days	Offsite Property No.: <del>N/A</del> <sup>TJB</sup> <del>2-15-18</del> 9067					
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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			<b>SPECIAL INSTRUCTIONS</b> N/A					
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HBY2	N	W	2-15-18	1007	1x125-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool <=6C

March 19, 2018

Relinquished By: <u>Juan Aguilar</u> /CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	Received By: <u>Troy Bacon</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: <u>Troy Bacon</u> CHPRC Signature: _____ Date/Time: FEB 15 2018 1400	Received By: <b>FEDEX</b> Signature: _____ Date/Time: _____	
Relinquished By: <b>FEDEX</b> Signature: _____ Date/Time: _____	Received By: <u>C. T. ...</u> Signature: _____ Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

Rev 1

CH2M Hill Plateau Remediation Company  
**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**  
 443944  
 C.O.C. # S18-002-233  
 Page 1 of 1

**Collector:** Malcom Chunn CHPRC  
**Contact/Requester:** Karen Waters-Husted  
**Telephone No.:** 509-376-4650  
**SAF No.:** S18-002  
**Sampling Origin:** Hanford Site  
**Purchase Order/Charge Code:** 300071  
**Project Title:** Sitewide Surv, February 2018  
**Logbook No.:** HNF-N-506 95/96  
**Ice Chest No.:** 6WS-738  
**Shipped To (Lab):** GEL Laboratories, LLC  
**Method of Shipment:** Commercial Carrier  
**Bill of Lading/Air Bill No.:** 77149269885  
**Protocol:** SURV  
**Priority:** 30 Days  
**Offsite Property No.:** 9067

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H4B6	Y	W	FEB 15 2018	1123	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B3	N	W			1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B3	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

March 19, 2018

Relinquished By: Malcom Chunn Signature: [Signature] Date/Time: FEB 15 2018 1240	Received By: Chris Fulton CHPRC Signature: [Signature] Date/Time: FEB 15 2018 1240	<b>Matrix *</b> S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquid SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other	
Relinquished By: Chris Fulton CHPRC Signature: [Signature] Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: [Signature] Date/Time:		
Relinquished By: Fedex Signature: [Signature] Date/Time:	Received By: C. [Signature] Signature: [Signature] Date/Time: 2/14/18 0845		
Relinquished By: Signature: [Signature] Date/Time:	Received By: Signature: [Signature] Date/Time:		
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>		C.O.C.# <b>S18-002-234</b>
				Page 1 of 1
<b>Collector:</b> Malcom Chunn CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650	
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071	
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506 <span style="font-size: 1.5em;">95/96</span>		<b>Ice Chest No.:</b> <span style="font-size: 1.5em;">6WS-738</span>	
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier		<b>Bill of Lading/Air Bill No.:</b> <span style="font-size: 1.5em;">7714 9621 8586</span>	
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <span style="font-size: 1.5em;">9067</span>	

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H4B8	N	W	FEB 15 2018	0835	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B8	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C
B3H5L7	Y	W			1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: <span style="font-size: 1.5em;">M.R. Chunn</span> <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small> FEB 15 2018 1240	Received By: Chris Fulton <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small> <span style="font-size: 1.5em;">[Signature]</span> FEB 15 2018 1240	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: Chris Fulton <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small> <span style="font-size: 1.5em;">[Signature]</span> FEB 15 2018 1400	Received By: FEDEX <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small>	
Relinquished By: FedEx <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small>	Received By: <span style="font-size: 1.5em;">C. Stimpin</span> <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small> 2/16/18 0845	
Relinquished By: <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small>	Received By: <small>Print First and Last Name</small> <small>Signature</small> <small>Date/Time</small>	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: _____ Date/Time: _____

Rev 1

<b>Collector:</b> Malcom Chunn CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506 <span style="font-size: 1.2em;">95/96</span>	<b>Ice Chest No.:</b> <span style="font-size: 1.2em;">605-422</span>
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> <span style="font-size: 1.2em;">7714 96298460</span>
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> <span style="font-size: 1.2em;">9067</span>

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H652	Y	W	FEB 15 2018	0944	1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B9	N	W			1x500-mL G/P	6020_METALS_ICPMS: Chromium (1)	6 Months	HNO3 to pH <2
B3H4B9	N	W			5x40-mL aGs*	8260_VOA_GCMS_IX: COMMON REV 1	14 Days	HCl or H2SO4 to pH <2 / Cool <=6C

March 19, 2018

Relinquished By: <span style="font-size: 1.2em;">MC</span> Malcom Chunn Print First and Last Name      Signature      FEB 15 2018 1240 Date/Time	Received By: <span style="font-size: 1.2em;">[Signature]</span> Chris Fulton CHPRC Print First and Last Name      Signature      FEB 15 2018 1240 Date/Time	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: <span style="font-size: 1.2em;">[Signature]</span> CHPRC Print First and Last Name      Signature      FEB 15 2018 Date/Time	Received By: <span style="font-size: 1.2em;">FEDEX</span> Print First and Last Name      Signature      Date/Time	
Relinquished By: <span style="font-size: 1.2em;">FedEx</span> Print First and Last Name      Signature      Date/Time	Received By: <span style="font-size: 1.2em;">[Signature]</span> Print First and Last Name      Signature      2/16/18 Date/Time	
Relinquished By: _____ Print First and Last Name      Signature      Date/Time	Received By: _____ Print First and Last Name      Signature      Date/Time	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: _____      Date/Time: _____

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: red;">413944</span>				C.O.C. # <b>S18-002-182</b>		
						Page 1 of 1		
<b>Collector:</b> MIKE ESPARZA CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506-97-61		<b>Ice Chest No.:</b> 6005-422				
<b>Shipped To (Lab):</b> GEL Laboratories, LLC		<b>Method of Shipment:</b> Commercial Carrier		<b>Bill of Lading/Air Bill No.:</b> 771496398460				
<b>Protocol:</b> SURV		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> 9067				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A				
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3H405	N		FEB 15 2018	1145	1x1-L P	9310_ALPHABETA_GPC: Gross Beta	6 Months	HNO3 to pH <2

March 19, 2018

1345		WC 2-15-18		1345				
<b>Relinquished By:</b> MIKE ESPARZA <i>Mike Esparza</i> <small>Print First and Last Name      Signature</small>		<b>Received By:</b> <del>SSU-1</del> FEDEX <small>Print First and Last Name      Signature</small>		<b>Date/Time:</b> FEB 15 2018		<b>Date/Time:</b> 2/16/18 0845		
<b>Relinquished By:</b> FedEx <small>Print First and Last Name      Signature</small>		<b>Received By:</b> C. Tarplin <i>C. Tarplin</i> <small>Print First and Last Name      Signature</small>		<b>Date/Time:</b> 2/16/18 0845				
<b>Relinquished By:</b> <small>Print First and Last Name      Signature</small>		<b>Received By:</b> <small>Print First and Last Name      Signature</small>		<b>Date/Time:</b>				
<b>Relinquished By:</b> <small>Print First and Last Name      Signature</small>		<b>Received By:</b> <small>Print First and Last Name      Signature</small>		<b>Date/Time:</b>				
<b>FINAL SAMPLE DISPOSITION</b>		<b>Disposal Method (e.g., Return to customer, per lab procedure, used in process):</b>				<b>Disposed By:</b>		<b>Date/Time:</b>

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				C.O.C. # <b>S18-002-187</b>	
		443944				Page 1 of 1	
<b>Collector:</b> MIKE ESPARZA CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650			
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071			
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 - 97-01		<b>Ice Chest No.:</b> 6605-422			
<b>Shipped To (Lab):</b> GEL Laboratories, LLC		<b>Method of Shipment:</b> Commercial Carrier		<b>Bill of Lading/Air Bill No.:</b> 771496298460			
<b>Protocol:</b> SURV		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> 9067			
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A			

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H442	N		FEB 15 2018	1318	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

March 19, 2018

Relinquished By: MIKE ESPARZA <i>Mike Esparza</i> Print First and Last Name      Signature      Date/Time FEB 15 2018	Received By: SSU-1 FEDEX Print First and Last Name      Signature      Date/Time 1345      m 2-15-18      1345	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: FedEx Print First and Last Name      Signature      Date/Time	Received By: C. Tarplin <i>C. Tarplin</i> Print First and Last Name      Signature      Date/Time 2/16/18 0845	
Relinquished By: Print First and Last Name      Signature      Date/Time	Received By: Print First and Last Name      Signature      Date/Time	
Relinquished By: Print First and Last Name      Signature      Date/Time	Received By: Print First and Last Name      Signature      Date/Time	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:      Date/Time:

Rev 1

<b>CH2M Hill Plateau Remediation Company</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 1.5em; color: blue;">443944</span>	C.O.C. # <b>S18-002-222</b>
Page 1 of 1		
<b>Collector:</b> Juan Aguilar <small>CHPRC</small>	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506-98140	<b>Ice Chest No.:</b> GWS-675
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> 77149466510
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> 9062

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H6F9	N	W	2-15-18	0926	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6F9	N	W	2-15-18	0926	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: <i>Juan Aguilar</i> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time: FEB 15 2018 1125	Received By: <i>Troy Bacon</i> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time: FEB 15 2018 1125	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: <i>Troy Bacon</i> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time: FEB 15 2018 1100	Received By: <b>FEDEX</b> Print First and Last Name      Signature      Date/Time:	
Relinquished By: <b>FEDEX</b> Print First and Last Name      Signature      Date/Time:	Received By: <i>C. Amplin</i> Print First and Last Name      Signature      Date/Time: 2/16/18 0845	
Relinquished By: Print First and Last Name      Signature      Date/Time:	Received By: Print First and Last Name      Signature      Date/Time:	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:      Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>		C.O.C.# <b>S18-002-225</b>
				Page 1 of 1
<b>Collector:</b> Juan Aguilar /CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650		
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071		
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506-98/40	<b>Ice Chest No.:</b> GWS-738		
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> 77492198585		
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> 9067		

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H6J4	N	W	2-15-18	0815	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6J4	N	W	2-15-18	0815	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: <b>Juan Aguilar</b> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time <b>FEB 15 2018 1125</b>	Received By: <b>Troy Bacon</b> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time <b>FEB 15 2018 1125</b>	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: <b>Troy Bacon</b> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time <b>FEB 15 2018 1405</b>	Received By: <b>FEDEX</b> Print First and Last Name      Signature      Date/Time	
Relinquished By: <b>FEDEX</b> Print First and Last Name      Signature      Date/Time	Received By: <b>C. Tanpin</b> <small>CHPRC</small> Print First and Last Name      Signature      Date/Time <b>2/16/18 0845</b>	
Relinquished By: Print First and Last Name      Signature      Date/Time	Received By: Print First and Last Name      Signature      Date/Time	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:      Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 1.5em; color: blue;">443944</span>				C.O.C.# <b>S18-002-226</b>		
						Page 1 of 1		
Collector: <b>Juan Aguilar</b> CHPRC		Contact/Requester: <b>Karen Waters-Husted</b>		Telephone No.: <b>509-376-4650</b>				
SAF No.: <b>S18-002</b>		Sampling Origin: <b>Hanford Site</b>		Purchase Order/Charge Code: <b>300071</b>				
Project Title: <b>Sitewide Surv, February 2018</b>		Logbook No.: <b>HNF-N-506-98140</b>		Ice Chest No.: <b>GWS-675</b>				
Shipped To (Lab): <b>GEL Laboratories, LLC</b>		Method of Shipment <b>Commercial Carrier</b>		Bill of Lading/Air Bill No.: <b>771494105170</b>				
Protocol <b>SURV</b>		Priority: <b>30 Days</b>		Offsite Property No.: <b>9062</b>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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				<b>SPECIAL INSTRUCTIONS</b> N/A				
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H6J5	N	W	2-15-18	1042	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6J5	N	W	2-15-18	1042	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: <b>Juan Aguilar</b> CHPRC Signature: <i>[Signature]</i> Date/Time: <b>FEB 15 2018 1125</b>	Received By: <b>Troy Bacon</b> CHPRC Signature: <i>[Signature]</i> Date/Time: <b>FEB 15 2018 1125</b>	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: <b>CHPRC</b> <b>Troy L. Bacon</b> Signature: <i>[Signature]</i> Date/Time: <b>FEB 15 2018 1420</b>	Received By: <b>FEDEX</b> Signature: _____ Date/Time: _____	
Relinquished By: <b>FedEx</b> Signature: _____ Date/Time: _____	Received By: <b>C. Carlin</b> Signature: <i>[Signature]</i> Date/Time: <b>2/14/18 0845</b>	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____      Date/Time: _____

Rev 1

<b>CH2MHill Plateau Remediation Company</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue; font-family: cursive;">4439144</span>	C.O.C.# <b>S18-002-230</b>
		Page 1 of 1

<b>Collector:</b> Juan Aguilar CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506 -98140	<b>Ice Chest No.:</b> GWS-675
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> 771494165170
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> 9062

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H5Y7	N	W	2-15-18	1007	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H5Y7	N	W	2-15-18	1007	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: <b>Juan Aguilar</b> CHPRC Print First and Last Name      Signature      Date/Time: FEB 15 2018 1125	Received By: <b>Troy Bacon</b> CHPRC <b>Troy L. Bacon</b> Print First and Last Name      Signature      Date/Time: FEB 15 2018 1125	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: <b>Troy L. Bacon</b> CHPRC <b>Troy L. Bacon</b> Print First and Last Name      Signature      Date/Time: FEB 15 2018 1400	Received By: <b>FEDEX</b> Print First and Last Name      Signature      Date/Time:		
Relinquished By: <b>FedEx</b> Print First and Last Name      Signature      Date/Time:	Received By: <b>C. Tomlin</b> Print First and Last Name      Signature      Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name      Signature      Date/Time:	Received By: Print First and Last Name      Signature      Date/Time:		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Rev 1

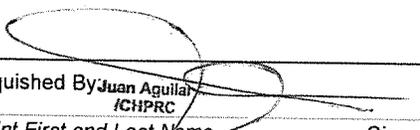
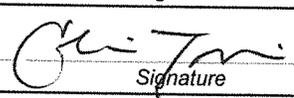
CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		C.O.C.# <b>S18-002-565</b>
		443944		Page 1 of 1
<b>Collector:</b> Juan Aguilar #CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650		
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071		
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506 - 98140	<b>Ice Chest No.:</b> GWS-675		
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> 77494665170		
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> 9062		

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H6V2	N	W	2-15-18	1007	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H6V2	N	W	2-15-18	1007	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: Juan Aguilar #CHPRC Signature:  Date/Time: FEB 15 2018 1125	Received By: Troy Bacon #CHPRC Signature: Troy L. Bacon Date/Time: FEB 15 2018 1125	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: CHPRC Troy L. Bacon Signature: Troy L. Bacon Date/Time: FEB 15 2018 1400	Received By: FEDEX Signature: Date/Time:		
Relinquished By: FedEx Signature: Date/Time:	Received By: C. Tardín Signature:  Date/Time: 2/16/18 0845		
Relinquished By: Signature: Date/Time:	Received By: Signature: Date/Time:		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		C.O.C. # <b>S18-002-624</b>
		443944		Page 1 of 1
<b>Collector:</b> Juan Aguilar /CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650		
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071		
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506-98140	<b>Ice Chest No.:</b> BWS-738		
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> 771492698585		
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> 9067		

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H873	N	W	2-15-18	0830	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3H873	N	W	2-15-18	0830	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

March 19, 2018

Relinquished By: <u>Juan Aguilar</u> /CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	Received By: <u>Troy Bacon</u> /CHPRC Signature: _____ Date/Time: FEB 15 2018 1125	<b>Matrix *</b> S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other
Relinquished By: <u>Troy Bacon</u> /CHPRC Signature: _____ Date/Time: FEB 15 2018 1400	Received By: <u>FEDEX</u> Signature: _____ Date/Time: _____	
Relinquished By: <u>FedEx</u> Signature: _____ Date/Time: _____	Received By: <u>C. Torgler</u> Signature: _____ Date/Time: 2/16/18 0845	
Relinquished By: _____ Signature: _____ Date/Time: _____	Received By: _____ Signature: _____ Date/Time: _____	
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____		Disposed By: _____ Date/Time: _____

Rev 1

CH2MHill Plateau Remediation Company		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>			C.O.C. # <b>S18-002-677</b>			
					Page 1 of 1			
<b>Collector:</b> Malcom Chunn CHPRC		<b>Contact/Requester:</b> Karen Waters-Husted		<b>Telephone No.:</b> 509-376-4650				
<b>SAF No.:</b> S18-002		<b>Sampling Origin:</b> Hanford Site		<b>Purchase Order/Charge Code:</b> 300071				
<b>Project Title:</b> Sitewide Surv, February 2018		<b>Logbook No.:</b> HNF-N-506 <span style="font-size: 1.5em;">95/96</span>		<b>Ice Chest No.:</b> <span style="font-size: 1.5em;">605-422</span>				
<b>Shipped To (Lab):</b> GEL Laboratories, LLC		<b>Method of Shipment:</b> Commercial Carrier		<b>Bill of Lading/Air Bill No.:</b> <span style="font-size: 1.5em;">771496298460</span>				
<b>Protocol:</b> SURV		<b>Priority:</b> 30 Days		<b>Offsite Property No.:</b> <span style="font-size: 1.5em;">91067</span>				
<b>POSSIBLE SAMPLE HAZARDS/REMARK</b> ** ** 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			<b>SPECIAL INSTRUCTIONS</b> N/A					
<b>Sample No.</b>	<b>Filter</b>	<b>*</b>	<b>Date</b>	<b>Time</b>	<b>No/Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>
B3HCK6	N	W	FEB 15 2018	1123	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None

March 19, 2018

Relinquished By: <span style="font-size: 1.5em;">MR CL</span> Print First and Last Name: Malcom Chunn Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: FEB 15 2018 1240	Received By: Chris Fulton Print First and Last Name: Chris Fulton Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: FEB 15 2018 1240	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WL = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: Chris Fulton Print First and Last Name: Chris Fulton Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: FEB 15 2018 1400	Received By: FEDEX Print First and Last Name: FEDEX Signature: Date/Time:		
Relinquished By: FedEx Print First and Last Name: FedEx Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time:	Received By: C. Tardio Print First and Last Name: C. Tardio Signature: <span style="font-size: 1.5em;">[Signature]</span> Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: Signature: Date/Time:	Received By: Print First and Last Name: Signature: Date/Time:		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By:	Date/Time:

Rev 1

CH2M Hill Plateau Remediation Company		811bs CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443944		C.O.C.# <b>S18-002-678</b>
				Page 1 of 1
<b>Collector:</b>	Malcom Chunn CHPRC	<b>Contact/Requester:</b>	Karen Waters-Husted	
<b>SAF No.:</b>	S18-002	<b>Sampling Origin:</b>	Hanford Site	
<b>Project Title:</b>	Sitewide Surv, February 2018	<b>Logbook No.:</b>	HNF-N-506	95/96
<b>Shipped To (Lab):</b>	GEL Laboratories, LLC	<b>Method of Shipment</b>	Commercial Carrier	
<b>Protocol</b>	SURV	<b>Priority:</b>	30 Days	
		<b>Telephone No.:</b>	509-376-4650	
		<b>Purchase Order/Charge Code:</b>	300071	
		<b>Ice Chest No.:</b>	6W5-738	
		<b>Bill of Lading/Air Bill No.:</b>	771496298585	
		<b>Offsite Property No.:</b>	9067	

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HCK7	N	W	FEB 15 2018	0944	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3HCK7	N	W			1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B3HCK7	N	W			1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

March 19, 2018

Relinquished By: <u>Malcom Chunn</u> Print First and Last Name: <u>Malcom Chunn</u> Signature: <u>[Signature]</u> Date/Time: <u>FEB 15 2018 1240</u>	Received By: <u>Chris Fulton</u> Print First and Last Name: <u>Chris Fulton</u> Signature: <u>[Signature]</u> Date/Time: <u>FEB 15 2018 1240</u>	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: <u>Chris Fulton</u> Print First and Last Name: <u>Chris Fulton</u> Signature: <u>[Signature]</u> Date/Time: <u>FEB 15 2018 1440</u>	Received By: <u>FEDEX</u> Print First and Last Name: <u>FEDEX</u> Signature: _____ Date/Time: _____		
Relinquished By: <u>FedEx</u> Print First and Last Name: <u>FedEx</u> Signature: _____ Date/Time: _____	Received By: <u>C. Tomlin</u> Print First and Last Name: <u>C. Tomlin</u> Signature: <u>[Signature]</u> Date/Time: <u>2/16/18 0845</u>		
Relinquished By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: _____ Print First and Last Name: _____ Signature: _____ Date/Time: _____		
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method (e.g., Return to customer, per lab procedure, used in process): _____ Disposed By: _____ Date/Time: _____	

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91165

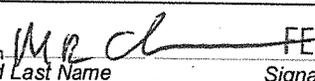
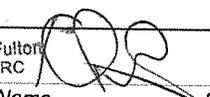
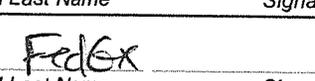
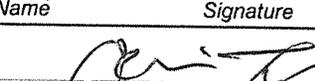
<b>CH2M Hill Plateau Remediation Company</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b> <span style="font-size: 2em; color: blue;">443944</span>	C.O.C.# <b>S18-002-679</b> Page 1 of 1
<b>Collector:</b> Malcom Chunn CHPRC	<b>Contact/Requester:</b> Karen Waters-Husted	<b>Telephone No.:</b> 509-376-4650
<b>SAF No.:</b> S18-002	<b>Sampling Origin:</b> Hanford Site	<b>Purchase Order/Charge Code:</b> 300071
<b>Project Title:</b> Sitewide Surv, February 2018	<b>Logbook No.:</b> HNF-N-506 <span style="color: blue;">95/96</span>	<b>Ice Chest No.:</b> <span style="color: blue;">6WS-422</span>
<b>Shipped To (Lab):</b> GEL Laboratories, LLC	<b>Method of Shipment:</b> Commercial Carrier	<b>Bill of Lading/Air Bill No.:</b> <span style="color: blue;">771496298460</span>
<b>Protocol:</b> SURV	<b>Priority:</b> 30 Days	<b>Offsite Property No.:</b> <span style="color: blue;">9067</span>

**POSSIBLE SAMPLE HAZARDS/REMARK**  
 \*\* \*\* 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

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3HCK8	N	W	FEB 15 2018	0835	1x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B3HCK8	N	W	/	/	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B3HCK8	N	W	/	/	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

March 19, 2018

Relinquished By: <span style="color: blue;">MR Chunn</span> Print First and Last Name: <span style="color: blue;">Malcom Chunn</span> Signature:  Date/Time: FEB 15 2018 1240	Received By: Chris Fulton Print First and Last Name: <span style="color: blue;">Chris Fulton</span> Signature:  Date/Time: FEB 15 2018 1240	Matrix * S = Soil      DS = Drum Solids SE = Sediment      DL = Drum Liquid SO = Solid      T = Tissue SL = Sludge      WI = Wipe W = Water      L = Liquid O = Oil      V = Vegetation A = Air      X = Other	
Relinquished By: Chris Fulton Print First and Last Name: <span style="color: blue;">Chris Fulton</span> Signature:  Date/Time: FEB 15 2018 1240	Received By: FEDEX Print First and Last Name: <span style="color: blue;">FEDEX</span> Signature:  Date/Time:		
Relinquished By: FedEx Print First and Last Name: <span style="color: blue;">FedEx</span> Signature:  Date/Time:	Received By: C. Tamplin Print First and Last Name: <span style="color: blue;">C. Tamplin</span> Signature:  Date/Time: 2/16/18 0845		
Relinquished By: Print First and Last Name: _____ Signature: _____ Date/Time: _____	Received By: Print First and Last Name: _____ Signature: _____ Date/Time: _____		
<b>FINAL SAMPLE DISPOSITION</b> Disposal Method (e.g., Return to customer, per lab procedure, used in process):		Disposed By: _____	Date/Time: _____

Rev 1



# **Data Review Qualifier Definitions**

## Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank >= MDC or >5% sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

# Laboratory Certifications

**List of current GEL Certifications as of 15 March 2018**

<b>State</b>	<b>Certification</b>
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# **Volatile Analysis**

# Case Narrative

GC/MS Volatile  
 Technical Case Narrative  
 CH2MHill Plateau Remediation Company (CPRC)  
 SDG #: GEL443944  
 Work Order #: 443944

**Product:** Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

**Analytical Method:** SW846 8260C

**Analytical Procedure:** GL-OA-E-038 REV# 26

**Analytical Batch:** 1739833

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944013	B3H4B3
443944014	B3H4B8
443944017	B3H4B9
1203973334	Method Blank (MB)
1203973335	Laboratory Control Sample (LCS)
1203973336	443833001(NonSDG) Post Spike (PS)
1203973337	443833001(NonSDG) Post Spike Duplicate (PSD)
1203974615	Method Blank (MB)
1203974616	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information**

**Continuing Calibration Verification Requirements**

The calibration verification standard requirements were not all met for samples 443944013 (B3H4B3), 443944014 (B3H4B8) and 443944017 (B3H4B9). Dichlorodifluoromethane recovered at 21.9%D and Trichlorofluoromethane recovered at 20.9%D in the daily CCV analyzed on 2/19/18. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

**Quality Control (QC) Information**

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits.

Sample	Analyte	Value
1203973337 (Non SDG 443833001PSD)	2-Butanone	64* (70%-130%)

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
--------	---------	-------

1203973336 (Non SDG 443833001PS)	Acetone	53* (70%-130%)
1203973337 (Non SDG 443833001PSD)	Acetone	49* (70%-130%)

**Technical Information**

**Sample Dilutions/Methanol Dilutions**

Samples 443944013 (B3H4B3) and 443944017 (B3H4B9) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	<b>443944</b>	
	<b>013</b>	<b>017</b>
Carbon tetrachloride	4X	2X

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

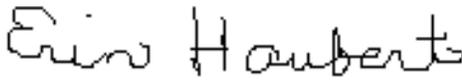
**The Qualifiers in this report are defined as follows:**

- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

<b>Signature:</b> 	<b>Name:</b> Erin Haubert
<b>Date:</b> 14 MAR 2018	<b>Title:</b> Data Validator

# Sample Data Summary

March 19, 2018

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Certificate of Analysis  
Sample Summary

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 11:23	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944013	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B3	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/16/2018 17:02	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 02/16/2018 17:02	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 021618V3\3V515.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene		2.42	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	3.11	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0

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Certificate of Analysis  
Sample Summary

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 11:23	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944013	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B3	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/16/2018 17:02	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 02/16/2018 17:02	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 021618V3\3V515.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 11:23	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944013	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B3DL	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/20/2018 14:36	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 4
<b>Prep Date:</b> 02/20/2018 14:36	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 022018V3\3W211.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	D	238	ug/L	1.20	8.00	3.00

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Certificate of Analysis  
Sample Summary

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 08:35	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944014	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B8	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/16/2018 17:33	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 02/16/2018 17:33	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 021618V3\3V516.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	3.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	J	3.32	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0

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Certificate of Analysis  
Sample Summary

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 08:35	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944014	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B8	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/16/2018 17:33	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 02/16/2018 17:33	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 021618V3\3V516.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

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Certificate of Analysis  
Sample Summary

SDG Number: GEL443944  
Lab Sample ID: 443944017  
  
Client ID: B3H4B9  
Batch ID: 1739833  
Run Date: 02/16/2018 18:05  
Prep Date: 02/16/2018 18:05  
Data File: 021618V3\3V517.D

Date Collected: 02/15/2018 09:44  
Date Received: 02/16/2018 08:45  
Client: CPRC001  
Method: SW846 8260C  
Inst: VOA3.I  
Analyst: JP1  
  
Column: DB-624

Matrix: WATER  
  
Project: CPRC0S18002  
SOP Ref: GL-OA-E-038  
Dilution: 1  
Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
79-01-6	Trichloroethylene	J	1.37	ug/L	0.300	2.00	1.00
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	1.7
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	4.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	2.77	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	TU	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0

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Certificate of Analysis  
Sample Summary

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 09:44	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944017	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B9	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/16/2018 18:05	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 02/16/2018 18:05	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 021618V3\3V517.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Date Collected:</b> 02/15/2018 09:44	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 443944017	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H4B9DL	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Batch ID:</b> 1739833	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 02/20/2018 15:07	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 2
<b>Prep Date:</b> 02/20/2018 15:07	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 022018V3\3W212.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	D	141	ug/L	0.600	4.00	3.00

# Quality Control Summary

**March 19, 2018**  
**GEL LABORATORIES LLC**

**Rev 1**

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: February 22, 2018

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**CH2M Hill Plateau Remediation Company**  
**MSIN R3-50 CHPRC**  
**PO Box 1600**  
**Richland, Washington**

**Contact: Mr. Scot Fitzgerald**

**Workorder: 443944**

<b>Parmname</b>	<b>NOM</b>	<b>Sample Qual</b>	<b>QC</b>	<b>Units</b>	<b>RPD%</b>	<b>REC%</b>	<b>Range</b>	<b>Anlst</b>	<b>Date Time</b>
<b>Volatile-GC/MS</b>									
Batch	1739833								
QC1203973335 LCS									
1,1,1,2-Tetrachloroethane	50.0		44.2	ug/L		88	(70%-130%)	JP1	02/16/18 10:43
1,1,1-Trichloroethane	50.0		50.7	ug/L		101	(70%-130%)		
1,1,2,2-Tetrachloroethane	50.0		41.8	ug/L		84	(70%-130%)		
1,1,2-Trichloroethane	50.0		42.5	ug/L		85	(70%-130%)		
1,1-Dichloroethane	50.0		47.0	ug/L		94	(70%-130%)		
1,1-Dichloroethylene	50.0		49.2	ug/L		98	(70%-130%)		
1,2,3-Trichloropropane	50.0		42.9	ug/L		86	(70%-130%)		
1,2-Dibromo-3-chloropropane	50.0		40.7	ug/L		81	(70%-130%)		
1,2-Dibromoethane	50.0		43.8	ug/L		88	(70%-130%)		
1,2-Dichloroethane	50.0		50.3	ug/L		101	(70%-130%)		
1,2-Dichloropropane	50.0		46.7	ug/L		93	(70%-130%)		
1,4-Dichlorobenzene	50.0		41.1	ug/L		82	(70%-130%)		
2-Butanone	250		249	ug/L		99	(70%-130%)		

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**QC Summary**

Workorder: 443944

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
2-Hexanone	250			226	ug/L		90	(70%-130%)	JP1	02/16/18	10:43
4-Methyl-2-pentanone	250			203	ug/L		81	(70%-130%)			
Acetone	250			246	ug/L		99	(70%-130%)			
Acetonitrile	1250			1110	ug/L		89	(70%-130%)			
Benzene	50.0			45.3	ug/L		91	(70%-130%)			
Bromodichloromethane	50.0			48.5	ug/L		97	(70%-130%)			
Bromoform	50.0			42.2	ug/L		84	(70%-130%)			
Bromomethane	50.0			41.1	ug/L		82	(70%-130%)			
Carbon disulfide	250			225	ug/L		90	(70%-130%)			
Carbon tetrachloride	50.0			49.7	ug/L		99	(70%-130%)			
Chlorobenzene	50.0			41.5	ug/L		83	(70%-130%)			
Chloroethane	50.0			45.4	ug/L		91	(70%-130%)			
Chloroform	50.0			48.5	ug/L		97	(70%-130%)			
Chloromethane	50.0			47.0	ug/L		94	(70%-130%)			
Dibromochloromethane	50.0			43.8	ug/L		88	(70%-130%)			

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**QC Summary**

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Dibromomethane	50.0			46.5	ug/L		93	(70%-130%)	JP1	02/16/18	10:43
Dichlorodifluoromethane	50.0			47.0	ug/L		94	(70%-130%)			
Ethylbenzene	50.0			43.6	ug/L		87	(70%-130%)			
Iodomethane	250			225	ug/L		90	(70%-130%)			
Methylene chloride	50.0			46.5	ug/L		93	(70%-130%)			
Styrene	50.0			44.1	ug/L		88	(70%-130%)			
Tetrachloroethylene	50.0			40.8	ug/L		82	(70%-130%)			
Toluene	50.0			41.0	ug/L		82	(70%-130%)			
Trichloroethylene	50.0			48.3	ug/L		97	(70%-130%)			
Trichlorofluoromethane	50.0			50.6	ug/L		101	(70%-130%)			
Vinyl acetate	250			224	ug/L		90	(70%-130%)			
Vinyl chloride	50.0			47.4	ug/L		95	(70%-130%)			
Xylenes (total)	150			124	ug/L		83	(70%-130%)			
cis-1,2-Dichloroethylene	50.0			47.7	ug/L		95	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			48.7	ug/L		97	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
trans-1,2-Dichloroethylene	50.0			49.0	ug/L		98	(70%-130%)	JP1	02/16/18	10:43
trans-1,3-Dichloropropylene	50.0			46.8	ug/L		94	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			52.3	ug/L		105	(70%-130%)			
**Bromofluorobenzene	50.0			51.1	ug/L		102	(70%-130%)			
**Toluene-d8	50.0			46.8	ug/L		94	(70%-130%)			
QC1203974616 LCS											
1,1,1,2-Tetrachloroethane	50.0			53.7	ug/L		107	(70%-130%)		02/20/18	10:23
1,1,1-Trichloroethane	50.0			60.1	ug/L		120	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			50.8	ug/L		102	(70%-130%)			
1,1,2-Trichloroethane	50.0			51.5	ug/L		103	(70%-130%)			
1,1-Dichloroethane	50.0			54.5	ug/L		109	(70%-130%)			
1,1-Dichloroethylene	50.0			59.0	ug/L		118	(70%-130%)			
1,2,3-Trichloropropane	50.0			52.8	ug/L		106	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			54.8	ug/L		110	(70%-130%)			
1,2-Dibromoethane	50.0			54.8	ug/L		110	(70%-130%)			
1,2-Dichloroethane	50.0			60.0	ug/L		120	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
1,2-Dichloropropane	50.0			54.2	ug/L		108	(70%-130%)	JP1	02/20/18	10:23
1,4-Dichlorobenzene	50.0			48.8	ug/L		98	(70%-130%)			
2-Butanone	250			295	ug/L		118	(70%-130%)			
2-Hexanone	250			273	ug/L		109	(70%-130%)			
4-Methyl-2-pentanone	250			255	ug/L		102	(70%-130%)			
Acetone	250			285	ug/L		114	(70%-130%)			
Acetonitrile	1250			1310	ug/L		105	(70%-130%)			
Benzene	50.0			52.6	ug/L		105	(70%-130%)			
Bromodichloromethane	50.0			57.8	ug/L		116	(70%-130%)			
Bromoform	50.0			53.0	ug/L		106	(70%-130%)			
Bromomethane	50.0			49.4	ug/L		99	(70%-130%)			
Carbon disulfide	250			270	ug/L		108	(70%-130%)			
Carbon tetrachloride	50.0			59.9	ug/L		120	(70%-130%)			
Chlorobenzene	50.0			50.0	ug/L		100	(70%-130%)			
Chloroethane	50.0			53.5	ug/L		107	(70%-130%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Chloroform	50.0			56.8	ug/L		114	(70%-130%)	JP1	02/20/18	10:23
Chloromethane	50.0			55.9	ug/L		112	(70%-130%)			
Dibromochloromethane	50.0			55.2	ug/L		110	(70%-130%)			
Dibromomethane	50.0			55.5	ug/L		111	(70%-130%)			
Dichlorodifluoromethane	50.0			60.0	ug/L		120	(70%-130%)			
Ethylbenzene	50.0			52.1	ug/L		104	(70%-130%)			
Iodomethane	250			265	ug/L		106	(70%-130%)			
Methylene chloride	50.0			51.4	ug/L		103	(70%-130%)			
Styrene	50.0			53.4	ug/L		107	(70%-130%)			
Tetrachloroethylene	50.0			51.1	ug/L		102	(70%-130%)			
Toluene	50.0			50.3	ug/L		101	(70%-130%)			
Trichloroethylene	50.0			57.8	ug/L		116	(70%-130%)			
Trichlorofluoromethane	50.0			59.7	ug/L		119	(70%-130%)			
Vinyl acetate	250			268	ug/L		107	(70%-130%)			
Vinyl chloride	50.0			55.7	ug/L		111	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
cis-1,2-Dichloroethylene	50.0			54.5	ug/L		109	(70%-130%)	JP1	02/20/18	10:23
cis-1,3-Dichloropropylene	50.0			55.7	ug/L		111	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			59.2	ug/L		118	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			55.9	ug/L		112	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			51.7	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0			51.0	ug/L		102	(70%-130%)			
**Toluene-d8	50.0			44.8	ug/L		90	(70%-130%)			
QC1203973334 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					02/16/18	12:17
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
1,2-Dibromoethane			U	0.300	ug/L				JP1	02/16/18	12:17
1,2-Dichloroethane			U	0.300	ug/L						
1,2-Dichloropropane			U	0.300	ug/L						
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Bromoform			U	0.300	ug/L				JP1	02/16/18	12:17
Bromomethane			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Methacrylonitrile			U	3.00	ug/L				JP1	02/16/18	12:17
Methyl methacrylate			U	3.00	ug/L						
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
trans-1,3-Dichloropropylene			U	0.300	ug/L				JP1	02/16/18	12:17
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			53.1	ug/L		106	(70%-130%)			
**Bromofluorobenzene	50.0			51.5	ug/L		103	(70%-130%)			
**Toluene-d8	50.0			46.9	ug/L		94	(70%-130%)			
QC1203974615 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					02/20/18	11:58
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
1,2-Dichloropropane			U	0.300	ug/L				JP1	02/20/18	11:58
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Bromomethane			U	0.300	ug/L						

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Carbon disulfide			U	1.60	ug/L				JP1	02/20/18	11:58
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methyl methacrylate			U	3.00	ug/L						

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Methylene chloride			U	1.60	ug/L				JP1	02/20/18	11:58
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			52.2	ug/L		104	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
**Bromofluorobenzene	50.0			52.9	ug/L		106	(70%-130%)	JP1	02/20/18	11:58
**Toluene-d8	50.0			46.0	ug/L		92	(70%-130%)			
QC1203973336 443833001 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	52.6	ug/L		105	(70%-130%)		02/16/18	19:07
1,1,1-Trichloroethane	50.0	U	0.00	56.1	ug/L		112	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	49.1	ug/L		98	(70%-130%)			
1,1,2-Trichloroethane	50.0	U	0.00	50.5	ug/L		101	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	52.5	ug/L		105	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	53.1	ug/L		106	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00	50.3	ug/L		101	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	52.8	ug/L		106	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	52.2	ug/L		104	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	58.0	ug/L		116	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	50.8	ug/L		102	(70%-130%)			
1,4-Dichlorobenzene	50.0	U	0.00	46.9	ug/L		94	(70%-130%)			
2-Butanone	250	TU	0.00	180	ug/L		72	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
2-Hexanone	250	U	0.00		197	ug/L	79	(70%-130%)	JP1	02/16/18	19:07
4-Methyl-2-pentanone	250	U	0.00		234	ug/L	94	(70%-130%)			
Acetone	250	TU	0.00	T	134	ug/L	53*	(70%-130%)			
Acetonitrile	1250	U	0.00		1310	ug/L	105	(70%-130%)			
Benzene	50.0	U	0.00		48.5	ug/L	97	(70%-130%)			
Bromodichloromethane	50.0	U	0.00		54.2	ug/L	108	(70%-130%)			
Bromoform	50.0	U	0.00		49.4	ug/L	99	(70%-130%)			
Bromomethane	50.0	U	0.00		53.9	ug/L	108	(70%-130%)			
Carbon disulfide	250	U	0.00		249	ug/L	100	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		58.8	ug/L	118	(70%-130%)			
Chlorobenzene	50.0	U	0.00		45.4	ug/L	91	(70%-130%)			
Chloroethane	50.0	U	0.00		54.1	ug/L	108	(70%-130%)			
Chloroform	50.0	U	0.00		54.1	ug/L	108	(70%-130%)			
Chloromethane	50.0	U	0.00		54.2	ug/L	108	(70%-130%)			
Dibromochloromethane	50.0	U	0.00		54.7	ug/L	109	(70%-130%)			

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**QC Summary**

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Dibromomethane	50.0	U	0.00	53.3	ug/L		107	(70%-130%)	JP1	02/16/18	19:07
Dichlorodifluoromethane	50.0	U	0.00	65.0	ug/L		130	(70%-130%)			
Ethylbenzene	50.0	U	0.00	49.4	ug/L		99	(70%-130%)			
Iodomethane	250	U	0.00	250	ug/L		100	(70%-130%)			
Methylene chloride	50.0		25.8	74.7	ug/L		98	(70%-130%)			
Styrene	50.0	U	0.00	51.1	ug/L		102	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	49.3	ug/L		99	(70%-130%)			
Toluene	50.0	U	0.00	47.7	ug/L		95	(70%-130%)			
Trichloroethylene	50.0	U	0.00	53.7	ug/L		107	(70%-130%)			
Trichlorofluoromethane	50.0	U	0.00	61.4	ug/L		123	(70%-130%)			
Vinyl acetate	250	U	0.00	291	ug/L		116	(70%-130%)			
Vinyl chloride	50.0	U	0.00	55.3	ug/L		111	(70%-130%)			
Xylenes (total)	150	U	0.00	146	ug/L		97	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	52.6	ug/L		105	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	50.4	ug/L		101	(70%-130%)			

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**QC Summary**

Workorder: 443944

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>												
Batch	1739833											
trans-1,2-Dichloroethylene	50.0	U	0.00		54.5	ug/L		109	(70%-130%)	JP1	02/16/18	19:07
trans-1,3-Dichloropropylene	50.0	J	0.340		52.7	ug/L		105	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		51.1		53.5	ug/L		107	(70%-130%)			
**Bromofluorobenzene	50.0		50.5		50.0	ug/L		100	(70%-130%)			
**Toluene-d8	50.0		48.7		46.3	ug/L		93	(70%-130%)			
QC1203973337 443833001 PSD												
1,1,1,2-Tetrachloroethane	50.0	U	0.00		49.6	ug/L	6	99	(0%-20%)		02/16/18	19:39
1,1,1-Trichloroethane	50.0	U	0.00		54.6	ug/L	3	109	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00		46.0	ug/L	7	92	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	0.00		50.4	ug/L	0	101	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00		52.5	ug/L	0	105	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00		53.8	ug/L	1	108	(0%-20%)			
1,2,3-Trichloropropane	50.0	U	0.00		46.8	ug/L	7	94	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00		48.2	ug/L	9	96	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00		50.9	ug/L	3	102	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00		54.6	ug/L	6	109	(0%-20%)			

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**QC Summary**

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
1,2-Dichloropropane	50.0	U	0.00		50.3	ug/L	1	101	(0%-20%)	JP1	02/16/18 19:39
1,4-Dichlorobenzene	50.0	U	0.00		45.4	ug/L	3	91	(0%-20%)		
2-Butanone	250	TU	0.00	T	159	ug/L	13	64*	(0%-20%)		
2-Hexanone	250	U	0.00		176	ug/L	11	71	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		219	ug/L	7	88	(0%-20%)		
Acetone	250	TU	0.00	T	124	ug/L	8	49*	(0%-20%)		
Acetonitrile	1250	U	0.00		1220	ug/L	7	98	(0%-20%)		
Benzene	50.0	U	0.00		48.1	ug/L	1	96	(0%-20%)		
Bromodichloromethane	50.0	U	0.00		53.4	ug/L	1	107	(0%-20%)		
Bromoform	50.0	U	0.00		47.3	ug/L	4	95	(0%-20%)		
Bromomethane	50.0	U	0.00		49.1	ug/L	9	98	(0%-20%)		
Carbon disulfide	250	U	0.00		250	ug/L	0	100	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		55.6	ug/L	6	111	(0%-20%)		
Chlorobenzene	50.0	U	0.00		46.9	ug/L	3	94	(0%-20%)		
Chloroethane	50.0	U	0.00		50.9	ug/L	6	102	(0%-20%)		

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**QC Summary**

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Chloroform	50.0	U	0.00	51.9	ug/L	4	104	(0%-20%)	JP1	02/16/18	19:39
Chloromethane	50.0	U	0.00	49.2	ug/L	10	98	(0%-20%)			
Dibromochloromethane	50.0	U	0.00	52.8	ug/L	4	106	(0%-20%)			
Dibromomethane	50.0	U	0.00	52.9	ug/L	1	106	(0%-20%)			
Dichlorodifluoromethane	50.0	U	0.00	58.6	ug/L	10	117	(0%-20%)			
Ethylbenzene	50.0	U	0.00	46.4	ug/L	6	93	(0%-20%)			
Iodomethane	250	U	0.00	252	ug/L	1	101	(0%-20%)			
Methylene chloride	50.0		25.8	74.7	ug/L	0	98	(0%-20%)			
Styrene	50.0	U	0.00	50.8	ug/L	1	102	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00	47.5	ug/L	4	95	(0%-20%)			
Toluene	50.0	U	0.00	45.4	ug/L	5	91	(0%-20%)			
Trichloroethylene	50.0	U	0.00	51.7	ug/L	4	103	(0%-20%)			
Trichlorofluoromethane	50.0	U	0.00	54.1	ug/L	13	108	(0%-20%)			
Vinyl acetate	250	U	0.00	251	ug/L	15	101	(0%-20%)			
Vinyl chloride	50.0	U	0.00	51.9	ug/L	6	104	(0%-20%)			

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**QC Summary**

Workorder: 443944

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1739833										
Xylenes (total)	150	U	0.00	148	ug/L	1	98	(0%-20%)	JP1	02/16/18	19:39
cis-1,2-Dichloroethylene	50.0	U	0.00	51.5	ug/L	2	103	(0%-20%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	49.9	ug/L	1	100	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	54.8	ug/L	1	110	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	J	0.340	51.5	ug/L	2	102	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		51.1	49.3	ug/L		99	(70%-130%)			
**Bromofluorobenzene	50.0		50.5	48.3	ug/L		97	(70%-130%)			
**Toluene-d8	50.0		48.7	44.9	ug/L		90	(70%-130%)			

**Notes:**

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (Organics only)

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**QC Summary**

Workorder: 443944

<b>Parmname</b>	<b>NOM</b>	<b>Sample</b>	<b>Qual</b>	<b>QC</b>	<b>Units</b>	<b>RPD%</b>	<b>REC%</b>	<b>Range</b>	<b>Anlst</b>	<b>Date</b>	<b>Time</b>
-----------------	------------	---------------	-------------	-----------	--------------	-------------	-------------	--------------	--------------	-------------	-------------

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.  
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.  
 \* Indicates that a Quality Control parameter was not within specifications.  
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

March 19, 2018

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Rev 1

## Surrogate Recovery Report

SDG Number: GEL443944

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203973335	LCS for batch 1739833	105	94	102
1203973334	MB for batch 1739833	106	94	103
443944013	B3H4B3	103	89	99
443944014	B3H4B8	106	99	100
443944017	B3H4B9	110	93	100
1203973336	B3D7T6PS	107	93	100
1203973337	B3D7T6PSD	99	90	97
1203974616	LCS for batch 1739833	103	90	102
1203974615	MB for batch 1739833	104	92	106
443944013	B3H4B3DL	109 D	94 D	102 D
443944017	B3H4B9DL	108 D	91 D	103 D

**Surrogate**

DCED4 = 1,2-Dichloroethane-d4

TOL = Toluene-d8

BFB = Bromofluorobenzene

**Acceptance Limits**

(70%-130%)

(70%-130%)

(70%-130%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

# Metals Analysis

# Case Narrative

Metals  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL443944  
Work Order #: 443944

**Product:** Determination of Metals by ICP-MS  
**Analytical Method:** SW846 3005A/6020B  
**Analytical Procedure:** GL-MA-E-014 REV# 32  
**Analytical Batch:** 1739925

**Preparation Method:** SW846 3005A  
**Preparation Procedure:** GL-MA-E-006 REV# 14  
**Preparation Batch:** 1739924

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944012	B3H4B6
443944013	B3H4B3
443944014	B3H4B8
443944015	B3H5L7
443944016	B3H652
443944017	B3H4B9
1203973648	Method Blank (MB)ICP-MS
1203973649	Laboratory Control Sample (LCS)
1203973652	443936011(NonSDGL) Serial Dilution (SD)
1203973650	443936011(NonSDGS) Matrix Spike (MS)
1203973651	443936011(NonSDGSD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Calibration Information**

**ICSA/ICSAB Statement**

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

**The Qualifiers in this report are defined as follows:**

- \* Duplicate analysis not within control limits
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Nik-Cole Elmore

**Date:** 15 MAR 2018

**Title:** Data Validator

# Sample Data Summary

**METALS**  
-1-  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL443944

**CONTRACT:** CPRC0S18002

**METHOD TYPE:** SW846

**SAMPLE ID:** 443944012

**BASIS:** As Received

**DATE COLLECTED** 15-FEB-18

**CLIENT ID:** B3H4B6

**LEVEL:** Low

**DATE RECEIVED** 16-FEB-18

**MATRIX:** WATER

**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	21.1	ug/L		3	10	10	1	MS	BAJ	02/27/18 23:51	180227-1	1739925

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

**\*Analytical Methods:**

MS SW846 3005A/6020B

**METALS**  
-1-  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL443944

**CONTRACT:** CPRC0S18002

**METHOD TYPE:** SW846

**SAMPLE ID:** 443944013

**BASIS:** As Received

**DATE COLLECTED** 15-FEB-18

**CLIENT ID:** B3H4B3

**LEVEL:** Low

**DATE RECEIVED** 16-FEB-18

**MATRIX:** WATER

**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	29.5	ug/L		3	10	10	1	MS	BAJ	02/27/18 23:54	180227-1	1739925

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

**\*Analytical Methods:**

MS SW846 3005A/6020B

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL443944

**CONTRACT:** CPRC0S18002

**METHOD TYPE:** SW846

**SAMPLE ID:** 443944014

**BASIS:** As Received

**DATE COLLECTED** 15-FEB-18

**CLIENT ID:** B3H4B8

**LEVEL:** Low

**DATE RECEIVED** 16-FEB-18

**MATRIX:** WATER

**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	02/27/18 23:57	180227-1	1739925

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

**\*Analytical Methods:**

MS SW846 3005A/6020B

**METALS**  
-1-  
**INORGANICS ANALYSIS DATA PACKAGE**

SDG No: GEL443944

CONTRACT: CPRC0S18002

METHOD TYPE: SW846

SAMPLE ID: 443944015

BASIS: As Received

DATE COLLECTED 15-FEB-18

CLIENT ID: B3H5L7

LEVEL: Low

DATE RECEIVED 16-FEB-18

MATRIX: WATER

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	02/28/18 00:01	180227-1	1739925

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

**\*Analytical Methods:**

MS SW846 3005A/6020B

**METALS**  
**-1-**  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL443944

**CONTRACT:** CPRC0S18002

**METHOD TYPE:** SW846

**SAMPLE ID:**443944016

**BASIS:** As Received

**DATE COLLECTED** 15-FEB-18

**CLIENT ID:** B3H652

**LEVEL:** Low

**DATE RECEIVED** 16-FEB-18

**MATRIX:** WATER

**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	94.3	ug/L		3	10	10	1	MS	BAJ	02/28/18 00:04	180227-1	1739925

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

**\*Analytical Methods:**

MS SW846 3005A/6020B

**METALS**  
-1-  
**INORGANICS ANALYSIS DATA PACKAGE**

**SDG No:** GEL443944

**CONTRACT:** CPRC0S18002

**METHOD TYPE:** SW846

**SAMPLE ID:**443944017

**BASIS:** As Received

**DATE COLLECTED** 15-FEB-18

**CLIENT ID:** B3H4B9

**LEVEL:** Low

**DATE RECEIVED** 16-FEB-18

**MATRIX:** WATER

**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-47-3	Chromium	100	ug/L		3	10	10	1	MS	BAJ	02/28/18 00:07	180227-1	1739925

**Prep Information:**

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739925	1739924	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

**\*Analytical Methods:**

MS SW846 3005A/6020B

# Quality Control Summary

**March 19, 2018**  
**GEL LABORATORIES LLC**

**Rev 1**

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: March 15, 2018

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**CH2M Hill Plateau Remediation Company**

**MSIN R3-50 CHPRC**

**PO Box 1600**

**Richland, Washington**

**Contact: Mr. Scot Fitzgerald**

**Workorder: 443944**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
<b>Metals Analysis - ICPMS</b>											
Batch	1739925										
QC1203973649	LCS										
Chromium	50.0			49.3	ug/L		98.7	(80%-120%)	BAJ	02/27/18	23:15
QC1203973648	MB										
Chromium			U	3.00	ug/L					02/27/18	23:11
QC1203973650	443936011	MS									
Chromium	50.0	12.9		64.7	ug/L		104	(75%-125%)		02/27/18	23:21
QC1203973651	443936011	MSD									
Chromium	50.0	12.9		65.3	ug/L	0.877	105	(0%-20%)		02/27/18	23:25
QC1203973652	443936011	SDILT									
Chromium		12.9	DU	15.0	ug/L	N/A		(0%-20%)		02/27/18	23:31

**Notes:**

The Qualifiers in this report are defined as follows:

- \* Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

**GEL LABORATORIES LLC**

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**QC Summary**

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
----------	-----	--------	------	----	-------	--------	------	-------	-------	------	------

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.  
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.  
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# General Chem Analysis

# Case Narrative

**General Chemistry  
 Technical Case Narrative  
 CH2MHill Plateau Remediation Company (CPRC)  
 SDG #: GEL443944  
 Work Order #: 443944**

**Product: Ion Chromatography****Analytical Method:** 9056\_ANIONS\_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batches:** 1739764 and 1739766

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
443944001	B3H6H0
443944002	B3H6J6
443944003	B3H6J7
443944004	B3H5Y8
443944005	B3H4B4
443944006	B3H4C0
443944007	B3H4C1
443944008	B3H672
443944009	B3H673
443944010	B3H6V1
443944011	B3HBY2
1203973199	Method Blank (MB)
1203973200	Laboratory Control Sample (LCS)
1203973201	443944001(B3H6H0) Sample Duplicate (DUP)
1203973202	443944001(B3H6H0) Post Spike (PS)
1203973211	Method Blank (MB)
1203973212	Laboratory Control Sample (LCS)
1203973213	443944011(B3HBY2) Sample Duplicate (DUP)
1203973214	443944011(B3HBY2) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information****Holding Times**

Samples (See Below) were analyzed outside of the method specified holding time due to instrument problems delaying the analysis. The analysis was performed as soon as possible by the analyst. The data is qualified.

Sample	Analyte	Value
1203973213 (B3HBY2DUP)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
1203973214 (B3HBY2PS)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944007 (B3H4C1)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944008 (B3H672)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944009 (B3H673)	Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18
443944011 (B3HBY2)	Chloride, Nitrate and Sulfate	Received 16-FEB-18, within holding, analyzed 19-FEB-18, out of holding 17-FEB-18

**Sample Dilutions**

The following samples 1203973201 (B3H6H0DUP), 1203973202 (B3H6H0PS), 443944001 (B3H6H0), 443944003 (B3H6J7), 443944004 (B3H5Y8), 443944005 (B3H4B4), 1203973213 (B3HBY2DUP), 1203973214 (B3HBY2PS), 443944007 (B3H4C1), 443944008 (B3H672), 443944009 (B3H673) and 443944011 (B3HBY2) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	443944							
	001	003	004	005	007	008	009	011
Several	100X 1X	5X 1X	10X 1X	5X 1X	20X 1X	20X 1X	20X 1X	10X 1X

**Miscellaneous Information**

**Manual Integrations**

Samples 443944002 (B3H6J6), 443944003 (B3H6J7), 443944004 (B3H5Y8) and 443944005 (B3H4B4) were manually integrated to correctly position the baseline as set in the calibration standards.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

**GEL LABORATORIES LLC**

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

**The Qualifiers in this report are defined as follows:**

- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- D Results are reported from a diluted aliquot of sample.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: 

Name: **Aubrey Kingsbury**

Date: **13 MAR 2018**

Title: **Analyst I**

# Sample Data Summary

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6H0	Project: CPRC0S18002
Sample ID: 443944001	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 09:26	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride		552	33.0	500	ug/L		1	MAR1	02/16/18	1231	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	38200	6700	20000	ug/L		100	MAR1	02/16/18	1913	1739764	2
Nitrate-N	D	144000	3300	10000	ug/L		100					
Sulfate	D	176000	13300	40000	ug/L		100					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6J6	Project: CPRC0S18002
Sample ID: 443944002	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 08:15	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	B	69.8	67.0	200	ug/L		1	MAR1	02/16/18	1302	1739764	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6J7	Project: CPRC0S18002
Sample ID: 443944003	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 10:42	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	434	33.0	500	ug/L		1	MAR1	02/16/18	1332	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	11500	335	1000	ug/L		5	MAR1	02/16/18	2045	1739764	2
Nitrate-N	D	9900	165	500	ug/L		5					
Sulfate	D	49300	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H5Y8	Project: CPRC0S18002
Sample ID: 443944004	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 10:07	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	354	33.0	500	ug/L		1	MAR1	02/16/18	1403	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	15400	670	2000	ug/L		10	MAR1	02/16/18	2116	1739764	2
Nitrate-N	D	28400	330	1000	ug/L		10					
Sulfate	D	88500	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H4B4	Project: CPRC0S18002
Sample ID: 443944005	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 11:23	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride		546	33.0	500	ug/L		1	MAR1	02/16/18	1434	1739764	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	30000	335	1000	ug/L		5	MAR1	02/16/18	2147	1739764	2
Nitrate-N	D	15700	165	500	ug/L		5					
Sulfate	D	55000	665	2000	ug/L		5					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H4C0	Project: CPRC0S18002
Sample ID: 443944006	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 08:35	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	B	140	67.0	200	ug/L		1	JXH5	02/16/18	1107	1739766	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

- |                                       |                                |
|---------------------------------------|--------------------------------|
| DF: Dilution Factor                   | Lc/LC: Critical Level          |
| DL: Detection Limit                   | PF: Prep Factor                |
| MDA: Minimum Detectable Activity      | RL: Reporting Limit            |
| MDC: Minimum Detectable Concentration | SQL: Sample Quantitation Limit |

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H4C1	Project: CPRC0S18002
Sample ID: 443944007	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 09:44	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	275	33.0	500	ug/L		1	JXH5	02/16/18	1137	1739766	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	22100	1340	4000	ug/L		20	JXH5	02/19/18	2203	1739766	2
Nitrate-N	DX	53600	660	2000	ug/L		20					
Sulfate	D	61700	2660	8000	ug/L		20					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H672	Project: CPRC0S18002
Sample ID: 443944008	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 12:54	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride		9340	67.0	200	ug/L		1	JXH5	02/16/18	1208	1739766	1
Fluoride	B	196	33.0	500	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Nitrate-N	DX	42900	660	2000	ug/L		20	JXH5	02/19/18	2234	1739766	2
Sulfate	D	28100	2660	8000	ug/L		20					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H673	Project: CPRC0S18002
Sample ID: 443944009	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 12:54	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride		9320	67.0	200	ug/L		1	JXH5	02/16/18	1239	1739766	1
Fluoride	B	203	33.0	500	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Nitrate-N	DX	43400	660	2000	ug/L		20	JXH5	02/19/18	2305	1739766	2
Sulfate	D	28200	2660	8000	ug/L		20					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3H6V1	Project: CPRC0S18002
Sample ID: 443944010	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 08:30	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Chloride	U	67.0	67.0	200	ug/L		1	JXH5	02/16/18	1310	1739766	1
Fluoride	U	33.0	33.0	500	ug/L		1					
Nitrate-N	U	33.0	33.0	250	ug/L		1					
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Sulfate	U	133	133	500	ug/L		1					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

- |                                       |                                |
|---------------------------------------|--------------------------------|
| DF: Dilution Factor                   | Lc/LC: Critical Level          |
| DL: Detection Limit                   | PF: Prep Factor                |
| MDA: Minimum Detectable Activity      | RL: Reporting Limit            |
| MDC: Minimum Detectable Concentration | SQL: Sample Quantitation Limit |

## Certificate of Analysis

Report Date: March 13, 2018

Company : CH2MHill Plateau Remediation Company  
 Address : MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
 Contact: Mr. Scot Fitzgerald  
 Project: CHPRC SAF S18-002

Client Sample ID: B3HBY2	Project: CPRC0S18002
Sample ID: 443944011	Client ID: CPRC001
Matrix: WATER	
Collect Date: 15-FEB-18 10:07	
Receive Date: 16-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC: COMMON "As Received"												
Fluoride	B	284	33.0	500	ug/L		1	JXH5	02/16/18	1341	1739766	1
Nitrite-N	U	33.0	33.0	250	ug/L		1					
Chloride	D	15300	670	2000	ug/L		10	JXH5	02/19/18	1114	1739766	2
Nitrate-N	DX	27500	330	1000	ug/L		10					
Sulfate	D	86100	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

**Notes:**

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# Quality Control Summary

**March 19, 2018**  
**GEL LABORATORIES LLC**

**Rev 1**

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary**

Report Date: March 13, 2018

Page 1 of 4

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1739764										
QC1203973201	443944001	DUP									
Chloride	D	38200	D	36800	ug/L	3.62		(0%-20%)	MAR1	02/16/18	19:43
Fluoride		552		532	ug/L	3.72	^	(+/-500)		02/16/18	15:05
Nitrate-N	D	144000	D	144000	ug/L	0.229		(0%-20%)		02/16/18	19:43
Nitrite-N	U	33.0	U	33.0	ug/L	N/A				02/16/18	15:05
Sulfate	D	176000	D	176000	ug/L	0.426		(0%-20%)		02/16/18	19:43
QC1203973200	LCS										
Chloride	5000			4800	ug/L		96.1	(80%-120%)		02/16/18	17:40
Fluoride	2500			2540	ug/L		102	(80%-120%)			
Nitrate-N	2500			2470	ug/L		98.6	(80%-120%)			
Nitrite-N	2500			2510	ug/L		101	(80%-120%)			
Sulfate	10000			10000	ug/L		100	(80%-120%)			
QC1203973199	MB										
Chloride			U	67.0	ug/L					02/16/18	17:09
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1739764										
Nitrite-N			U	33.0	ug/L				MAR1	02/16/18	17:09
Sulfate			U	133	ug/L						
QC1203973202 443944001 PS											
Chloride	5.00	D	0.382 D	5.13	mg/L		94.9	(75%-125%)		02/16/18	20:14
Fluoride	2.50		0.552	2.99	mg/L		97.4	(75%-125%)		02/16/18	15:36
Nitrate-N	2.50	D	1.44 D	4.05	mg/L		104	(75%-125%)		02/16/18	20:14
Nitrite-N	2.50	U	0.00	2.43	mg/L		97.2	(75%-125%)		02/16/18	15:36
Sulfate	10.0	D	1.76 D	11.6	mg/L		98.5	(75%-125%)		02/16/18	20:14
Batch 1739766											
QC1203973213 443944011 DUP											
Chloride		D	15300 D	15300	ug/L	0.209		(0%-20%)	JXH5	02/19/18	11:45
Fluoride		B	284 B	287	ug/L	1.3 ^		(+/-500)		02/16/18	18:19
Nitrate-N		DX	27500 DX	27500	ug/L	0.00726		(0%-20%)		02/19/18	11:45
Nitrite-N		U	33.0 U	33.0	ug/L	N/A				02/16/18	18:19
Sulfate		D	86100 D	85800	ug/L	0.39		(0%-20%)		02/19/18	11:45
QC1203973212 LCS											
Chloride	5000			4830	ug/L		96.7	(80%-120%)		02/16/18	16:47
Fluoride	2500			2520	ug/L		101	(80%-120%)			

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QC Summary

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Ion Chromatography</b>											
Batch	1739766										
Nitrate-N	2500			2440	ug/L		97.6	(80%-120%)	JXH5	02/16/18	16:47
Nitrite-N	2500			2480	ug/L		99	(80%-120%)			
Sulfate	10000			9940	ug/L		99.4	(80%-120%)			
QC1203973211 MB											
Chloride			U	67.0	ug/L					02/16/18	16:16
Fluoride			U	33.0	ug/L						
Nitrate-N			U	33.0	ug/L						
Nitrite-N			U	33.0	ug/L						
Sulfate			U	133	ug/L						
QC1203973214 443944011 PS											
Chloride	5.00	D	1.53 D	6.38	mg/L		96.9	(75%-125%)		02/19/18	12:16
Fluoride	2.50	B	0.284	2.77	mg/L		99.5	(75%-125%)		02/16/18	18:50
Nitrate-N	2.50	DX	2.75 DX	5.43	mg/L		107	(75%-125%)		02/19/18	12:16
Nitrite-N	2.50	U	0.00	2.32	mg/L		92.7	(75%-125%)		02/16/18	18:50
Sulfate	10.0	D	8.61 D	18.9	mg/L		103	(75%-125%)		02/19/18	12:16

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range

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**QC Summary**

Workorder: 443944

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).										
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.										
D	Results are reported from a diluted aliquot of sample.										
N	Spike Sample recovery is outside control limits.										
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.  
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.  
 \* Indicates that a Quality Control parameter was not within specifications.  
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

# Radiological Analysis

# Case Narrative

Radiochemistry  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL443944  
Work Order #: 443944

**Product:** I129LL\_SEP\_LEPS\_GS: COMMON (low level)  
**Analytical Method:** DOE EML HASL-300,I-01 Modified  
**Analytical Procedure:** GL-RAD-A-006 REV# 21  
**Analytical Batch:** 1741322

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
443944020	B3H6F9
443944021	B3H6J4
443944022	B3H6J5
443944023	B3H5Y7
443944024	B3H6V2
443944025	B3H873
443944026	B3HCK6
443944027	B3HCK7
443944028	B3HCK8
1203976948	Method Blank (MB)
1203976949	443944020(B3H6F9) Sample Duplicate (DUP)
1203976950	443944020(B3H6F9) Matrix Spike (MS)
1203976951	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information**

**Sample Re-prep/Re-analysis**

Samples were re-prepped due to high LCS recovery. The re-analysis is being reported.

**Product:** 9310\_ALPHABETA\_GPC: Gross Beta  
**Analytical Method:** 9310\_ALPHABETA\_GPC  
**Analytical Procedure:** GL-RAD-A-001 REV# 19  
**Analytical Batch:** 1740281

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
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443944018	B3H405
1203974608	Method Blank (MB)
1203974609	443944018(B3H405) Sample Duplicate (DUP)
1203974610	443944018(B3H405) Matrix Spike (MS)
1203974611	443944018(B3H405) Matrix Spike Duplicate (MSD)
1203974612	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Technical Information**

**Gross Alpha/Beta Preparation Information**

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

**Recounts**

Samples 1203974609 (B3H405DUP) and 443944018 (B3H405) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

**Miscellaneous Information**

**Additional Comments**

The matrix spike and matrix spike duplicate, 1203974610 (B3H405MS) and 1203974611 (B3H405MSD), aliquots were reduced to conserve sample volume.

**Product: TRITIUM\_DIST\_LSC: COMMON**

**Analytical Method: TRITIUM\_DIST\_LSC**

**Analytical Procedure: GL-RAD-A-002 REV# 22**

**Analytical Batch: 1739760**

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
443944019	B3H442
443944027	B3HCK7
443944028	B3HCK8
1203973171	Method Blank (MB)
1203973172	443932001(NonSDG) Sample Duplicate (DUP)
1203973173	443932001(NonSDG) Matrix Spike (MS)
1203973174	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

**Miscellaneous Information**

**Additional Comments**

The matrix spike, 1203973173 (Non SDG 443932001MS), aliquot was reduced to conserve sample volume.

**Product:** TC99\_EIE\_LSC: COMMON

**Analytical Method:** TC99\_EIE\_LSC

**Analytical Procedure:** GL-RAD-A-059 REV# 5

**Analytical Batch:** 1739980

The following samples were analyzed using the above methods and analytical procedure(s).

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
443944020	B3H6F9
443944021	B3H6J4
443944022	B3H6J5
443944023	B3H5Y7
443944024	B3H6V2
443944025	B3H873
443944027	B3HCK7
443944028	B3HCK8
1203973816	Method Blank (MB)
1203973817	443979016(NonSDG) Sample Duplicate (DUP)
1203973818	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443944 GEL Work Order: 443944

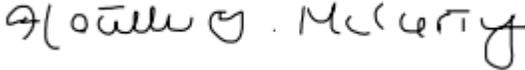
**The Qualifiers in this report are defined as follows:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

**Review/Validation**

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

**Signature:** 

**Name:** Heather McCarty

**Date:** 07 MAR 2018

**Title:** Analyst II

# Sample Data Summary

March 19, 2018

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**Certificate of Analysis  
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944018	Date Collected: 02/15/2018 11:45	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H405	Method: 9310_ALPHABETA_GPC	Prep Basis: "As Received"
Batch ID: 1740281	Analyst: JXK3	SOP Ref: GL-RAD-A-001
Run Date: 03/06/2018 11:45	Aliquot: 125 mL	Instrument: PIC5A
Data File: B1740281r1.xls	Prep Method: EPA 900.0/SW846 9310	Count Time: 60 min
Prep Batch: 1740281		
Prep Date: 03/05/2018 13:06		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-47-2	Beta BETA	U	2.70	pCi/L	+/-1.85	1.91	2.81	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944019	<b>Date Collected:</b> 02/15/2018 13:18	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H442	<b>Method:</b> TRITIUM_DIST_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739760	<b>Analyst:</b> MXH8	<b>SOP Ref:</b> GL-RAD-A-002
<b>Run Date:</b> 02/19/2018 16:42	<b>Aliquot:</b> 50 mL	<b>Instrument:</b> LSCRED
<b>Data File:</b> T1739760.xls	<b>Prep Method:</b> EPA 906.0 Modified	<b>Count Time:</b> 50 min
<b>Prep Batch:</b> 1739760		
<b>Prep Date:</b> 02/19/2018 08:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		3220	pCi/L	+/-283	685	278	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944020	Date Collected: 02/15/2018 09:26	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6F9	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1741322	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:37	Aliquot: 0.8 L	Instrument: XRAY1
Data File: I443944020.CNF;3	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 240 min
Prep Batch: 1741322		
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		2.02	pCi/L	+/-0.960	0.982	0.919	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944020	<b>Date Collected:</b> 02/15/2018 09:26	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H6F9	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 08:34	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		6280	pCi/L	+/-98.7	719	37.7	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2550	3070	CPM	83.2	(30%-105%)

**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944021	Date Collected: 02/15/2018 08:15	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6J4	Prep Basis: "As Received"	
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:38	Analyst: BSW1	Instrument: XRAY2
Data File: I443944021.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.423	pCi/L	+/-0.412	0.415	0.655	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944021	<b>Date Collected:</b> 02/15/2018 08:15	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H6J4	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 09:01	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-17.7	pCi/L	+/-20.7	20.7	36.9	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2630	3070	CPM	85.8	(30%-105%)

**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944022	<b>Date Collected:</b> 02/15/2018 10:42	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H6J5	<b>Prep Basis:</b> "As Received"	
<b>Batch ID:</b> 1741322	<b>Method:</b> DOE EML HASL-300,I-01 Mo	<b>SOP Ref:</b> GL-RAD-A-006
<b>Run Date:</b> 02/23/2018 10:38	<b>Analyst:</b> BSW1	<b>Instrument:</b> XRAY4
<b>Data File:</b> I443944022.CNF;2	<b>Aliquot:</b> 1.2 L	<b>Count Time:</b> 120 min
<b>Prep Batch:</b> 1741322	<b>Prep Method:</b> DOE EML HASL-300,I-01 M	
<b>Prep Date:</b> 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		1.07	pCi/L	+/-0.504	0.515	0.617	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944022	<b>Date Collected:</b> 02/15/2018 10:42	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H6J5	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 09:28	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		57.0	pCi/L	+/-20.3	21.3	32.0	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	3020	3070	CPM	98.4	(30%-105%)

**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944023	Date Collected: 02/15/2018 10:07	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H5Y7	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1741322	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 10:38	Aliquot: 1.2 L	Instrument: XRAY5
Data File: I443944023.CNF;2	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 1741322		
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		3.17	pCi/L	+/-1.45	1.49	1.11	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944023	<b>Date Collected:</b> 02/15/2018 10:07	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H5Y7	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 09:55	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		1370	pCi/L	+/-48.2	162	35.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2710	3070	CPM	88.3	(30%-105%)

**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944024	Date Collected: 02/15/2018 10:07	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H6V2	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1741322	Analyst: BSW1	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 11:10	Aliquot: 1.2 L	Instrument: GAM05
Data File: I443944024.CNF;2	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 141 min
Prep Batch: 1741322		
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		2.62	pCi/L	+/-1.28	1.30	0.827	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944024	<b>Date Collected:</b> 02/15/2018 10:07	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H6V2	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 10:22	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		1230	pCi/L	+/-44.7	146	33.6	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2840	3070	CPM	92.5	(30%-105%)

**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

SDG Number: GEL443944	Client: CPRC001	Project: CPRC0S18002
Lab Sample ID: 443944025	Date Collected: 02/15/2018 08:30	Matrix: WATER
	Date Received: 02/16/2018 08:45	
Client ID: B3H873	Prep Basis: "As Received"	
Batch ID: 1741322	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 02/23/2018 11:10	Analyst: BSW1	Instrument: GAM21
Data File: I443944025.CNF;2	Aliquot: 1.2 L	Count Time: 120 min
Prep Batch: 1741322	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.141	pCi/L	+/-0.307	0.314	0.520	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944025	<b>Date Collected:</b> 02/15/2018 08:30	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3H873	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 10:49	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-16.8	pCi/L	+/-17.8	17.8	31.8	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2980	3070	CPM	97.1	(30%-105%)

**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944026	<b>Date Collected:</b> 02/15/2018 11:23	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK6	<b>Prep Basis:</b> "As Received"	
<b>Batch ID:</b> 1741322	<b>Method:</b> DOE EML HASL-300,I-01 Mo	<b>SOP Ref:</b> GL-RAD-A-006
<b>Run Date:</b> 02/23/2018 13:39	<b>Analyst:</b> BSW1	<b>Instrument:</b> XRAY1
<b>Data File:</b> I443944026.CNF;2	<b>Aliquot:</b> 1.2 L	<b>Count Time:</b> 120 min
<b>Prep Batch:</b> 1741322	<b>Prep Method:</b> DOE EML HASL-300,I-01 M	
<b>Prep Date:</b> 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		0.768	pCi/L	+/-0.547	0.552	0.530	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944027	<b>Date Collected:</b> 02/15/2018 09:44	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK7	<b>Prep Basis:</b> "As Received"	
<b>Batch ID:</b> 1741322	<b>Method:</b> DOE EML HASL-300,I-01 Mo	<b>SOP Ref:</b> GL-RAD-A-006
<b>Run Date:</b> 02/23/2018 13:39	<b>Analyst:</b> BSW1	<b>Instrument:</b> XRAY2
<b>Data File:</b> I443944027.CNF;2	<b>Aliquot:</b> 1.2 L	<b>Count Time:</b> 120 min
<b>Prep Batch:</b> 1741322	<b>Prep Method:</b> DOE EML HASL-300,I-01 M	
<b>Prep Date:</b> 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.195	pCi/L	+/-0.387	0.397	0.794	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944027	<b>Date Collected:</b> 02/15/2018 09:44	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK7	<b>Method:</b> TRITIUM_DIST_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739760	<b>Analyst:</b> MXH8	<b>SOP Ref:</b> GL-RAD-A-002
<b>Run Date:</b> 02/19/2018 17:34	<b>Aliquot:</b> 50 mL	<b>Instrument:</b> LSCRED
<b>Data File:</b> T1739760.xls	<b>Prep Method:</b> EPA 906.0 Modified	<b>Count Time:</b> 50 min
<b>Prep Batch:</b> 1739760		
<b>Prep Date:</b> 02/19/2018 08:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1960	pCi/L	+/-245	451	283	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944027	<b>Date Collected:</b> 02/15/2018 09:44	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK7	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 11:16	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		87.7	pCi/L	+/-23.5	25.5	35.8	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2630	3070	CPM	85.8	(30%-105%)

**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944028	<b>Date Collected:</b> 02/15/2018 08:35	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK8	<b>Method:</b> DOE EML HASL-300,I-01 Mo	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1741322	<b>Analyst:</b> BSW1	<b>SOP Ref:</b> GL-RAD-A-006
<b>Run Date:</b> 02/23/2018 13:39	<b>Aliquot:</b> 1.2 L	<b>Instrument:</b> XRAY4
<b>Data File:</b> I443944028.CNF;2	<b>Prep Method:</b> DOE EML HASL-300,I-01 M	<b>Count Time:</b> 120 min
<b>Prep Batch:</b> 1741322		
<b>Prep Date:</b> 02/22/2018 12:04		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.183	pCi/L	+/-0.334	0.345	0.572	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

March 19, 2018

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944028	<b>Date Collected:</b> 02/15/2018 08:35	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK8	<b>Method:</b> TRITIUM_DIST_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739760	<b>Analyst:</b> MXH8	<b>SOP Ref:</b> GL-RAD-A-002
<b>Run Date:</b> 02/19/2018 18:26	<b>Aliquot:</b> 50 mL	<b>Instrument:</b> LSCRED
<b>Data File:</b> T1739760.xls	<b>Prep Method:</b> EPA 906.0 Modified	<b>Count Time:</b> 50 min
<b>Prep Batch:</b> 1739760		
<b>Prep Date:</b> 02/19/2018 08:43		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	24.1	pCi/L	+/-162	162	283	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

March 19, 2018

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**Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> GEL443944	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0S18002
<b>Lab Sample ID:</b> 443944028	<b>Date Collected:</b> 02/15/2018 08:35	<b>Matrix:</b> WATER
	<b>Date Received:</b> 02/16/2018 08:45	
<b>Client ID:</b> B3HCK8	<b>Method:</b> TC99_EIE_LSC	<b>Prep Basis:</b> "As Received"
<b>Batch ID:</b> 1739980	<b>Analyst:</b> CXS7	<b>SOP Ref:</b> GL-RAD-A-059
<b>Run Date:</b> 02/25/2018 11:42	<b>Aliquot:</b> 100 mL	<b>Instrument:</b> LSCGOLD
<b>Data File:</b> E1739980.xls	<b>Prep Method:</b> DOE EML HASL-300, Tc-02-	<b>Count Time:</b> 25 min
<b>Prep Batch:</b> 1739980		
<b>Prep Date:</b> 02/20/2018 12:20		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-11.1	pCi/L	+/-19.0	19.0	33.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	2820	3070	CPM	91.9	(30%-105%)

**Comments:**

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.  
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).  
 The MDC is a sample specific MDC.

# Quality Control Summary

**QC Summary**

Report Date: March 7, 2018  
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**Client :** CH2MHill Plateau Remediation Company  
 MSIN R3-50 CHPRC  
 PO Box 1600  
 Richland, Washington 99352  
**Contact:** Mr. Scot Fitzgerald  
**Workorder:** 443944

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
<b>Rad Gamma Spec</b>									
Batch	1741322								
QC1203976948	MB								
Iodine-129			U	0.0887	pCi/L			BSW1	02/23/1813:41
				Uncert: +/-0.411					
				TPU: +/-0.413					
QC1203976949	443944020	DUP							
Iodine-129		2.02		2.81	pCi/L				02/23/1813:41
				Uncert: +/-0.960		RPD: 65 (0% - 100%)			
				TPU: +/-0.982		RER: 1.91 (0-2)			
QC1203976950	443944020	MS							
Iodine-129		52.0	2.02	53.1	pCi/L	REC: 100 (75%-125%)			02/23/1815:53
				Uncert: +/-0.960					
				TPU: +/-0.982					
QC1203976951	LCS								
Iodine-129		34.7		35.5	pCi/L	REC: 102 (80%-120%)			02/23/1815:54
				Uncert: +/-3.84					
				TPU: +/-5.22					
<b>Rad Gas Flow</b>									
Batch	1740281								
QC1203974608	MB								
Beta			U	-0.246	pCi/L			JXK3	03/06/1810:33
				Uncert: +/-1.25					
				TPU: +/-1.25					
QC1203974609	443944018	DUP							
Beta		U	2.70	3.22	pCi/L				03/06/1811:45
				Uncert: +/-1.85		RPD: 18 (0% - 100%)			
				TPU: +/-1.91		RER: 0.379 (0-2)			
QC1203974610	443944018	MS							
Beta		1880	U	2.70	pCi/L	REC: 102 (75%-125%)			03/06/1810:34
				Uncert: +/-1.85					
				TPU: +/-1.91					
QC1203974611	443944018	MSD							
Beta		1880	U	2.70	pCi/L	REC: 99 (75%-125%)			03/06/1810:34
				Uncert: +/-1.85		RPD: 3 (0%-20%)			
				TPU: +/-1.91		RER: 0.223 (0-2)			
QC1203974612	LCS								
Beta		376		385	pCi/L	REC: 102 (80%-120%)			03/06/1810:34
				Uncert: +/-13.5					
				TPU: +/-63.7					
<b>Rad Liquid Scintillation</b>									
Batch	1739760								
QC1203973171	MB								
Tritium			U	-18.7	pCi/L			MXH8	02/19/1819:18
				Uncert: +/-157					
				TPU: +/-157					

## QC Summary

**Workorder: 443944**

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
<b>Rad Liquid Scintillation</b>									
Batch	1739760								
QC1203973172	443932001	DUP							
Tritium		7660		7940	pCi/L				02/19/1820:11
	Uncert:	+/-391		+/-403		RPD: 4	(0%-20%)		
	TPU:	+/-1530		+/-1590		RER: 0.253	(0-2)		
QC1203973173	443932001	MS							
Tritium	5160	7660		12100	pCi/L	REC: 87	(75%-125%)		02/19/1821:03
	Uncert:	+/-391		+/-718					
	TPU:	+/-1530		+/-2460					
QC1203973174	LCS								
Tritium	2580			2200	pCi/L	REC: 85	(80%-120%)		02/19/1821:55
	Uncert:			+/-251					
	TPU:			+/-493					
Batch	1739980								
QC1203973816	MB								
Technetium-99			U	-11.6	pCi/L			CXS7	02/25/1813:03
	Uncert:			+/-20.9					
	TPU:			+/-20.9					
**Technetium-99m Tracer	3070			2590	CPM	REC: 84	(30%-105%)		
QC1203973817	443979016	DUP							
Technetium-99		228		261	pCi/L				02/25/1813:31
	Uncert:	+/-30.6		+/-34.0		RPD: 13	(0%-20%)		
	TPU:	+/-40.1		+/-45.1		RER: 1.05	(0-2)		
**Technetium-99m Tracer	3070	2340		2240	CPM	REC: 73	(30%-105%)		
QC1203973818	LCS								
Technetium-99	888			828	pCi/L	REC: 93	(80%-120%)		02/25/1813:58
	Uncert:			+/-40.4					
	TPU:			+/-102					
**Technetium-99m Tracer	3070			2610	CPM	REC: 85	(30%-105%)		

**Notes:**

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \* Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- A The TIC is a suspected aldol-condensation product
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in both the associated QC blank and in the sample.
- B The analyte was detected in the associated method blank >= MDC or >5% sample activity.
- C Analyte has been confirmed by GC/MS analysis
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- E Reported value is estimated due to interferences. See comment in narrative.
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as

## QC Summary

Workorder: 443944

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
						appropriate). Value is estimated				
M						Duplicate precision not met.				
N						Spike Sample recovery is outside control limits.				
P						Aroclor target analyte with greater than 25% difference between column analyses.				
S						Reported value determined by the Method of Standard Additions (MSA)				
T						Spike and/or spike duplicate sample recovery is outside control limits.				
U						Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.				
UX						Gamma Spectroscopy--Uncertain identification				
W						Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.				
X						Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier				
Y						Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier				
Z						Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier				
o						Analyte failed to recover within LCS limits (Organics only)				

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

\*\* Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.