

July 21, 2016

REV. 1



a member of **The GEL Group** INC



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July 21, 2016

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

Re: CHPRC SAF S16-006
Work Order: 398858
SDG: GEL398858

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 08, 2016. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Per client P&D: This package was revised to include missing SIR16-417.

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: S16-006-302, S16-006-305, S16-006-308 and S16-006-315
Enclosures

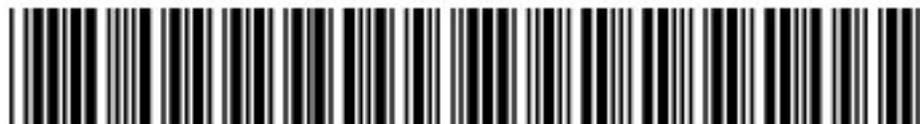


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Problem and Discrepancy Report

Problem and Discrepancy Report**GEL****SDG GEL398858****07/13/16**

The data package has the following issues:

There are two SIRs associated with data package GEL398858: SIR16-417 and SIR16-454. Only SIR16-454 was included in the data package. Please provide a revised data package to include both SIRs.

Resolution: *Provide correction.*

Lab Response:

The lab will correct and re-issue the data package.

Provide a resolution to each issue noted on the report

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Sample Issue Resolution

SAMPLE ISSUE RESOLUTION	SIR NUM	SIR16-454
	REV NUM	0
	DATE INITIATED	7/5/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) S16-006
OPERABLE UNIT(S) NONE
PROJECT(S) SURV16
SAMPLE EVENT TITLE(S) SURV16
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 2
SAMPLE NUMBERS B35D06, B35D32
SAMPLE MATRIX WATER
COLLECTION DATE 6/6/2016 - 6/7/2016
SDG NUM GEL398858

ISSUE BACKGROUND

CLASS Laboratory Issue

TYPE Quality Control Failure

DESCRIPTION The Se-79 batch for the listed SDGs had an LCS recovery of 121% that does not meet the client recovery range of 80-120%; however, it does meet our standard requirement of 125%. All of the sample results in the batch are less than MDA; therefore, this high bias does not impact the data.

DISPOSITION

DESCRIPTION Proposed Resolution: Initiate SIR, report results and include a detailed comment in the case narrative.

JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer DATE: 07/01/2016
ACCEPTED BY: Sarah Nagel DATE: 07/05/2016

SAMPLE ISSUE RESOLUTION

SIR NUM SIR16-417
REV NUM 0
DATE INITIATED 6/9/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) S16-006
OPERABLE UNIT(S) NONE
PROJECT(S) SURV16
SAMPLE EVENT TITLE(S) SURV16
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 1
SAMPLE NUMBERS B35D06
SAMPLE MATRIX WATER
COLLECTION DATE -
SDG NUM GEL398858

ISSUE BACKGROUND

CLASS Sample Management Issues
TYPE Analyte Correction
DESCRIPTION SMR discovered the 8260_VOA_GCMS_IX: COMMON service list for GEL inadvertently omitted several compounds. Omitted compounds were: Bromodichloromethane (75-27-4), bromomethane (74-83-9), ethyl cyanide (107-12-0), Methyl methacrylate (80-62-6), trichlorofluoromethane (75-69-4), cis-1,2-dichloroethene (156-59-2) and 1,4-dichlorobenzene (106-46-7).

DISPOSITION

DESCRIPTION Please add the omitted compounds.
JUSTIFICATION Final Disposition: Add the compounds and re-issue the report.

SUBMITTED BY: Scot Fitzgerald DATE: 06/09/2016
ACCEPTED BY: Heather Shaffer DATE: 06/09/2016

Case Narrative

Per client P&D: This package was revised to include missing SIR16-417.

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S16-006
SDG: GEL398858**

July 21, 2016

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 June 08, 2016, 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. Please see the enclosed SIR regarding a QC issue for Se79 analysis.

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 and DER.

Sample Identification

The laboratory received the following samples:

Laboratory Identification	Sample Description
398858001	B35CX6
398858002	B35D06
398858003	B35D32
398858004	B35D35
398858005	B35D65

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, 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 #: GEL398858
Work Order #: 398858

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 sample 398858002 (B35D06). The daily CCV analyzed on 6/9/16 recovered Dichlorodifluoromethane at 27.2%, Acrolein at 21.3%, 2-Chloro-1,3-butadiene at 26.2%, and Isobutyl alcohol at 21.1%. The daily CCV analyzed on 6/10/16 recovered Dichlorodifluoromethane at 26.1% and Acrolein at 22.0%. 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. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203564766 (Non SDG 398674001PS)	1,1-Dichloroethylene	135* (70%-130%)
	Acetone	61* (70%-130%)
1203564767 (Non SDG 398674001PSD)	1,1-Dichloroethylene	139* (70%-130%)
	Acetone	61* (70%-130%)

Metals

Determination of Metals by ICP

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

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 398858003 (B35D32) and 398858004 (B35D35).

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.

Radiochemistry

AMCMISO_EIE_PRECIP_AEA: 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.

Technical Information

Recounts

Sample 1203564010 (MB) was recounted once due to high yield and a second time due to a peak shift. The second recount is reported.

PUISO_PRECIP_AEA: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.

Technical Information

Recounts

Sample 1203564015 (LCS) was recounted due to a peak shift. The recount is reported.

UIISO_IE_PRECIP_AEA: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.

Technical Information

Recounts

The batch was recounted twice due to failed laboratory control sample spike recoveries. The third counts are reported.

GAMMA_GS: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.

I129LL_SEP_LEPS_GS: COMMON (low level)

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.

SRISO_SEP_PRECIP_GPC: 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.

Quality Control (QC) Information**QC Information**

The sample and duplicate, 1203566156 (Non SDG 398676005DUP), do not meet the client relative error ratio requirement; however, both sample and duplicate results are less than the minimum detectable activity.

Technical Information**Recounts**

Sample 1203566157 (LCS) was recounted due to high recovery. The recount is reported. Sample 1203566155 (MB) was recounted due to a suspected blank false positive. The recount is reported.

9310_ALPHABETA_GPC: ALPHA

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.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203566172 (Non SDG 398744003MS) and 1203566173 (Non SDG 398744003MSD), aliquots were reduced to conserve sample volume.

PU241_IE_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.

TC99_EIE_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.

Technical Information

Recounts

Samples 398858001 (B35CX6) and 398858003 (B35D32) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

SE79_SEP_IE_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.

Quality Control (QC) Information

QC Information

The laboratory control sample 1203570474 (LCS) does not meet the client's LCS requirement of 80-120%; however, it does meet GEL's standard LCS requirement of 75-125%. Reporting results.

Technical Information

Recounts

Sample 1203570474 (LCS) was recounted due to high recovery. The recount is reported.

Miscellaneous Information

C14_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.

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.

Technical Information**Recounts**

Sample 1203570616 (B35CY3DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

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

921bs

CH2M Hill Plateau Remediation Company

C.O.C. # **S16-006-305**
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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

398858

Collector: Dan Woehle
CHPRC

SAF No. S16-006

Project Title: SURV, JUNE 2016

Shipped To (Lab): **GEL Laboratories, LLC**

Protocol: SURV

Contact/Requester: Karen Waters-Husted

Sampling Origin: Hanford Site

Logbook No. HNF-N-506 86/16

Method of Shipment: Commercial Carrier

Priority: 30 Days **PRIORITY**

Telephone No. 509-376-4650

Purchase Order/Charge Code 300071 *Aw. 6/17/16*

Ice Chest No. *605-351492*

Bill of Lading/Air Bill No. *776461353384*

Offsite Property No. *6701*

POSSIBLE SAMPLE HAZARDS/REMARKS

*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS: N/A

Hold Time: _____

Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35D06	N	W	6.6.16	1353	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B35D06	N	W			4x40-mL aGs*	8260_VOA_GCMS_IX: COMMON	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B35D06	N	W			1x1-L G/P	AMCMISO_EIE_PRECIP_AEA: COMMON	180 Days	HNO3 to pH <2
B35D06	N	W			1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B35D06	N	W			1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B35D06	N	W			2x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B35D06	N	W			1x1-L G/P	PU241_IE_LSC: COMMON	6 Months	HNO3 to pH <2
B35D06	N	W			1x1-L G/P	PUISO_PLATE_AEA: COMMON	6 Months	HNO3 to pH <2
B35D06	N	W			1x1-L G/P	SE79_SEP_IE_LSC: COMMON	6 Months	HNO3 to pH <2
B35D06	N	W			3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B35D06	N	W			1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B35D06	N	W			1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B35D06	N	W	6.6.16	1353	3x1-L G/P	UIISO_IE_PRECIP_AEA: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Date/Time	Matrix *
Dan Woehle CHPRC	<i>Dan Woehle</i>		SSU-1			JUN 06 2016 1400	JUN 06 2016 1430	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By			SSU-1			JUN 07 2016 0910	JUN 07 2016 0910	
Relinquished By	<i>Jody Wald</i>		FEDEX			JUN 07 2016 1400	JUN 07 2016 1400	
Relinquished By			<i>M. Ershaw</i>				6/8/16 0900	

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

65165

CH2M Hill Plateau Remediation Company
 C.O.C.# S16-006-308
 Page 1 of 1

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 398858

Collector: K.C. Patterson/CHPRC
 Contact/Requester: Karen Waters-Husted
 Telephone No.: 509-376-4650
 SAF No.: S16-006
 Sampling Origin: Hanford Site
 Purchase Order/Charge Code: 300071
 Project Title: SURV, JUNE 2016
 Logbook No.: HNF-N-506 83/83
 Ice Chest No.: 605-351
 Shipped To (Lab): GEL Laboratories, LLC
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No.: 776461353682
 Protocol: SURV
 Priority: 30 Days
 Priority: **PRIORITY**
 Offsite Property No.: 6702

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

Sample No.	Filter	* Date	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B35D32	N	JUN 07 2016	0801		1x500-mL G/P	6010_METALS_ICP: COMMON; 6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B35D32	N				1x4-L G/P	GAMMA_GS: COMMON	6 Months	HNO3 to pH <2
B35D32	N				2x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B35D32	N				1x1-L G/P	SE79_SEP_IE_LSC: COMMON	6 Months	HNO3 to pH <2
B35D32	N				3x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B35D32	N				1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B35D32	N				1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None
B35D32	N				3x1-L G/P	UI50_IE_PRECIP_AEA: COMMON	6 Months	HNO3 to pH <2
B35D35	Y				1x500-mL G/P	6010_METALS_ICP: COMMON	6 Months	HNO3 to pH <2

Relinquished By	Print	Sign	Received By	Print	Sign	Date/Time	Date/Time	Matrix *
K.C. Patterson/CHPRC			Lesly West/CHPRC			JUN 07 2016 0850	JUN 07 2016 0850	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By			Received By	FEDEX		JUN 07 2016 1400		
Relinquished By			Received By			JUN 07 2016 1400	6/18/16 0900	
Relinquished By			Received By					

FINAL SAMPLE DISPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By
 Date/Time
 FSR ID = FSR31691
 A-6004-842 (REV 2)
 PRINTED ON 4/28/2016

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # S16-006-315	
Dan Woehle CHPRC		398858		Page 1 of 1	
Collector	Dan Woehle CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S16-006	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071
Project Title	SURV, JUNE 2016	Logbook No.	HNF-N-506 86/17	Ice Chest No.	605-346
Shipped To (Lab)	GEL Laboratories, LLC	Method of Shipment	Commercial Carrier	Bill of Lading/Air Bill No.	776 465146 772
Protocol	SURV	Priority:	15 Days	Offsite Property No.	6703
POSSIBLE SAMPLE HAZARDS/REMARKS		SPECIAL INSTRUCTIONS		Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
*** 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		N/A			

Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B35D65	N	6.7.16	1106	1x500-mL G/P	6020_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B35D65	N	6.7.16	1106	2x1-L P	9310_ALPHABETA_GPC: Gross Alpha	6 Months	HNO3 to pH <2

Relinquished By Dan Woehle CHPRC	Print <i>Dan Woehle</i>	Sign	Date/Time JUN 07 2016 1400	Received By Leah Wall CHPRC	Print <i>Leah Wall</i>	Sign	Date/Time JUN 07 2016 2:00
Relinquished By			Date/Time JUN 07 2016 1400	Received By FEDEX			Date/Time
Relinquished By			Date/Time	Received By <i>M. Koston</i>			Date/Time 6/13/16 0900
Relinquished By			Date/Time	Received By			Date/Time

Matrix *	DS = Drum Solids
S = Soil	DL = Drum Liquids
SE = Sediment	T = Tissue
SO = Solid	WI = Wipe
SL = Sludge	L = Liquid
W = Water	V = Vegetation
O = Oil	X = Other
A = Air	



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order:	
Received By: <u>MK</u>		Date Received: <u>6-8-16</u>	
Suspected Hazard Information		Yes	No
COC/Samples marked as radioactive?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Classified Radioactive II or III by RSO?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
COC/Samples marked containing PCBs?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Shipped as a DOT Hazardous?		Hazard Class Shipped: _____ UN#: _____	
Samples identified as Foreign Soil?		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>2C</u>
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>13046196 L</u> Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH:
6	Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Preservation added, Lot#: _____ Sample ID's and containers affected:
7	VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9	Are Encore containers present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14	Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15	COC form is properly signed in-relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16	Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>7764 6135 3682 21° NO ice</u> <u>7764 6135 3384 2°</u> <u>7764 6514 6772 2°</u>

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 6/8/16 Page 1 of 1
GL-CHL-SR-001 Rev 3

Data Review Qualifier Definitions

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 (843) 556-8171

Report Date: 21-JUL-16

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Revision #1 21-JUL-2016

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 associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	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 21 July 2016

State	Certification
Alaska	UST-0110
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	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
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 #: GEL398858
 Work Order #: 398858**

Product: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer
Analytical Method: SW846 8260C
Analytical Procedure: GL-OA-E-038 REV# 22
Analytical Batch: 1573480

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
1203564764	Method Blank (MB)
1203564765	Laboratory Control Sample (LCS)
1203564766	398674001(NonSDG) Post Spike (PS)
1203564767	398674001(NonSDG) Post Spike Duplicate (PSD)
1203565407	Method Blank (MB)
1203565408	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 1203564764 (MB), 1203564765 (LCS), 1203564766 (Non SDG 398674001PS), 1203564767 (Non SDG 398674001PSD), 1203565407 (MB), 1203565408 (LCS) and 398858002 (B35D06). The daily CCV analyzed on 6/9/16 recovered Dichlorodifluoromethane at 27.2%, Acrolein at 21.3%, 2-Chloro-1,3-butadiene at 26.2%, and Isobutyl alcohol at 21.1%. The daily CCV analyzed on 6/10/16 recovered Dichlorodifluoromethane at 26.1% and Acrolein at 22.0%. 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. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203564766 (Non SDG 398674001PS)	1,1-Dichloroethylene	135* (70%-130%)
	Acetone	61* (70%-130%)
1203564767 (Non SDG 398674001PSD)	1,1-Dichloroethylene	139* (70%-130%)
	Acetone	61* (70%-130%)

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: GEL398858 GEL Work Order: 398858

The Qualifiers in this report are defined as follows:

- 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:

Signature: 

Name: Erin Haubert

Date: 05 JUL 2016

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 2

SDG Number: GEL398858	Date Collected: 06/06/2016 13:53	Matrix: WATER
Lab Sample ID: 398858002	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Client: CPRC001	Project: CPRC0S16006
Batch ID: 1573480	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 06/10/2016 13:51	Inst: VOA3.I	Dilution: 1
Prep Date: 06/10/2016 13:51	Analyst: CDS1	Purge Vol: 5 mL
Data File: 061016V3\3M511.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00
75-35-4	1,1-Dichloroethylene	TU	0.300	ug/L	0.300	2.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0
56-23-5	Carbon tetrachloride		11.3	ug/L	0.300	2.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00
67-66-3	Chloroform	J	1.95	ug/L	0.300	2.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100

Volatile
Certificate of Analysis
Sample Summary

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SDG Number: GEL398858	Date Collected: 06/06/2016 13:53	Matrix: WATER
Lab Sample ID: 398858002	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Client: CPRC001	Project: CPRC0S16006
Batch ID: 1573480	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 06/10/2016 13:51	Inst: VOA3.I	Dilution: 1
Prep Date: 06/10/2016 13:51	Analyst: CDS1	Purge Vol: 5 mL
Data File: 061016V3\3M511.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00
79-01-6	Trichloroethylene	J	0.650	ug/L	0.300	2.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0

Quality Control Summary

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QC Summary

Report Date: June 24, 2016

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 398858

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
QC1203564765	LCS										
1,1,1,2-Tetrachloroethane	50.0			46.4	ug/L		93	(70%-130%)	CDS1	06/09/16	11:38
1,1,1-Trichloroethane	50.0			53.7	ug/L		107	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			46.6	ug/L		93	(70%-130%)			
1,1,2-Trichloroethane	50.0			44.0	ug/L		88	(70%-130%)			
1,1-Dichloroethane	50.0			52.7	ug/L		105	(70%-130%)			
1,1-Dichloroethylene	50.0			54.5	ug/L		109	(70%-130%)			
1,2,3-Trichloropropane	50.0			44.4	ug/L		89	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			46.9	ug/L		94	(70%-130%)			
1,2-Dibromoethane	50.0			44.3	ug/L		89	(70%-130%)			
1,2-Dichloroethane	50.0			49.7	ug/L		99	(70%-130%)			
1,2-Dichloropropane	50.0			49.5	ug/L		99	(70%-130%)			
1,4-Dichlorobenzene	50.0			46.2	ug/L		92	(70%-130%)			
2-Butanone	250			269	ug/L		108	(70%-130%)			
2-Hexanone	250			256	ug/L		102	(70%-130%)			
4-Methyl-2-pentanone	250			230	ug/L		92	(70%-130%)			
Acetone	250			254	ug/L		102	(70%-130%)			
Acetonitrile	1250			1120	ug/L		89	(70%-130%)			
Benzene	50.0			50.4	ug/L		101	(70%-130%)			
Bromodichloromethane	50.0			51.3	ug/L		103	(70%-130%)			
Bromoform	50.0			47.8	ug/L		96	(70%-130%)			

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Bromomethane	50.0			55.7	ug/L		111	(70%-130%)	CDS1	06/09/16	11:38
Carbon disulfide	250			247	ug/L		99	(70%-130%)			
Carbon tetrachloride	50.0			51.0	ug/L		102	(70%-130%)			
Chlorobenzene	50.0			46.4	ug/L		93	(70%-130%)			
Chloroethane	50.0			55.0	ug/L		110	(70%-130%)			
Chloroform	50.0			48.9	ug/L		98	(70%-130%)			
Chloromethane	50.0			59.8	ug/L		120	(70%-130%)			
Dibromochloromethane	50.0			46.4	ug/L		93	(70%-130%)			
Dibromomethane	50.0			47.7	ug/L		95	(70%-130%)			
Dichlorodifluoromethane	50.0			63.6	ug/L		127	(70%-130%)			
Ethylbenzene	50.0			48.1	ug/L		96	(70%-130%)			
Iodomethane	250			242	ug/L		97	(70%-130%)			
Methylene chloride	50.0			47.0	ug/L		94	(70%-130%)			
Styrene	50.0			48.2	ug/L		96	(70%-130%)			
Tetrachloroethylene	50.0			46.2	ug/L		92	(70%-130%)			
Toluene	50.0			43.4	ug/L		87	(70%-130%)			
Trichloroethylene	50.0			51.4	ug/L		103	(70%-130%)			
Trichlorofluoromethane	50.0			58.7	ug/L		117	(70%-130%)			
Vinyl acetate	250			296	ug/L		118	(70%-130%)			
Vinyl chloride	50.0			57.5	ug/L		115	(70%-130%)			
Xylenes (total)	150			143	ug/L		95	(70%-130%)			

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
cis-1,2-Dichloroethylene	50.0			48.1	ug/L		96	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			52.7	ug/L		105	(70%-130%)	CDS1	06/09/16	11:38
trans-1,2-Dichloroethylene	50.0			51.8	ug/L		104	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			48.0	ug/L		96	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			52.4	ug/L		105	(70%-130%)			
**Bromofluorobenzene	50.0			53.5	ug/L		107	(70%-130%)			
**Toluene-d8	50.0			47.2	ug/L		94	(70%-130%)			
QC1203565408 LCS											
1,1,1,2-Tetrachloroethane	50.0			50.3	ug/L		101	(70%-130%)		06/10/16	09:16
1,1,1-Trichloroethane	50.0			58.4	ug/L		117	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			49.5	ug/L		99	(70%-130%)			
1,1,2-Trichloroethane	50.0			47.7	ug/L		95	(70%-130%)			
1,1-Dichloroethane	50.0			56.2	ug/L		112	(70%-130%)			
1,1-Dichloroethylene	50.0			59.6	ug/L		119	(70%-130%)			
1,2,3-Trichloropropane	50.0			46.2	ug/L		92	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			53.1	ug/L		106	(70%-130%)			
1,2-Dibromoethane	50.0			48.7	ug/L		97	(70%-130%)			
1,2-Dichloroethane	50.0			53.7	ug/L		107	(70%-130%)			
1,2-Dichloropropane	50.0			53.5	ug/L		107	(70%-130%)			
1,4-Dichlorobenzene	50.0			49.4	ug/L		99	(70%-130%)			
2-Butanone	250			295	ug/L		118	(70%-130%)			
2-Hexanone	250			274	ug/L		109	(70%-130%)			
4-Methyl-2-pentanone	250			253	ug/L		101	(70%-130%)			

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Acetone	250			281	ug/L		112	(70%-130%)	CDS1	06/10/16	09:16
Acetonitrile	1250			1260	ug/L		101	(70%-130%)			
Benzene	50.0			53.8	ug/L		108	(70%-130%)			
Bromodichloromethane	50.0			55.8	ug/L		112	(70%-130%)			
Bromoform	50.0			51.5	ug/L		103	(70%-130%)			
Bromomethane	50.0			53.2	ug/L		106	(70%-130%)			
Carbon disulfide	250			280	ug/L		112	(70%-130%)			
Carbon tetrachloride	50.0			55.8	ug/L		112	(70%-130%)			
Chlorobenzene	50.0			49.6	ug/L		99	(70%-130%)			
Chloroethane	50.0			55.4	ug/L		111	(70%-130%)			
Chloroform	50.0			52.7	ug/L		105	(70%-130%)			
Chloromethane	50.0			57.7	ug/L		115	(70%-130%)			
Dibromochloromethane	50.0			51.7	ug/L		103	(70%-130%)			
Dibromomethane	50.0			53.1	ug/L		106	(70%-130%)			
Dichlorodifluoromethane	50.0			63.1	ug/L		126	(70%-130%)			
Ethylbenzene	50.0			51.6	ug/L		103	(70%-130%)			
Iodomethane	250			266	ug/L		106	(70%-130%)			
Methylene chloride	50.0			50.1	ug/L		100	(70%-130%)			
Styrene	50.0			50.6	ug/L		101	(70%-130%)			
Tetrachloroethylene	50.0			50.5	ug/L		101	(70%-130%)			
Toluene	50.0			50.7	ug/L		101	(70%-130%)			

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Trichloroethylene	50.0			55.4	ug/L		111	(70%-130%)			
Trichlorofluoromethane	50.0			58.4	ug/L		117	(70%-130%)	CDS1	06/10/16	09:16
Vinyl acetate	250			286	ug/L		114	(70%-130%)			
Vinyl chloride	50.0			57.0	ug/L		114	(70%-130%)			
Xylenes (total)	150			154	ug/L		103	(70%-130%)			
cis-1,2-Dichloroethylene	50.0			52.9	ug/L		106	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			55.4	ug/L		111	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			55.1	ug/L		110	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			53.1	ug/L		106	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			50.1	ug/L		100	(70%-130%)			
**Bromofluorobenzene	50.0			51.8	ug/L		104	(70%-130%)			
**Toluene-d8	50.0			46.7	ug/L		93	(70%-130%)			
QC1203564764 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					06/09/16	12:39
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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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
1,2-Dichloropropane			U	0.300	ug/L				CDS1	06/09/16	12:39
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						
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						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L				CDS1	06/09/16	12:39
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						
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
Volatile-GC/MS											
Batch	1573480										
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L				CDS1	06/09/16	12:39
**1,2-Dichloroethane-d4	50.0			51.7	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0			51.7	ug/L		103	(70%-130%)			
**Toluene-d8	50.0			49.2	ug/L		98	(70%-130%)			
QC1203565407 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					06/10/16	10:48
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						
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						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Acetonitrile			U	16.7	ug/L				CDS1	06/10/16	10:48
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						
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
Volatile-GC/MS											
Batch	1573480										
Methacrylonitrile			U	3.00	ug/L						
Methyl methacrylate			U	3.00	ug/L				CDS1	06/10/16	10:48
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						
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			51.8	ug/L		104	(70%-130%)			
**Bromofluorobenzene	50.0			52.7	ug/L		105	(70%-130%)			
**Toluene-d8	50.0			48.2	ug/L		96	(70%-130%)			
QC1203564766 398674001 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	58.3	ug/L		117	(70%-130%)		06/09/16	20:17
1,1,1-Trichloroethane	50.0	U	0.00	64.2	ug/L		128	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
1,1,2,2-Tetrachloroethane	50.0	U	0.00		53.9	ug/L	108	(70%-130%)	CDS1	06/09/16	20:17
1,1,2-Trichloroethane	50.0	U	0.00		53.6	ug/L	107	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00		64.8	ug/L	130	(70%-130%)			
1,1-Dichloroethylene	50.0	TU	0.00	T	67.5	ug/L	135 *	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00		50.9	ug/L	102	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00		52.2	ug/L	104	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00		54.0	ug/L	108	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00		61.7	ug/L	123	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00		60.1	ug/L	120	(70%-130%)			
1,4-Dichlorobenzene	50.0	U	0.00		53.9	ug/L	108	(70%-130%)			
2-Butanone	250	U	0.00		198	ug/L	79	(70%-130%)			
2-Hexanone	250	U	0.00		200	ug/L	80	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00		274	ug/L	110	(70%-130%)			
Acetone	250	TU	0.00	T	152	ug/L	61 *	(70%-130%)			
Acetonitrile	1250	U	0.00		1350	ug/L	108	(70%-130%)			
Benzene	50.0	U	0.00		60.5	ug/L	121	(70%-130%)			
Bromodichloromethane	50.0	U	0.00		59.8	ug/L	120	(70%-130%)			
Bromoform	50.0	U	0.00		54.8	ug/L	110	(70%-130%)			
Bromomethane	50.0	U	0.00		54.3	ug/L	109	(70%-130%)			
Carbon disulfide	250	U	0.00		318	ug/L	127	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		59.8	ug/L	120	(70%-130%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Chlorobenzene	50.0	U	0.00	57.6	ug/L		115	(70%-130%)			
Chloroethane	50.0	U	0.00	50.5	ug/L		101	(70%-130%)	CDS1	06/09/16	20:17
Chloroform	50.0	U	0.00	59.0	ug/L		118	(70%-130%)			
Chloromethane	50.0	U	0.00	61.4	ug/L		123	(70%-130%)			
Dibromochloromethane	50.0	U	0.00	56.8	ug/L		114	(70%-130%)			
Dibromomethane	50.0	U	0.00	55.2	ug/L		110	(70%-130%)			
Dichlorodifluoromethane	50.0	U	0.00	57.8	ug/L		116	(70%-130%)			
Ethylbenzene	50.0	U	0.00	59.4	ug/L		119	(70%-130%)			
Iodomethane	250	U	0.00	299	ug/L		120	(70%-130%)			
Methylene chloride	50.0	J	2.69	57.0	ug/L		109	(70%-130%)			
Styrene	50.0	U	0.00	59.7	ug/L		119	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00	56.6	ug/L		113	(70%-130%)			
Toluene	50.0	U	0.00	58.8	ug/L		118	(70%-130%)			
Trichloroethylene	50.0	U	0.00	59.8	ug/L		120	(70%-130%)			
Trichlorofluoromethane	50.0	U	0.00	53.3	ug/L		107	(70%-130%)			
Vinyl acetate	250	U	0.00	290	ug/L		116	(70%-130%)			
Vinyl chloride	50.0	U	0.00	58.6	ug/L		117	(70%-130%)			
Xylenes (total)	150	U	0.00	178	ug/L		119	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	59.2	ug/L		118	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	61.5	ug/L		123	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	61.7	ug/L		123	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	60.3	ug/L		121	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
**1,2-Dichloroethane-d4	50.0	53.5		52.1	ug/L		104	(70%-130%)			
**Bromofluorobenzene	50.0	50.3		52.9	ug/L		106	(70%-130%)	CDS1	06/09/16	20:17
**Toluene-d8	50.0	50.1		50.9	ug/L		102	(70%-130%)			
QC1203564767 398674001 PSD											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	54.3	ug/L	7	109	(0%-20%)		06/09/16	20:48
1,1,1-Trichloroethane	50.0	U	0.00	64.7	ug/L	1	129	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	53.1	ug/L	2	106	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	0.00	50.7	ug/L	6	101	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	64.7	ug/L	0	129	(0%-20%)			
1,1-Dichloroethylene	50.0	TU	0.00	T 69.6	ug/L	3	139*	(0%-20%)			
1,2,3-Trichloropropane	50.0	U	0.00	48.7	ug/L	4	97	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	54.6	ug/L	5	109	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00	50.2	ug/L	7	100	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00	62.1	ug/L	1	124	(0%-20%)			
1,2-Dichloropropane	50.0	U	0.00	58.0	ug/L	4	116	(0%-20%)			
1,4-Dichlorobenzene	50.0	U	0.00	50.9	ug/L	6	102	(0%-20%)			
2-Butanone	250	U	0.00	195	ug/L	2	78	(0%-20%)			
2-Hexanone	250	U	0.00	188	ug/L	6	75	(0%-20%)			
4-Methyl-2-pentanone	250	U	0.00	258	ug/L	6	103	(0%-20%)			
Acetone	250	TU	0.00	T 153	ug/L	1	61*	(0%-20%)			
Acetonitrile	1250	U	0.00	1330	ug/L	1	107	(0%-20%)			
Benzene	50.0	U	0.00	60.1	ug/L	1	120	(0%-20%)			
Bromodichloromethane	50.0	U	0.00	61.2	ug/L	2	122	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Bromoform	50.0	U	0.00	54.3	ug/L	1	109	(0%-20%)	CDS1	06/09/16	20:48
Bromomethane	50.0	U	0.00	51.4	ug/L	6	103	(0%-20%)			
Carbon disulfide	250	U	0.00	317	ug/L	0	127	(0%-20%)			
Carbon tetrachloride	50.0	U	0.00	61.2	ug/L	2	122	(0%-20%)			
Chlorobenzene	50.0	U	0.00	53.2	ug/L	8	106	(0%-20%)			
Chloroethane	50.0	U	0.00	49.7	ug/L	2	99	(0%-20%)			
Chloroform	50.0	U	0.00	58.2	ug/L	1	116	(0%-20%)			
Chloromethane	50.0	U	0.00	57.3	ug/L	7	115	(0%-20%)			
Dibromochloromethane	50.0	U	0.00	54.8	ug/L	4	110	(0%-20%)			
Dibromomethane	50.0	U	0.00	57.5	ug/L	4	115	(0%-20%)			
Dichlorodifluoromethane	50.0	U	0.00	56.1	ug/L	3	112	(0%-20%)			
Ethylbenzene	50.0	U	0.00	56.2	ug/L	5	112	(0%-20%)			
Iodomethane	250	U	0.00	305	ug/L	2	122	(0%-20%)			
Methylene chloride	50.0	J	2.69	56.4	ug/L	1	107	(0%-20%)			
Styrene	50.0	U	0.00	55.8	ug/L	7	112	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00	52.7	ug/L	7	105	(0%-20%)			
Toluene	50.0	U	0.00	53.4	ug/L	10	107	(0%-20%)			
Trichloroethylene	50.0	U	0.00	61.4	ug/L	3	123	(0%-20%)			
Trichlorofluoromethane	50.0	U	0.00	52.6	ug/L	1	105	(0%-20%)			
Vinyl acetate	250	U	0.00	287	ug/L	1	115	(0%-20%)			
Vinyl chloride	50.0	U	0.00	52.6	ug/L	11	105	(0%-20%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch	1573480										
Xylenes (total)	150	U	0.00	169	ug/L	5	113	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	59.4	ug/L	0	119	(0%-20%)	CDS1	06/09/16	20:48
cis-1,3-Dichloropropylene	50.0	U	0.00	61.7	ug/L	0	123	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	63.2	ug/L	2	126	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	56.7	ug/L	6	113	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		53.5	51.5	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0		50.3	52.3	ug/L		105	(70%-130%)			
**Toluene-d8	50.0		50.1	47.3	ug/L		95	(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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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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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.

Volatile

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Surrogate Recovery Report

SDG Number: GEL398858

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203564765	LCS for batch 1573480	105	94	107
1203564764	MB for batch 1573480	103	98	103
1203564766	B34WT5PS	104	102	106
1203564767	B34WT5PSD	103	95	105
1203565408	LCS for batch 1573480	100	93	104
1203565407	MB for batch 1573480	104	96	105
398858002	B35D06	102	100	100

Surrogate**Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4 (70%-130%)
TOL = Toluene-d8 (70%-130%)
BFB = Bromofluorobenzene (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 #: GEL398858
Work Order #: 398858

Product: Determination of Metals by ICP-MS**Analytical Method:** 6020_METALS_ICPMS**Analytical Procedure:** GL-MA-E-014 REV# 28**Analytical Batch:** 1573178**Product: Determination of Metals by ICP****Analytical Method:** 6010_METALS_ICP**Analytical Procedure:** GL-MA-E-013 REV# 26**Analytical Batch:** 1573202**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 13**Preparation Batches:** 1573177 and 1573201

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
398858003	B35D32
398858004	B35D35
398858005	B35D65
1203564000	Method Blank (MB) ICP
1203564001	Laboratory Control Sample (LCS)
1203564004	398858003(B35D32L) Serial Dilution (SD)
1203564002	398858003(B35D32S) Matrix Spike (MS)
1203564003	398858003(B35D32SD) Matrix Spike Duplicate (MSD)
1203563947	Method Blank (MB) ICP-MS
1203563948	Laboratory Control Sample (LCS)
1203563951	398858002(B35D06L) Serial Dilution (SD)
1203563949	398858002(B35D06S) Matrix Spike (MS)
1203563950	398858002(B35D06SD) 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**CRDL/PQL Requirements**

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of potassium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 398858003 (B35D32) and 398858004 (B35D35)-ICP.

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: GEL398858 GEL Work Order: 398858

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: 30 JUN 2016****Title: Data Validator**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398858

CONTRACT: CPRC0S16006

METHOD TYPE: SW846

SAMPLE ID:398858002

BASIS: As Received

DATE COLLECTED 06-JUN-16

CLIENT ID: B35D06

LEVEL: Low

DATE RECEIVED 08-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	3.82	ug/L		0.067	0.2	15	1	MS	SKJ	06/22/16 13:53	160622-2	1573178

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1573178	1573177	SW846 3005A	50	mL	50	mL	06/10/16	JP1

***Analytical Methods:**

MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398858

CONTRACT: CPRC0S16006

METHOD TYPE: SW846

SAMPLE ID:398858003

BASIS: As Received

DATE COLLECTED 07-JUN-16

CLIENT ID: B35D32

LEVEL: Low

DATE RECEIVED 08-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-39-3	Barium	41.7	ug/L		1	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-70-2	Calcium	28100	ug/L		50	200	200	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-47-3	Chromium	16.7	ug/L		1	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-50-8	Copper	6.99	ug/L	B	3	10	10	1	P	HSC	06/17/16 11:56	061716-1	1573202
7439-89-6	Iron	75.5	ug/L	B	30	100	100	1	P	HSC	06/17/16 11:56	061716-1	1573202
7439-95-4	Magnesium	8900	ug/L		110	300	300	1	P	HSC	06/17/16 11:56	061716-1	1573202
7439-96-5	Manganese	7.77	ug/L	B	2	10	10	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-02-0	Nickel	1.71	ug/L	B	1.5	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-09-7	Potassium	3650	ug/L		50	150	150	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-23-5	Sodium	12200	ug/L		100	300	300	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-61-1	Uranium	1.89	ug/L		0.067	0.2	15	1	MS	SKJ	06/22/16 14:04	160622-2	1573178
7440-62-2	Vanadium	25.5	ug/L		1	5	5	1	P	HSC	06/17/16 11:56	061716-1	1573202
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	06/17/16 11:56	061716-1	1573202

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1573178	1573177	SW846 3005A	50	mL	50	mL	06/10/16	JP1
1573202	1573201	SW846 3005A	50	mL	50	mL	06/10/16	JP1

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398858

CONTRACT: CPRC0S16006

METHOD TYPE: SW846

SAMPLE ID:398858004

BASIS: As Received

DATE COLLECTED 07-JUN-16

CLIENT ID: B35D35

LEVEL: Low

DATE RECEIVED 08-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-36-0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-38-2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-39-3	Barium	41.5	ug/L		1	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-43-9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-70-2	Calcium	28900	ug/L		50	200	200	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-47-3	Chromium	16.6	ug/L		1	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-50-8	Copper	7.14	ug/L	B	3	10	10	1	P	HSC	06/17/16 12:14	061716-1	1573202
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	06/17/16 12:14	061716-1	1573202
7439-95-4	Magnesium	8970	ug/L		110	300	300	1	P	HSC	06/17/16 12:14	061716-1	1573202
7439-96-5	Manganese	2.16	ug/L	B	2	10	10	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-02-0	Nickel	1.58	ug/L	B	1.5	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-09-7	Potassium	3790	ug/L		50	150	150	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-22-4	Silver	1	ug/L	U	1	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-23-5	Sodium	12700	ug/L		100	300	300	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-62-2	Vanadium	25.9	ug/L		1	5	5	1	P	HSC	06/17/16 12:14	061716-1	1573202
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	06/17/16 12:14	061716-1	1573202

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1573202	1573201	SW846 3005A	50	mL	50	mL	06/10/16	JP1

***Analytical Methods:**

P SW846 3005A/6010C

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL398858

CONTRACT: CPCR0S16006

METHOD TYPE: SW846

SAMPLE ID:398858005

BASIS: As Received

DATE COLLECTED 07-JUN-16

CLIENT ID: B35D65

LEVEL: Low

DATE RECEIVED 08-JUN-16

MATRIX: WATER

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	69.7	ug/L		0.067	0.2	15	1	MS	SKJ	06/22/16 14:06	160622-2	1573178

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1573178	1573177	SW846 3005A	50	mL	50	mL	06/10/16	JP1

***Analytical Methods:**

MS SW846 3005A/6020A

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: June 30, 2016

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 398858

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1573178										
QC1203563948	LCS										
Uranium	50.0			52.3	ug/L		105	(80%-120%)	SKJ	06/22/16	13:52
QC1203563947	MB										
Uranium			U	0.067	ug/L					06/22/16	13:50
QC1203563949	398858002	MS									
Uranium	50.0	3.82		56.1	ug/L		105	(75%-125%)		06/22/16	13:55
QC1203563950	398858002	MSD									
Uranium	50.0	3.82		55.8	ug/L	0.466	104	(0%-20%)		06/22/16	13:56
QC1203563951	398858002	SDILT									
Uranium		3.82	D	0.707	ug/L	7.34		(0%-10%)		06/22/16	14:00
Metals Analysis-ICP											
Batch	1573202										
QC1203564001	LCS										
Antimony	500			492	ug/L		98.3	(80%-120%)	HSC	06/17/16	11:53
Arsenic	500			479	ug/L		95.8	(80%-120%)			
Barium	500			478	ug/L		95.5	(80%-120%)			
Cadmium	500			470	ug/L		93.9	(80%-120%)			
Calcium	5000			4960	ug/L		99.2	(80%-120%)			
Chromium	500			476	ug/L		95.1	(80%-120%)			
Cobalt	500			479	ug/L		95.8	(80%-120%)			
Copper	500			483	ug/L		96.5	(80%-120%)			
Iron	5000			4840	ug/L		96.8	(80%-120%)			
Magnesium	5000			4990	ug/L		99.7	(80%-120%)			
Manganese	500			474	ug/L		94.7	(80%-120%)			
Nickel	500			475	ug/L		94.9	(80%-120%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1573202										
Potassium	5000			4810	ug/L		96.3	(80%-120%)	HSC	06/17/16	11:53
Silver	500			474	ug/L		94.7	(80%-120%)			
Sodium	5000			4830	ug/L		96.6	(80%-120%)			
Vanadium	500			484	ug/L		96.9	(80%-120%)			
Zinc	500			479	ug/L		95.7	(80%-120%)			
QC1203564000	MB										
Antimony			U	3.50	ug/L					06/17/16	11:51
Arsenic			U	5.00	ug/L						
Barium			U	1.00	ug/L						
Cadmium			U	1.00	ug/L						
Calcium			U	50.0	ug/L						
Chromium			U	1.00	ug/L						
Cobalt			U	1.00	ug/L						
Copper			U	3.00	ug/L						
Iron			U	30.0	ug/L						
Magnesium			U	110	ug/L						
Manganese			U	2.00	ug/L						
Nickel			U	1.50	ug/L						
Potassium			U	50.0	ug/L						
Silver			U	1.00	ug/L						
Sodium			U	100	ug/L						
Vanadium			U	1.00	ug/L						

GEL LABORATORIES LLC

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1573202										
Zinc			U	3.30	ug/L				HSC	06/17/16	11:51
QC1203564002 398858003 MS											
Antimony	500	U	3.50	484	ug/L		96.3	(75%-125%)		06/17/16	11:59
Arsenic	500	U	5.00	486	ug/L		96.6	(75%-125%)			
Barium	500		41.7	512	ug/L		94.1	(75%-125%)			
Cadmium	500	U	1.00	465	ug/L		93	(75%-125%)			
Calcium	5000		28100	33700	ug/L		N/A	(75%-125%)			
Chromium	500		16.7	485	ug/L		93.6	(75%-125%)			
Cobalt	500	U	1.00	465	ug/L		93	(75%-125%)			
Copper	500	B	6.99	488	ug/L		96.2	(75%-125%)			
Iron	5000	B	75.5	4820	ug/L		94.8	(75%-125%)			
Magnesium	5000		8900	13900	ug/L		101	(75%-125%)			
Manganese	500	B	7.77	470	ug/L		92.5	(75%-125%)			
Nickel	500	B	1.71	461	ug/L		91.9	(75%-125%)			
Potassium	5000		3650	8470	ug/L		96.5	(75%-125%)			
Silver	500	U	1.00	469	ug/L		93.8	(75%-125%)			
Sodium	5000		12200	17400	ug/L		105	(75%-125%)			
Vanadium	500		25.5	501	ug/L		95.1	(75%-125%)			
Zinc	500	U	3.30	474	ug/L		94.3	(75%-125%)			
QC1203564003 398858003 MSD											
Antimony	500	U	3.50	482	ug/L	0.501	95.9	(0%-20%)		06/17/16	12:02
Arsenic	500	U	5.00	480	ug/L	1.17	95.5	(0%-20%)			
Barium	500		41.7	513	ug/L	0.201	94.3	(0%-20%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1573202										
Cadmium	500	U	1.00	467	ug/L	0.528	93.5	(0%-20%)	HSC	06/17/16	12:02
Calcium	5000		28100	33900	ug/L	0.503	N/A	(0%-20%)			
Chromium	500		16.7	488	ug/L	0.613	94.2	(0%-20%)			
Cobalt	500	U	1.00	465	ug/L	0.0602	92.9	(0%-20%)			
Copper	500	B	6.99	492	ug/L	0.755	96.9	(0%-20%)			
Iron	5000	B	75.5	4840	ug/L	0.551	95.3	(0%-20%)			
Magnesium	5000		8900	13700	ug/L	1.52	96.8	(0%-20%)			
Manganese	500	B	7.77	474	ug/L	0.902	93.3	(0%-20%)			
Nickel	500	B	1.71	461	ug/L	0.0108	91.9	(0%-20%)			
Potassium	5000		3650	8660	ug/L	2.21	100	(0%-20%)			
Silver	500	U	1.00	468	ug/L	0.19	93.6	(0%-20%)			
Sodium	5000		12200	17500	ug/L	0.459	106	(0%-20%)			
Vanadium	500		25.5	502	ug/L	0.251	95.3	(0%-20%)			
Zinc	500	U	3.30	477	ug/L	0.713	94.9	(0%-20%)			
QC1203564004 398858003 SDILT											
Antimony		U	2.23	DU	17.5	ug/L	N/A	(0%-10%)		06/17/16	12:05
Arsenic		U	2.55	DU	25.0	ug/L	N/A	(0%-10%)			
Barium			41.7	D	8.29	ug/L	.484	(0%-10%)			
Cadmium		U	0.0902	DU	5.00	ug/L	N/A	(0%-10%)			
Calcium			28100	D	5660	ug/L	.737	(0%-10%)			
Chromium			16.7	BD	3.14	ug/L	5.82	(0%-10%)			
Cobalt		U	0.542	DU	5.00	ug/L	N/A	(0%-10%)			

GEL LABORATORIES LLC

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QC Summary

Workorder: 398858

Page 5 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis-ICP											
Batch	1573202										
Copper	B	6.99	DU	15.0	ug/L	N/A		(0%-10%)	HSC	06/17/16	12:05
Iron	B	75.5	DU	150	ug/L	N/A		(0%-10%)			
Magnesium		8900	D	1800	ug/L	1.35		(0%-10%)			
Manganese	B	7.77	DU	10.0	ug/L	N/A		(0%-10%)			
Nickel	B	1.71	DU	7.50	ug/L	N/A		(0%-10%)			
Potassium		3650	D	706	ug/L	3.22		(0%-10%)			
Silver	U	-0.712	DU	5.00	ug/L	N/A		(0%-10%)			
Sodium		12200	D	2470	ug/L	1.66		(0%-10%)			
Vanadium		25.5	D	6.09	ug/L	19.6		(0%-10%)			
Zinc	U	2.33	DU	16.5	ug/L	N/A		(0%-10%)			

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

GEL LABORATORIES LLC

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QC Summary

Workorder: 398858

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Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
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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 #: GEL398858
Work Order #: 398858

Product: AMCMISO_EIE_PRECIP_AEA: COMMON

Analytical Method: AMCMISO_EIE_PREC_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1573207

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
1203564010	Method Blank (MB)
1203564011	398858002(B35D06) Sample Duplicate (DUP)
1203564012	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

Recounts

Sample 1203564010 (MB) was recounted once due to high yield and a second time due to a peak shift. The second recount is reported.

Product: PUIISO_PRECIP_AEA:COMMON

Analytical Method: PUIISO_PRECIP_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1573208

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
1203564013	Method Blank (MB)
1203564014	398858002(B35D06) Sample Duplicate (DUP)
1203564015	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**Recounts**

Sample 1203564015 (LCS) was recounted due to a peak shift. The recount is reported.

Product: UISO_IE_PRECIP_AEA:COMMON

Analytical Method: UISO_IE_PRECIP_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1573210

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
398858003	B35D32
1203564020	Method Blank (MB)
1203564021	398858002(B35D06) Sample Duplicate (DUP)
1203564022	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**Recounts**

The batch was recounted twice due to failed laboratory control sample spike recoveries. The third counts are reported.

Product: GAMMA_GS:COMMON

Analytical Method: 901.1_GAMMA_GS

Analytical Procedure: GL-RAD-A-013 REV# 25

Analytical Batch: 1572404

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
398858003	B35D32
1203561772	Method Blank (MB)
1203561773	398682002(B35CY3) Sample Duplicate (DUP)
1203561774	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.

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: 1573409

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
398858003	B35D32
1203564574	Method Blank (MB)
1203564575	398858002(B35D06) Sample Duplicate (DUP)
1203564576	398858002(B35D06) Matrix Spike (MS)
1203564577	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.

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 17

Analytical Batch: 1574054

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
398858003	B35D32
1203566155	Method Blank (MB)
1203566156	398676005(NonSDG) Sample Duplicate (DUP)
1203566157	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.

Quality Control (QC) Information

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The sample and duplicate, 1203566156 (Non SDG 398676005DUP), do not meet the client relative error ratio requirement; however, both sample and duplicate results are less than the minimum detectable activity.

Technical Information

Recounts

Sample 1203566157 (LCS) was recounted due to high recovery. The recount is reported. Sample 1203566155 (MB) was recounted due to a suspected blank false positive. The recount is reported.

Product: 9310_ALPHABETA_GPC: ALPHA

Analytical Method: 9310_ALPHABETA_GPC

Analytical Procedure: GL-RAD-A-001 REV# 18

Analytical Batch: 1574059

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858005	B35D65
1203566170	Method Blank (MB)
1203566171	398744003(NonSDG) Sample Duplicate (DUP)
1203566172	398744003(NonSDG) Matrix Spike (MS)
1203566173	398744003(NonSDG) Matrix Spike Duplicate (MSD)
1203566174	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.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203566172 (Non SDG 398744003MS) and 1203566173 (Non SDG 398744003MSD), aliquots were reduced to conserve sample volume.

Product: PU241_IE_LSC: COMMON

Analytical Method: PU241_IE_LSC

Analytical Procedure: GL-RAD-A-035 REV# 17

Analytical Batch: 1573211

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
1203564023	Method Blank (MB)
1203564024	398858002(B35D06) Sample Duplicate (DUP)
1203564025	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.

Product: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

Analytical Procedure: GL-RAD-A-059 REV# 4

Analytical Batch: 1574420

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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398858001	B35CX6
398858002	B35D06
398858003	B35D32
1203567208	Method Blank (MB)
1203567209	398682002(B35CY3) Sample Duplicate (DUP)
1203567210	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

Recounts

Samples 398858001 (B35CX6) and 398858003 (B35D32) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Product: SE79_SEP_IE_LSC: COMMON

Analytical Method: SE79_SEP_IE_LSC

Analytical Procedure: GL-RAD-A-031 REV# 11

Analytical Batch: 1575739

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
398858003	B35D32
1203570472	Method Blank (MB)
1203570473	398770001(B35D12) Sample Duplicate (DUP)
1203570474	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.

Quality Control (QC) Information

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The laboratory control sample 1203570474 (LCS) does not meet the client's LCS requirement of 80-120%; however, it does meet GEL's standard LCS requirement of 75-125%. Reporting results.

Technical Information

Recounts

Sample 1203570474 (LCS) was recounted due to high recovery. The recount is reported.

Miscellaneous Information

Product: C14_LSC: COMMON

Analytical Method: C14_LSC

Analytical Procedure: GL-RAD-A-003 REV# 15

Analytical Batch: 1575769

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858002	B35D06
1203570561	Method Blank (MB)
1203570562	398682002(B35CY3) Sample Duplicate (DUP)
1203570563	398682002(B35CY3) Matrix Spike (MS)
1203570564	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.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 21

Analytical Batch: 1575790

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
398858001	B35CX6
398858002	B35D06
398858003	B35D32
1203570615	Method Blank (MB)
1203570616	398682002(B35CY3) Sample Duplicate (DUP)
1203570617	398682002(B35CY3) Matrix Spike (MS)
1203570618	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

Recounts

Sample 1203570616 (B35CY3DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

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: GEL398858 GEL Work Order: 398858

The Qualifiers in this report are defined as follows:

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: Heather McCarty

Date: 01 JUL 2016

Title: Analyst II

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858001	Date Collected: 06/07/2016 09:31	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35CX6	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1574420	Analyst: GXR1	SOP Ref: GL-RAD-A-059
Run Date: 06/26/2016 14:03	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1574420.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1574420		
Prep Date: 06/21/2016 13:58		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		53.7	pCi/L	+/-24.0	24.8	38.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	23700	28800	CPM	82.3	(30%-105%)

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858001	Date Collected: 06/07/2016 09:31	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35CX6	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1575790	Analyst: GXR1	SOP Ref: GL-RAD-A-002
Run Date: 06/28/2016 05:20	Aliquot: 50 mL	Instrument: LSCSILVER
Data File: T1575790.xls	Prep Method: EPA 906.0 Modified	Count Time: 45 min
Prep Batch: 1575790		
Prep Date: 06/27/2016 17:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		311	pCi/L	+/-185	194	296	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.

Rad
 Certificate of Analysis
 Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: AMCMISO_EIE_PREC_AEA	Prep Basis: "As Received"
Batch ID: 1573207	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/23/2016 08:59	Aliquot: 0.4 L	Instrument: 1091
Data File: S0398858002_AM.1A.gcnf	Prep Method: DOE EML HASL-300, Am-05	Count Time: 240 min
Prep Batch: 1573207		
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.0105	pCi/L	+/-0.0586	0.0587	0.112	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	3.71	5.34	pCi/L	69.5	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: PUIISO_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1573208	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/23/2016 08:59	Aliquot: 0.4 L	Instrument: 1084
Data File: S0398858002_PU.1A.gcnf	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 239.9998 min
Prep Batch: 1573208		
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	-0.0113	pCi/L	+/-0.0341	0.0342	0.0958	1.00
OER-100-70	Plutonium-239/240	U	-0.0226	pCi/L	+/-0.0364	0.0365	0.116	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	4.28	4.93	pCi/L	86.8	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: UIISO_IE_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1573210	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/29/2016 10:52	Aliquot: 0.4 L	Instrument: 1010
Data File: S0398858002_UU.2B.gcnf	Prep Method: DOE EML HASL-300, U-02-R	Count Time: 120 min
Prep Batch: 1573210		
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		1.56	pCi/L	+/-0.459	0.534	0.209	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.120	pCi/L	+/-0.164	0.166	0.176	1.00
7440-61-1	Uranium-238		1.41	pCi/L	+/-0.434	0.499	0.172	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	4.71	5.21	pCi/L	90.3	(30%-105%)

Comments:

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.

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: PU241_IE_LSC	Prep Basis: "As Received"
Batch ID: 1573211	Analyst: MXS2	SOP Ref: GL-RAD-A-035
Run Date: 06/26/2016 17:43	Aliquot: 0.4 L	Instrument: LSCGOLD
Data File: PU1573211.xls	Prep Method: DOE EML HASL-300, Pu-11-	Count Time: 30 min
Prep Batch: 1573211		
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14119-32-5	Plutonium-241	U	-5.62	pCi/L	+/-7.30	7.30	13.4	25.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	4.28	4.93	pCi/L	86.8	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1574054	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 06/22/2016 14:33	Aliquot: 300 mL	Instrument: PIC3C
Data File: S1574054r3.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1574054		
Prep Date: 06/21/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	0.418	pCi/L	+/-0.941	0.943	1.69	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	5.80	7.37	mg	78.8	(40%-110%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858
 Lab Sample ID: 398858002
 Client ID: B35D06
 Batch ID: 1572404
 Run Date: 06/20/2016 11:39
 Data File: G398858002.CNF;1
 Prep Batch: 1572404
 Prep Date: 06/17/2016 00:00

Client: CPRC001
 Date Collected: 06/06/2016 13:53
 Date Received: 06/08/2016 09:00
 Method: 901.1_GAMMA_GS
 Analyst: MJH1
 Aliquot: 2 L
 Prep Method: EPA 901.1

Project: CPRC0S16006
 Matrix: WATER
 Prep Basis: "As Received"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM33
 Count Time: 120 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14234-35-6	Antimony-125	U	-2.23	pCi/L	+/-6.84	6.91	12.1	
13967-70-9	Cesium-134	U	0.558	pCi/L	+/-2.42	2.43	4.90	
10045-97-3	Cesium-137	U	-0.279	pCi/L	+/-2.83	2.83	5.33	15.0
10198-40-0	Cobalt-60	U	-0.138	pCi/L	+/-2.25	2.25	4.55	
14683-23-9	Europium-152	U	4.36	pCi/L	+/-7.60	7.86	14.7	
15585-10-1	Europium-154	U	5.13	pCi/L	+/-5.34	5.83	13.4	
14391-16-3	Europium-155	U	1.72	pCi/L	+/-11.0	11.0	19.5	
13966-00-2	Potassium-40	U	7.55	pCi/L	+/-39.7	39.7	59.3	

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 1573409	Analyst: MJH1	SOP Ref: GL-RAD-A-006
Run Date: 06/23/2016 09:22	Aliquot: 1.5 L	Instrument: XRAY4
Data File: I398858002.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 240 min
Prep Batch: 1573409		
Prep Date: 06/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		0.891	pCi/L	+/-0.410	0.419	0.414	1.00

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1574420	Analyst: GXR1	SOP Ref: GL-RAD-A-059
Run Date: 06/26/2016 14:30	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1574420.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1574420		
Prep Date: 06/21/2016 13:58		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	31.4	pCi/L	+/-21.3	21.6	35.1	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	25700	28800	CPM	89.2	(30%-105%)

Comments:

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

Rad
 Certificate of Analysis
 Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: SE79_SEP_IE_LSC	Prep Basis: "As Received"
Batch ID: 1575739	Analyst: CXS7	SOP Ref: GL-RAD-A-031
Run Date: 06/24/2016 13:08	Aliquot: 0.1 L	Instrument: LSCBLUE
Data File: SE1575739R2.xls	Prep Method: NERC ORD	Count Time: 60 min
Prep Batch: 1575739		
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15758-45-9	Selenium-79	NU	-4.74	pCi/L	+/-10.1	10.1	17.4	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Selenium Carrier	17.7	20.0	mg	88.5	(40%-110%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: C14_LSC	Prep Basis: "As Received"
Batch ID: 1575769	Analyst: TXJ1	SOP Ref: GL-RAD-A-003
Run Date: 06/23/2016 21:52	Aliquot: 60 mL	Instrument: LSCTEAL
Data File: C1575769.xls	Prep Method: EPA EERF C-01 Modified	Count Time: 30 min
Prep Batch: 1575769		
Prep Date: 06/23/2016 16:02		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	23.7	pCi/L	+/-20.8	21.2	34.6	50.0

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858002	Date Collected: 06/06/2016 13:53	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D06	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1575790	Analyst: GXR1	SOP Ref: GL-RAD-A-002
Run Date: 06/28/2016 06:07	Aliquot: 50 mL	Instrument: LSCSILVER
Data File: T1575790.xls	Prep Method: EPA 906.0 Modified	Count Time: 45 min
Prep Batch: 1575790		
Prep Date: 06/27/2016 17:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		7660	pCi/L	+/-424	1540	295	400

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858003	Date Collected: 06/07/2016 08:01	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D32	Method: UIISO_IE_PRECIP_AEA	Prep Basis: "As Received"
Batch ID: 1573210	Analyst: MXS2	SOP Ref: GL-RAD-A-011
Run Date: 06/29/2016 10:52	Aliquot: 0.4 L	Instrument: 1012
Data File: S0398858003_UU.2B.gcnf	Prep Method: DOE EML HASL-300, U-02-R	Count Time: 120 min
Prep Batch: 1573210		
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		0.894	pCi/L	+/-0.386	0.423	0.193	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.0264	pCi/L	+/-0.143	0.144	0.275	1.00
7440-61-1	Uranium-238		0.659	pCi/L	+/-0.343	0.365	0.263	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	4.09	5.21	pCi/L	78.4	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858003	Date Collected: 06/07/2016 08:01	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D32	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1574054	Analyst: KSD1	SOP Ref: GL-RAD-A-004
Run Date: 06/22/2016 14:33	Aliquot: 300 mL	Instrument: PIC4A
Data File: S1574054r3.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1574054		
Prep Date: 06/21/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	1.38	pCi/L	+/-1.17	1.19	1.89	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.00	7.37	mg	81.5	(40%-110%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858
Lab Sample ID: 398858003

Client ID: B35D32
Batch ID: 1572404
Run Date: 06/20/2016 11:39
Data File: G398858003.CNF;1
Prep Batch: 1572404
Prep Date: 06/17/2016 00:00

Client: CPRC001
Date Collected: 06/07/2016 08:01
Date Received: 06/08/2016 09:00

Method: 901.1_GAMMA_GS
Analyst: MJH1
Aliquot: 2 L
Prep Method: EPA 901.1

Project: CPRC0S16006
Matrix: WATER

Prep Basis: "As Received"
SOP Ref: GL-RAD-A-013
Instrument: GAM41
Count Time: 120 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	1.50	pCi/L	+/-3.30	3.38	6.56	15.0
10198-40-0	Cobalt-60	U	-0.487	pCi/L	+/-3.99	4.00	7.54	
14683-23-9	Europium-152	U	7.98	pCi/L	+/-7.89	8.71	16.3	
15585-10-1	Europium-154	U	-3.86	pCi/L	+/-8.12	8.31	14.6	
14391-16-3	Europium-155	U	4.79	pCi/L	+/-10.5	10.7	17.2	

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858003	Date Collected: 06/07/2016 08:01	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D32		Prep Basis: "As Received"
Batch ID: 1573409	Method: DOE EML HASL-300,I-01 Mo	SOP Ref: GL-RAD-A-006
Run Date: 06/23/2016 13:53	Analyst: MJH1	Instrument: XRAY4
Data File: I398858003.CNF;2	Aliquot: 1.5 L	Count Time: 90 min
Prep Batch: 1573409	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 06/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		1.82	pCi/L	+/-0.829	0.849	0.897	1.00

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858003	Date Collected: 06/07/2016 08:01	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D32	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1574420	Analyst: GXR1	SOP Ref: GL-RAD-A-059
Run Date: 06/26/2016 14:57	Aliquot: 100 mL	Instrument: LSCGOLD
Data File: E1574420.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 25 min
Prep Batch: 1574420		
Prep Date: 06/21/2016 13:58		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		2790	pCi/L	+/-67.7	317	36.5	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	24900	28800	CPM	86.3	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858003	Date Collected: 06/07/2016 08:01	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D32		Prep Basis: "As Received"
Batch ID: 1575739	Method: SE79_SEP_IE_LSC	SOP Ref: GL-RAD-A-031
Run Date: 06/24/2016 14:11	Analyst: CXS7	Instrument: LSCBLUE
Data File: SE1575739R2.xls	Aliquot: 0.1 L	Count Time: 60 min
Prep Batch: 1575739	Prep Method: NERC ORD	
Prep Date: 06/22/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15758-45-9	Selenium-79	NU	11.4	pCi/L	+/-8.76	8.77	14.6	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Selenium Carrier	21.0	20.0	mg	105	(40%-110%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858003	Date Collected: 06/07/2016 08:01	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D32	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1575790	Analyst: GXR1	SOP Ref: GL-RAD-A-002
Run Date: 06/28/2016 06:54	Aliquot: 50 mL	Instrument: LSCSILVER
Data File: T1575790.xls	Prep Method: EPA 906.0 Modified	Count Time: 45 min
Prep Batch: 1575790		
Prep Date: 06/27/2016 17:11		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		12600	pCi/L	+/-533	2500	300	400

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL398858	Client: CPRC001	Project: CPRC0S16006
Lab Sample ID: 398858005	Date Collected: 06/07/2016 11:06	Matrix: WATER
	Date Received: 06/08/2016 09:00	
Client ID: B35D65		Prep Basis: "As Received"
Batch ID: 1574059	Method: 9310_ALPHABETA_GPC	SOP Ref: GL-RAD-A-001
Run Date: 06/20/2016 16:11	Analyst: JXC9	Instrument: PIC9C
Data File: AB1574059.xls	Aliquot: 150 mL	Count Time: 120 min
Prep Batch: 1574059	Prep Method: EPA 900.0/SW846 9310	
Prep Date: 06/17/2016 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA		41.3	pCi/L	+/-5.04	8.47	2.98	3.00

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.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 1, 2016

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Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 398858

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1573207								
QC1203564010	MB								
Americium-241			U	0.0753	pCi/L			MXS2	06/29/1614:08
				Uncert: +/-0.103					
				TPU: +/-0.104					
**Americium-243 Tracer	5.34			4.32	pCi/L	REC: 81	(30%-105%)		
				Uncert: +/-0.685					
				TPU: +/-1.03					
QC1203564011	398858002	DUP							
Americium-241		U	0.0105	U	-0.0146	pCi/L			06/23/1608:59
				Uncert: +/-0.0586	+/-0.0644		RPD: 0	N/A	
				TPU: +/-0.0587	+/-0.0646		RER: 0.564	(0-2)	
**Americium-243 Tracer	5.34		3.71		2.56	pCi/L	REC: 48	(30%-105%)	
				Uncert: +/-0.644	+/-0.786				
				TPU: +/-0.976	+/-1.17				
QC1203564012	LCS								
Americium-241					4.42	pCi/L	REC: 90	(80%-120%)	06/23/1608:59
				Uncert: +/-0.486					
				TPU: +/-0.717					
**Americium-243 Tracer	5.34				5.22	pCi/L	REC: 98	(30%-105%)	
				Uncert: +/-0.531					
				TPU: +/-0.828					
Batch	1573208								
QC1203564013	MB								
Plutonium-238			U	-0.00552	pCi/L			MXS2	06/23/1608:59
				Uncert: +/-0.0476					
				TPU: +/-0.0478					
Plutonium-239/240			U	-0.0166	pCi/L				
				Uncert: +/-0.050					
				TPU: +/-0.0502					
**Plutonium-242 Tracer	4.93				3.05	pCi/L	REC: 62	(30%-105%)	
				Uncert: +/-0.665					
				TPU: +/-0.978					
QC1203564014	398858002	DUP							
Plutonium-238		U	-0.0113	U	0.0291	pCi/L			
				Uncert: +/-0.0341	+/-0.0767		RPD: 0	N/A	
				TPU: +/-0.0342	+/-0.0768		RER: 0.942	(0-2)	
Plutonium-239/240		U	-0.0226	U	-0.00298	pCi/L			
				Uncert: +/-0.0364	+/-0.0691		RPD: 0	N/A	
				TPU: +/-0.0365	+/-0.0692		RER: 0.491	(0-2)	
**Plutonium-242 Tracer	4.93		4.28		4.00	pCi/L	REC: 81	(30%-105%)	
				Uncert: +/-0.547	+/-0.598				
				TPU: +/-0.820	+/-0.889				
QC1203564015	LCS								
Plutonium-238			U	0.0754	pCi/L				06/23/1614:14
				Uncert: +/-0.0812					

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QC Summary

Workorder: 398858

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1573208								
Plutonium-239/240	4.94	TPU:		+/-0.0818					
		Uncert:		5.46	pCi/L	REC: 110	(80%-120%)		
		TPU:		+/-0.593					
**Plutonium-242 Tracer	4.93	TPU:		+/-0.913	pCi/L	REC: 80	(30%-105%)		
		Uncert:		+/-0.565					
		TPU:		+/-0.844					
Batch	1573210								
QC1203564020	MB								
Uranium-233/234			U	-0.0053	pCi/L			MXS2	06/29/1610:50
		Uncert:		+/-0.0879					
		TPU:		+/-0.0883					
Uranium-235/236			U	0.157	pCi/L				
		Uncert:		+/-0.215					
		TPU:		+/-0.217					
Uranium-238			U	0.0336	pCi/L				
		Uncert:		+/-0.124					
		TPU:		+/-0.124					
**Uranium-232 Tracer	5.21			4.30	pCi/L	REC: 83	(30%-105%)		
		Uncert:		+/-0.950					
		TPU:		+/-1.40					
QC1203564021	398858002	DUP							
Uranium-233/234			1.56	1.58	pCi/L				06/29/1610:50
		Uncert:	+/-0.459	+/-0.678		RPD: 1	(0% - 20%)		
		TPU:	+/-0.534	+/-0.773		RER: 0.0447	(0-2)		
Uranium-235/236		U	0.120	0.125	pCi/L				
		Uncert:	+/-0.164	+/-0.281		RPD: 0	N/A		
		TPU:	+/-0.166	+/-0.283		RER: 0.0258	(0-2)		
Uranium-238			1.41	1.68	pCi/L				
		Uncert:	+/-0.434	+/-0.690		RPD: 18	(0% - 20%)		
		TPU:	+/-0.499	+/-0.794		RER: 0.568	(0-2)		
**Uranium-232 Tracer	5.21		4.71	2.83	pCi/L	REC: 54	(30%-105%)		
		Uncert:	+/-0.833	+/-1.16					
		TPU:	+/-1.24	+/-1.69					
QC1203564022	LCS								
Uranium-233/234				7.59	pCi/L				06/28/1614:25
		Uncert:		+/-0.551					
		TPU:		+/-1.03					
Uranium-235/236				0.407	pCi/L				
		Uncert:		+/-0.147					
		TPU:		+/-0.154					
Uranium-238	6.73			6.85	pCi/L	REC: 102	(80%-120%)		
		Uncert:		+/-0.521					
		TPU:		+/-0.944					
**Uranium-232 Tracer	5.21			3.44	pCi/L	REC: 66	(30%-105%)		
		Uncert:		+/-0.463					
		TPU:		+/-0.757					
Batch	1573211								
QC1203564023	MB								

GEL LABORATORIES LLC

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QC Summary

Workorder: 398858

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1573211								
Plutonium-241			U	-5.8	pCi/L			MXS2	06/26/1618:14
				Uncert: +/-10.1					
				TPU: +/-10.1					
**Plutonium-242 Tracer	4.93			3.05	pCi/L	REC: 62 (30%-105%)			
				Uncert: +/-0.665					
				TPU: +/-0.978					
QC1203564024	398858002	DUP							
Plutonium-241		U	-5.62	U	-6.61	pCi/L			06/26/1618:45
				Uncert: +/-7.30		RPD: 0 N/A			
				TPU: +/-7.30		RER: 0.183 (0-2)			
**Plutonium-242 Tracer	4.93	4.28		4.00	pCi/L	REC: 81 (30%-105%)			
				Uncert: +/-0.547					
				TPU: +/-0.820					
QC1203564025	LCS								
Plutonium-241	193			155	pCi/L	REC: 81 (80%-120%)			06/26/1619:17
				Uncert: +/-13.9					
				TPU: +/-35.7					
**Plutonium-242 Tracer	4.93			4.07	pCi/L	REC: 83 (30%-105%)			
				Uncert: +/-0.592					
				TPU: +/-0.880					
Rad Gamma Spec									
Batch	1572404								
QC1203561772	MB								
Antimony-125			U	6.62	pCi/L			MJH1	06/20/1611:40
				Uncert: +/-7.36					
				TPU: +/-7.96					
Cesium-134			U	-0.667	pCi/L				
				Uncert: +/-2.80					
				TPU: +/-2.82					
Cesium-137			U	-2.31	pCi/L				
				Uncert: +/-2.94					
				TPU: +/-3.13					
Cobalt-60			U	0.242	pCi/L				
				Uncert: +/-2.80					
				TPU: +/-2.80					
Europium-152			U	-2.49	pCi/L				
				Uncert: +/-7.79					
				TPU: +/-7.88					
Europium-154			U	3.02	pCi/L				
				Uncert: +/-7.73					
				TPU: +/-7.85					
Europium-155			U	5.08	pCi/L				
				Uncert: +/-10.0					
				TPU: +/-10.3					
Potassium-40			U	-25.2	pCi/L				
				Uncert: +/-35.8					
				TPU: +/-37.6					
QC1203561773	398682002	DUP							
Antimony-125		U	0.768	U	13.8	pCi/L			06/20/1611:40
				Uncert: +/-6.93		RPD: 0 N/A			

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Gamma Spec										
Batch		1572404								
		TPU:		+/-6.94						
				+/-15.2						
Cesium-134		U	-0.0983	U	-1.82	pCi/L				
		Uncert:	+/-2.68		+/-5.13					
		TPU:	+/-2.68		+/-5.20					
Cesium-137		U	0.137	U	2.24	pCi/L				
		Uncert:	+/-2.48		+/-3.86					
		TPU:	+/-2.48		+/-3.99					
Cobalt-60		U	0.571	U	1.12	pCi/L				
		Uncert:	+/-2.52		+/-3.30					
		TPU:	+/-2.54		+/-3.34					
Europium-152		U	2.00	U	8.21	pCi/L				
		Uncert:	+/-7.61		+/-11.4					
		TPU:	+/-7.66		+/-12.0					
Europium-154		U	-5.25	U	3.98	pCi/L				
		Uncert:	+/-7.72		+/-9.74					
		TPU:	+/-8.09		+/-9.91					
Europium-155		U	-0.198	U	5.69	pCi/L				
		Uncert:	+/-9.66		+/-9.51					
		TPU:	+/-9.66		+/-9.85					
Potassium-40		U	4.02	U	39.4	pCi/L				
		Uncert:	+/-40.0		+/-59.5					
		TPU:	+/-40.0		+/-59.5					
QC1203561774 LCS										
Americium-241		34400			35100	pCi/L	REC: 102 (80%-120%)			06/20/1613:32
		Uncert:			+/-1180					
		TPU:			+/-3610					
Antimony-125				U	-186	pCi/L				
		Uncert:			+/-216					
		TPU:			+/-232					
Cesium-134				U	14.3	pCi/L				
		Uncert:			+/-90.6					
		TPU:			+/-90.9					
Cesium-137		13400			13800	pCi/L	REC: 103 (80%-120%)			
		Uncert:			+/-325					
		TPU:			+/-1150					
Cobalt-60		13500			14100	pCi/L	REC: 104 (80%-120%)			
		Uncert:			+/-379					
		TPU:			+/-1150					
Europium-152				U	100	pCi/L				
		Uncert:			+/-208					
		TPU:			+/-213					
Europium-154				U	-26.4	pCi/L				
		Uncert:			+/-123					
		TPU:			+/-124					
Europium-155				U	48.6	pCi/L				
		Uncert:			+/-248					
		TPU:			+/-249					
Potassium-40				U	177	pCi/L				

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1572404								
				Uncert:					
				TPU:					
Batch	1573409								
QC1203564574	MB								
Iodine-129			U	-0.147	pCi/L			MJH1	06/23/1613:54
				Uncert:					
				TPU:					
QC1203564575	398858002	DUP							
Iodine-129				0.891	pCi/L				06/23/1613:54
				Uncert:					
				TPU:					
QC1203564576	398858002	MS							
Iodine-129				27.7	pCi/L	REC: 87	(75%-125%)		06/23/1614:21
				Uncert:					
				TPU:					
QC1203564577	LCS								
Iodine-129				27.7	pCi/L	REC: 99	(80%-120%)		06/23/1615:09
				Uncert:					
				TPU:					
Rad Gas Flow									
Batch	1574054								
QC1203566155	MB								
Strontium-90			U	-1.33	pCi/L			KSD1	06/22/1616:30
				Uncert:					
				TPU:					
**Strontium Carrier				7.37	mg	REC: 87	(40%-110%)		
QC1203566156	398676005	DUP							
Strontium-90			U	-0.749	pCi/L				06/22/1614:32
				Uncert:					
				TPU:					
**Strontium Carrier				7.37	mg	REC: 79	(40%-110%)		
QC1203566157	LCS								
Strontium-90				73.0	pCi/L	REC: 116	(80%-120%)		06/24/1610:55
				Uncert:					
				TPU:					
**Strontium Carrier				7.37	mg	REC: 77	(40%-110%)		
Batch	1574059								
QC1203566170	MB								
Alpha			U	-1.31	pCi/L			JXC9	06/20/1616:26
				Uncert:					
				TPU:					
QC1203566171	398744003	DUP							
Alpha			U	0.0146	pCi/L				06/20/1616:30
				Uncert:					
				TPU:					
QC1203566172	398744003	MS							
Alpha			U	0.0146	pCi/L	REC: 105	(75%-125%)		06/20/1611:31
				Uncert:					
				TPU:					

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1574059								
QC1203566173	398744003	MSD							
Alpha	240	U	0.0146	238	pCi/L	REC: 99 (75%-125%)			06/20/1611:31
	Uncert:		+/-1.41	+/-26.8		RPD: 6 (0%-20%)			
	TPU:		+/-1.41	+/-49.2		RER: 0.41 (0-2)			
QC1203566174	LCS								
Alpha	79.9			70.0	pCi/L	REC: 88 (80%-120%)			
	Uncert:			+/-7.20					
	TPU:			+/-13.5					
Rad Liquid Scintillation									
Batch	1574420								
QC1203567208	MB								
Technetium-99			U	18.3	pCi/L			GXR1	06/26/1615:51
	Uncert:			+/-21.2					
	TPU:			+/-21.3					
**Technetium-99m Tracer	28800			25500	CPM	REC: 89 (30%-105%)			
QC1203567209	398682002	DUP							
Technetium-99		U	1.66	U	2.65	pCi/L			06/26/1616:18
	Uncert:		+/-21.1	+/-20.1		RPD: 0 N/A			
	TPU:		+/-21.1	+/-20.1		RER: 0.0668 (0-2)			
**Technetium-99m Tracer	28800		25200	26200	CPM	REC: 91 (30%-105%)			
QC1203567210	LCS								
Technetium-99	861			754	pCi/L	REC: 88 (80%-120%)			06/26/1616:45
	Uncert:			+/-38.5					
	TPU:			+/-92.2					
**Technetium-99m Tracer	28800			25700	CPM	REC: 89 (30%-105%)			
Batch	1575739								
QC1203570472	MB								
Selenium-79			U	5.06	pCi/L			CXS7	06/24/1623:35
	Uncert:			+/-10.5					
	TPU:			+/-10.5					
**Selenium Carrier	20.0			17.3	mg	REC: 87 (40%-110%)			
QC1203570473	398770001	DUP							
Selenium-79		NU	1.64	NU	5.80	pCi/L			06/25/1600:37
	Uncert:		+/-11.3	+/-10.0		RPD: 0 N/A			
	TPU:		+/-11.3	+/-10.0		RER: 0.54 (0-2)			
**Selenium Carrier	20.0		16.0	18.1	mg	REC: 91 (40%-110%)			
QC1203570474	LCS								
Selenium-79	866		N	1050	pCi/L	REC: 121* (80%-120%)			06/30/1619:28
	Uncert:			+/-30.7					
	TPU:			+/-42.8					
**Selenium Carrier	20.0			18.6	mg	REC: 93 (40%-110%)			
Batch	1575769								
QC1203570561	MB								
Carbon-14			U	2.62	pCi/L			TXJ1	06/23/1622:59
	Uncert:			+/-20.2					
	TPU:			+/-20.2					
QC1203570562	398682002	DUP							
Carbon-14		U	-0.331	U	9.31	pCi/L			06/23/1623:30
	Uncert:		+/-20.1	+/-20.3		RPD: 0 N/A			

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch	1575769									
		TPU:	+/-20.1							
				+/-20.4						
						RER:	0.66	(0-2)		
QC1203570563	398682002	MS								
Carbon-14	1260	U	-0.331	1250	pCi/L	REC:	99	(75%-125%)		06/24/1600:01
		Uncert:	+/-20.1	+/-47.4						
		TPU:	+/-20.1	+/-237						
QC1203570564	LCS									
Carbon-14	1260			1310	pCi/L	REC:	103	(80%-120%)		06/24/1600:33
		Uncert:		+/-46.9						
		TPU:		+/-247						
Batch	1575790									
QC1203570615	MB									
Tritium			U	220	pCi/L			GXR1		06/28/1610:02
		Uncert:		+/-172						
		TPU:		+/-177						
QC1203570616	398682002	DUP								
Tritium		U	-106	U	-234	pCi/L				06/29/1609:19
		Uncert:	+/-211		+/-199		RPD:	0	N/A	
		TPU:	+/-211		+/-199		RER:	0.859	(0-2)	
QC1203570617	398682002	MS								
Tritium	2340	U	-106	2490	pCi/L	REC:	106	(75%-125%)		06/28/1611:36
		Uncert:	+/-211	+/-280						
		TPU:	+/-211	+/-556						
QC1203570618	LCS									
Tritium	2330			2700	pCi/L	REC:	116	(80%-120%)		06/28/1612:23
		Uncert:		+/-292						
		TPU:		+/-598						

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
- 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 associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- 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 appropriate). Value is estimated
- M Duplicate precision not met.

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
N										
P										
S										
T										
U										
UX										
W										
X										
Y										
Z										
o										

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.