



April 15, 2021

Mr. Scot Fitzgerald
Central Plateau Cleanup Company
MSIN R3-50
PO Box 1600
Richland, Washington 99352

Re: SAF S21-003
Work Order: 538337
SDG: GEL538337

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 19, 2021. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

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,

Clare Drennen for
Heather Shaffer
Project Manager

Purchase Order: 900152 + 7H
Chain of Custody: S21-003-164 and S21-003-167
Enclosures

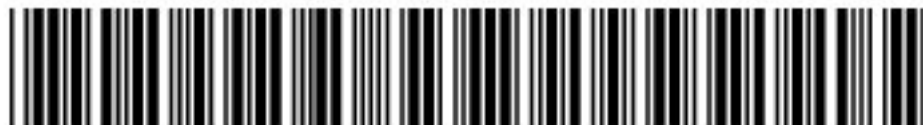


Table of Contents

Case Narrative.....	3
Chain of Custody and Supporting Documentation.....	8
Data Review Qualifier Definitions.....	12
Laboratory Certifications.....	14
Radiological Analysis.....	16
Case Narrative.....	17
Sample Data Summary.....	22
Quality Control Summary.....	30

Case Narrative

**General Narrative
for
Central Plateau Cleanup Company (74393)
SAF S21-003
SDG: GEL538337**

April 15, 2021

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 March 19, 2021, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification

The laboratory received the following samples:

Laboratory Identification	Sample Description
538337001	B404N8
538337002	B404P5

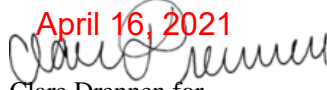
Case Narrative

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: Radiochemistry.

We certify that this package is in compliance with the Analytical Laboratory Services for CH2M Hill Plateau Remediation Company Statement of Work, 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 data package deliverable 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.



Clare Drennen for
Heather Shaffer
Project Manager

Radiochemistry
Technical Case Narrative
Central Plateau Cleanup Company
SDG #: GEL538337
Work Order #: 538337

SMR_I129LOWLEVEL_RAD

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.

SMR_SR_RAD_GPC

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 1204778772 (B40541DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

SMR_ALPHABETA_GPC

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, 1204778888 (B404P7MS) and 1204778889 (B404P7MSD), aliquots were reduced to conserve sample volume.

SMR_TC99_LSC

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.

SMR_TRITIUM_LSC

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 1204782655 (LCS) was recounted due to low recovery. 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

Central Plateau Cleanup Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# S21-003-164

Page 1 of 1

539337

Collector: Troy Bacon CPCC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S21-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 900152
Project Title: SURV, March 2021	Logbook No.: HNF-N-506 119/43	Ice Chest No.: GWS 138
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: 77320041 (old)
Protocol: SURV	Priority: 30 Days	Offsite Property No.: NA ASL 2/4/21

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

SPECIAL INSTRUCTIONS
 N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B404N8	N	W	MAR 17 2021	1150	1x4-L G/P	SMR_I129LOWLEVEL_RAD	6 Months	None
B404N8	N	W			1x1-L G/P	SMR_SR_RAD_GPC	6 Months	HNO3 to pH <2
B404N8	N	W			1x250-mL G/P	SMR_TC99_LSC	6 Months	HNO3 to pH <2
B404N8	N	W	MAR 17 2021	1150	1x250-mL P	SMR_TRITIUM_LSC	6 Months	None

Relinquished By			Received By			Matrix *
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time	
Troy Bacon CPCC	<i>Troy L. Bacon</i>	MAR 17 2021 1300	SSU-1		MAR 17 2021 1300	
SSU-1		MAR 18 2021 0630	Troy Bacon CPCC	<i>Troy L. Bacon</i>	MAR 18 2021 0630	
Troy Bacon CPCC	<i>Troy L. Bacon</i>	MAR 18 2021 1400	FEDEX			
			Stacy Boone GEL Laboratories	<i>Stacy Boone</i>	MAR 19 2021 1000	

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.#
S21-003-167

Page 1 of 1

530337

Collector: Troy Bacon CPCC	Contact/Requester: Karen Waters-Husted	Telephone No.: 509-376-4650
SAF No.: S21-003	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 900152
Project Title: SURV, March 2021	Logbook No.: HNF-N-506 119/43	Ice Chest No.: GUS 138
Shipped To (Lab): GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No.: TRB00041 Wdlen
Protocol: SURV	Priority: 30 Days	Offsite Property No.: NA ASG 2/11/21

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

SPECIAL INSTRUCTIONS
N/A

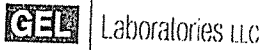
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B404P5	N	W	MAR 17 2021	1030	1x1-L G/P	SMR_ALPHABETA_GPC	6 Months	HNO3 to pH <2
B404P5	N	W		1	1x4-L G/P	SMR_I129LOWLEVEL_RAD	6 Months	None
B404P5	N	W	MAR 17 2021	1030	1x250-mL P	SMR_TRITIUM_LSC	6 Months	None

Relinquished By			Received By			Matrix *	
Print First and Last Name	Signature	Date/Time	Print First and Last Name	Signature	Date/Time	S	DS
Troy Bacon CPCC	<i>Troy Bacon</i>	MAR 17 2021 1300	SSU-1		MAR 17 2021 1300	SE	DL
SSU-1		MAR 18 2021 0630	Troy Bacon CPCC	<i>Troy Bacon</i>	MAR 18 2021 0630	SO	T
Troy Bacon CPCC	<i>Troy Bacon</i>	MAR 18 2021 1400				SL	WI
			Stacy Boone GEL Laboratories	<i>SB</i>	MAR 19 2021 1000	W	L
						O	V
						A	X

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

Disposed By:

Date/Time:



SAMPLE RECEIPT & REVIEW FORM

Client: **CPRC** SDG/AR/COC/Work Order: **558337**

Received By: **Stacy Brown** Date Received: **March 19, 2021**

Carrier and Tracking Number
FedEx Express FedEx Ground UPS Field Services Courier Other
7732 0251 7973 ic **7731 9680 7434 ic**

Suspected Hazard Information Yes No
*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

A) Shipped as a DOT Hazardous? Hazard Class Shipped: UN#: If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___

B) Did the client designate the samples are to be received as radioactive? COC notation or radioactive stickers on containers equal client designation.

C) Did the RSO classify the samples as radioactive? Maximum Net Counts Observed* (Observed Counts - Area Background Counts): CPM / mR/Hr
Classified as: Rad 1 Rad 2 Rad 3

D) Did the client designate samples are hazardous? COC notation or hazard labels on containers equal client designation.

E) Did the RSO identify possible hazards? If D or E is yes, select Hazards below.
PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

Sample Receipt Criteria Yes NA No Comments/Qualifiers (Required for Non-Conforming Items)

1 Shipping containers received intact and sealed? Circle Applicable: Seals broken Damaged container Leaking container Other (describe)

2 Chain of custody documents included with shipment? Circle Applicable: Client contacted and provided COC COC created upon receipt.

3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* Preservation Method: Wet Ice Ice Packs Dry ice None Other:
*all temperatures are recorded in Celsius TEMP: _____

4 Daily check performed and passed on IR temperature gun? Temperature Device Serial #: **IRI-20**
Secondary Temperature Device Serial # (If Applicable):

5 Sample containers intact and sealed? Circle Applicable: Seals broken Damaged container Leaking container Other (describe)

6 Samples requiring chemical preservation at proper pH? Sample ID's and Containers Affected:
If Preservation added, Lot#:

7 Do any samples require Volatile Analysis? If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)
Do liquid VOA vials contain acid preservation? Yes No ___ NA ___ (If unknown, select No)
Are liquid VOA vials free of headspace? Yes No ___ NA ___
Sample ID's and containers affected:

8 Samples received within holding time? ID's and tests affected:

9 Sample ID's on COC match ID's on bottles? ID's and containers affected:

10 Date & time on COC match date & time on bottles? Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)

11 Number of containers received match number indicated on COC? Circle Applicable: No container count on COC Other (describe)

12 Are sample containers identifiable as GEL provided by use of GEL labels?

13 COC form is properly signed in relinquished/received sections? Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):
7732 0041 6662 ic **7731 9676 1130 ic**

PM (or PMA) review: Initials **CD** Date **3/22/21** Page **1** of **1**

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

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

Laboratory Certifications

List of current GEL Certifications as of 15 April 2021

State	Certification
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
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	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122021-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2019-165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-21-19
Utah NELAP	SC000122020-34
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
Central Plateau Cleanup Company
SDG #: GEL538337
Work Order #: 538337**

Product: SMR_I129LOWLEVEL_RAD**Analytical Method:** DOE EML HASL-300,I-01 Modified**Analytical Procedure:** GL-RAD-A-006 REV# 21**Analytical Batch:** 2105535

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
538337001	B404N8
538337002	B404P5
1204778500	Method Blank (MB)
1204778501	538144012(NonSDG) Sample Duplicate (DUP)
1204778502	538144012(NonSDG) Matrix Spike (MS)
1204778503	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: SMR_SR_RAD_GPC**Analytical Method:** SR_RAD_GPC**Analytical Procedure:** GL-RAD-A-004 REV# 21**Analytical Batch:** 2105616

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
538337001	B404N8
1204778771	Method Blank (MB)
1204778772	537544008(B40541) Sample Duplicate (DUP)
1204778773	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 1204778772 (B40541DUP) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

Product: SMR_ALPHABETA_GPC**Analytical Method:** ALPHABETA_GPC**Analytical Procedure:** GL-RAD-A-001 REV# 20**Analytical Batch:** 2105660

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
538337002	B404P5
1204778886	Method Blank (MB)
1204778887	537205003(B404P7) Sample Duplicate (DUP)
1204778888	537205003(B404P7) Matrix Spike (MS)
1204778889	537205003(B404P7) Matrix Spike Duplicate (MSD)
1204778890	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, 1204778888 (B404P7MS) and 1204778889 (B404P7MSD), aliquots were reduced to conserve sample volume.

Product: SMR_TC99_LSC**Analytical Method:** TC99_LSC**Analytical Procedure:** GL-RAD-A-059 REV# 5**Analytical Batch:** 2105546

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
538337001	B404N8
1204778526	Method Blank (MB)
1204778527	538144012(NonSDG) Sample Duplicate (DUP)
1204778528	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: SMR_TRITIUM_LSC

Analytical Method: TRITIUM_LSC

Analytical Procedure: GL-RAD-A-002 REV# 23

Analytical Batch: 2107629

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
538337001	B404N8
538337002	B404P5
1204782652	Method Blank (MB)
1204782653	538337001(B404N8) Sample Duplicate (DUP)
1204782654	538337001(B404N8) Matrix Spike (MS)
1204782655	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 1204782655 (LCS) was recounted due to low recovery. 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**

CPRC002 Central Plateau Cleanup Company (74393)

Client SDG: GEL538337 GEL Work Order: 538337


The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: **Name:** Theresa Austin**Date:** 15 APR 2021**Title:** Group Leader

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337001	Date Collected: 03/17/2021 11:50	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404N8	Method: SR_RAD_GPC	Prep Basis: "As Received"
Batch ID: 2105616	Analyst: JXC9	SOP Ref: GL-RAD-A-004
Run Date: 03/27/2021 16:10	Aliquot: 300 mL	Instrument: PIC4C
Data File: S2105616r1.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 2105616		
Prep Date: 03/22/2021 10:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90	U	-0.147	pCi/L	+/-0.570	0.570	1.11	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	3.60	4.29	mg	83.9	(40%-110%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337001	Date Collected: 03/17/2021 11:50	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404N8	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 2105535	Analyst: MJH1	SOP Ref: GL-RAD-A-006
Run Date: 03/25/2021 15:49	Aliquot: 1.2 L	Instrument: XRAY6
Data File: I538337001.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 2105535		
Prep Date: 03/24/2021 17:51		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I5046-84-1	Iodine-129		5.97	pCi/L	+/-1.76	1.85	0.938	1.00

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337001	Date Collected: 03/17/2021 11:50	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404N8	Method: TC99_LSC	Prep Basis: "As Received"
Batch ID: 2105546	Analyst: JJ3	SOP Ref: GL-RAD-A-059
Run Date: 03/28/2021 09:16	Aliquot: 100 mL	Instrument: LSCRED
Data File: E2105546.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 2105546		
Prep Date: 03/24/2021 19:24		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		2570	pCi/L	+/-68.6	294	38.0	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	39600	44300	CPM	89.5	(30%-105%)

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337001	Date Collected: 03/17/2021 11:50	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404N8	Method: TRITIUM_LSC	Prep Basis: "As Received"
Batch ID: 2107629	Analyst: KXA1	SOP Ref: GL-RAD-A-002
Run Date: 04/01/2021 07:56	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T2107629R.xls	Prep Method: EPA 906.0 Modified	Count Time: 15.02955 min
Prep Batch: 2107629		
Prep Date: 03/31/2021 08:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		4600	pCi/L	+/-500	1020	311	400

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337002	Date Collected: 03/17/2021 10:30	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404P5	Method: ALPHABETA_GPC	Prep Basis: "As Received"
Batch ID: 2105660	Analyst: RP1	SOP Ref: GL-RAD-A-001
Run Date: 04/01/2021 10:27	Aliquot: 200 mL	Instrument: LB4100G4
Data File: AB2105660r2.xls	Prep Method: EPA 900.0/SW846 9310	Count Time: 80 min
Prep Batch: 2105660		
Prep Date: 03/30/2021 07:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha ALPHA	U	1.96	pCi/L	+/-1.98	2.02	2.75	3.00
12587-47-2	Beta BETA		1400	pCi/L	+/-18.1	227	2.01	4.00

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

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337002	Date Collected: 03/17/2021 10:30	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404P5	Method: DOE EML HASL-300,I-01 Mo	Prep Basis: "As Received"
Batch ID: 2105535	Analyst: MJH1	SOP Ref: GL-RAD-A-006
Run Date: 03/25/2021 15:50	Aliquot: 1.2 L	Instrument: XRAY7
Data File: I538337002.CNF;1	Prep Method: DOE EML HASL-300,I-01 M	Count Time: 120 min
Prep Batch: 2105535		
Prep Date: 03/24/2021 17:51		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		5.08	pCi/L	+/-1.14	1.25	0.811	1.00
Surrogate/Tracer recovery		Result	Nominal	Units	Recovery%	Acceptable Limits		

Comments:

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

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL538337	Client: CPRC002	Project: CPRC0S21003
Lab Sample ID: 538337002	Date Collected: 03/17/2021 10:30	Matrix: WATER
	Date Received: 03/19/2021 10:00	
Client ID: B404P5	Method: TRITIUM_LSC	Prep Basis: "As Received"
Batch ID: 2107629	Analyst: KXA1	SOP Ref: GL-RAD-A-002
Run Date: 04/01/2021 08:14	Aliquot: 50 mL	Instrument: LSCORANGE
Data File: T2107629R.xls	Prep Method: EPA 906.0 Modified	Count Time: 15.02967 min
Prep Batch: 2107629		
Prep Date: 03/31/2021 08:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1270	pCi/L	+/-299	387	314	400

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

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

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: April 15, 2021
Page 1 of 3

Client : Central Plateau Cleanup Company
MSIN R3-50
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 538337

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	2105535								
QC1204778500	MB								
Iodine-129			U	0.232	pCi/L			MJH1	03/25/2117:56
				Uncert: +/-0.201					
				TPU: +/-0.202					
QC1204778501	538144012	DUP							
Iodine-129		U -0.161	U	0.331	pCi/L				03/25/2117:57
				Uncert: +/-0.357		RPD: 0	N/A		
				TPU: +/-0.364		RER: 1.52	(0-2)		
QC1204778502	538144012	MS							
Iodine-129		36.5 U -0.161		30.2	pCi/L	REC: 83.3	(75%-125%)		03/25/2117:58
				Uncert: +/-0.357					
				TPU: +/-0.364					
QC1204778503	LCS								
Iodine-129		36.5		36.2	pCi/L	REC: 99.3	(80%-120%)		03/25/2118:00
				Uncert: +/-4.46					
				TPU: +/-5.75					
Rad Gas Flow									
Batch	2105616								
QC1204778771	MB								
Strontium-90			U	0.896	pCi/L			JXC9	03/27/2116:09
				Uncert: +/-0.820					
				TPU: +/-0.846					
**Strontium Carrier		4.29		3.80	mg	REC: 89	(40%-110%)		
QC1204778772	537544008	DUP							
Strontium-90		U 0.0270	U	0.133	pCi/L				03/29/2114:51
				Uncert: +/-0.430		RPD: 0	N/A		
				TPU: +/-0.430		RER: 0.381	(0-2)		
**Strontium Carrier		4.29		4.10	mg	REC: 93	(40%-110%)		
QC1204778773	LCS								
Strontium-90		71.9		69.9	pCi/L	REC: 97.2	(80%-120%)		03/27/2116:09
				Uncert: +/-3.20					
				TPU: +/-16.5					
**Strontium Carrier		4.29		3.90	mg	REC: 91	(40%-110%)		
Batch	2105660								
QC1204778886	MB								
Alpha			U	0.117	pCi/L			RP1	04/01/2110:25
				Uncert: +/-0.657					
				TPU: +/-0.658					
Beta			U	1.32	pCi/L				
				Uncert: +/-1.42					
				TPU: +/-1.44					
QC1204778887	537205003	DUP							
Alpha		27.3		29.9	pCi/L				04/01/2110:30
				Uncert: +/-5.28		RPD: 9	(0%-20%)		

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QC Summary

Workorder: 538337

Page 2 of 3

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Gas Flow										
Batch	2105660									
		TPU:	+/-7.07	+/-7.91						
Beta		498		456	pCi/L	RER: 0.481	(0-2)			
		Uncert:	+/-9.82	+/-11.0		RPD: 9	(0%-20%)			
		TPU:	+/-83.1	+/-74.5		RER: 0.738	(0-2)			
QC1204778888	537205003	MS								
Alpha	253	27.3		228	pCi/L	REC: 79.4	(75%-125%)		04/01/2110:30	
		Uncert:	+/-5.28	+/-25.6						
		TPU:	+/-7.07	+/-45.7						
Beta	863	498		1350	pCi/L	REC: 99.1	(75%-125%)			
		Uncert:	+/-9.82	+/-39.6						
		TPU:	+/-83.1	+/-224						
QC1204778889	537205003	MSD								
Alpha	253	27.3		227	pCi/L	REC: 79.2	(75%-125%)		04/01/2110:30	
		Uncert:	+/-5.28	+/-25.8		RPD: 0	(0%-20%)			
		TPU:	+/-7.07	+/-46.2		RER: 0.0137	(0-2)			
Beta	863	498		1380	pCi/L	REC: 102	(75%-125%)			
		Uncert:	+/-9.82	+/-40.2		RPD: 2	(0%-20%)			
		TPU:	+/-83.1	+/-233		RER: 0.18	(0-2)			
QC1204778890	LCS									
Alpha	63.1			59.5	pCi/L	REC: 94.2	(80%-120%)		04/01/2110:30	
		Uncert:		+/-5.88						
		TPU:		+/-11.5						
Beta	216			213	pCi/L	REC: 98.5	(80%-120%)			
		Uncert:		+/-8.00						
		TPU:		+/-35.8						
Rad Liquid Scintillation										
Batch	2105546									
QC1204778526	MB									
Technetium-99			U	8.32	pCi/L			JJ3	03/28/2109:37	
		Uncert:		+/-18.4						
		TPU:		+/-18.4						
**Technetium-99m Tracer	44300			40700	CPM	REC: 92	(30%-105%)			
QC1204778527	538144012	DUP								
Technetium-99		253		271	pCi/L				03/28/2109:59	
		Uncert:	+/-27.3	+/-26.4		RPD: 7	(0%-20%)			
		TPU:	+/-39.2	+/-40.1		RER: 0.637	(0-2)			
**Technetium-99m Tracer	44300	42700		43400	CPM	REC: 98	(30%-105%)			
QC1204778528	LCS									
Technetium-99		843		732	pCi/L	REC: 86.8	(80%-120%)		03/28/2110:20	
		Uncert:		+/-38.7						
		TPU:		+/-90.0						
**Technetium-99m Tracer	44300			40400	CPM	REC: 91	(30%-105%)			
Batch	2107629									
QC1204782652	MB									
Tritium			U	-25.0	pCi/L			KXA1	04/01/2110:52	
		Uncert:		+/-154						
		TPU:		+/-154						
QC1204782653	538337001	DUP								

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QC Summary

Workorder: 538337

Page 3 of 3

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch	2107629									
Tritium		4600		4310	pCi/L					
		Uncert:	+/-500	+/-476		RPD:	7	(0%-20%)		
		TPU:	+/-1020	+/-959		RER:	0.409	(0-2)		
QC1204782654	538337001	MS								
Tritium	3780	4600		8010	pCi/L	REC:	90.3	(75%-125%)		04/01/2111:27
		Uncert:	+/-500	+/-649						
		TPU:	+/-1020	+/-1680						
QC1204782655	LCS									
Tritium	3770			3630	pCi/L	REC:	96.3	(80%-120%)		04/02/2108:27
		Uncert:		+/-442						
		TPU:		+/-830						

Notes:

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

The Qualifiers in this report are defined as follows:

- B The analyte was detected in the associated method blank >= MDC or >5% sample activity.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- 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.
- UX Gamma Spectroscopy--Uncertain identification
- 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

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.