

July 10, 2017



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2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

July 10, 2017

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

Re: CHPRC SAF S17-006
Work Order: 425606
SDG: GEL425606

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 16, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071-7H
Chain of Custody: S17-006-245
Enclosures



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July 10, 2017

Case Narrative

July 10, 2017

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF S17-006
SDG: GEL425606

July 10, 2017

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 16, 2017, for analysis. The sample was 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 sample:

Laboratory Identification	Sample Description
425606001	B39T07

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 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.

July 10, 2017

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

July 10, 2017

Radiochemistry

Technical Case Narrative

CH2M Hill Plateau Remediation Company (CPRC)

SDG #: GEL425606

Work Order #: 425606

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 the duplicate, 1203815774 (B39R31DUP), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.19.

Technical Information

Recounts

Samples 1203815774 (B39R31DUP) and 425606001 (B39T07) were verified by recounting at least five days from the separation date. The recounts are reported.

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 1203815893 (B39T96MS) was recounted due to low recovery. The recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike, 1203815893 (B39T96MS), aliquot was reduced to conserve sample volume.

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

July 10, 2017

Recounts

Sample 1203815897 (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

July 10, 2017

CH2M Hill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **S17-006-245**
Page 1 of 1

Collector: Chris Fulton CHPRC
SAF No. S17-006
Project Title: SURV, JUNE 2017
Shipped To (Lab): GEL Laboratories, LLC
Protocol: SURV

Contact/Requester: Karen Waters-Husted
Telephone No. 509-376-4650
Purchase Order/Charge Code: 300071
Ice Chest No. 6005-323
Bill of Lading/Air Bill No. 77941230 5085
Offsite Property No. 8046

Priority: 30 Days
SPECIAL INSTRUCTIONS: **PRIORITY**
SPECIAL INSTRUCTIONS: N/A
Total Activity Exemption: Yes No

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	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39T07	N	W	JUN 14 2017	1401	1x500-mL G/P 500 mL	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B39T07	N	W	↓	↓	1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B39T07	N	W	↓	↓	1x250-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

** Per Management*

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Chris Fulton CHPRC	SSU-1	<i>[Signature]</i>	JUN 14 2017 1430	SSU.	SSU-1	<i>[Signature]</i>	JUN 14 2017 1430	Soil, Sediment, Solid, Sludge, Water, Oil, Air, DS, DL, T, WI, L, V, X
9 of 27 Chris Fulton CHPRC		<i>[Signature]</i>	JUN 15 2017 0700	Leah Wall CHPRC		<i>[Signature]</i>	JUN 15 2017 0700	
Chris Fulton CHPRC		<i>[Signature]</i>	JUN 15 2017 1400	FEDEX		<i>[Signature]</i>	JUN 15 2017 1400	
		<i>[Signature]</i>	FEU EX			<i>[Signature]</i>	6/16/17 9:15	

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

Disposed By: *[Signature]* Date/Time: 6/16/17 9:15

July 10, 2017



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>		SDG/AR/COC/Work Order: <u>425600</u>	
Received By: <u>Stacy Boone</u>		Date Received: <u>16 JUNE -17</u>	
Carrier and Tracking Number		Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other <u>7794 1520 3402 -1c</u> <u>7794 1593 5896 -1c</u> <u>7794 1439 8361 -1c</u> <u>7794 1230 5085 -1c</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. 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?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius, TEMP: _____
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-17</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes _____ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No _____ N/A (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No _____ N/A Sample ID's and containers affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials NS Date 6/19/17 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.	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 $\geq 2X$ the MDA and, after corrections, result is \geq 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 \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	

Laboratory Certifications

List of current GEL Certifications as of 10 July 2017

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	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
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	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Radiological Analysis

Case Narrative

July 10, 2017

Radiochemistry

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL425606

Work Order #: 425606

Product: SRISO_SEP_PRECIP_GPC: COMMON

Analytical Method: SRISO_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 18

Analytical Batch: 1675923

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425606001	B39T07
1203815773	Method Blank (MB)
1203815774	425103020(B39R31) Sample Duplicate (DUP)
1203815775	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 the duplicate, 1203815774 (B39R31DUP), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.19.

Technical Information

Recounts

Samples 1203815774 (B39R31DUP) and 425606001 (B39T07) were verified by recounting at least five days from the separation date. The recounts are reported.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

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

Analytical Batch: 1675960

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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July 10, 2017

425606001	B39T07
1203815891	Method Blank (MB)
1203815892	425280008(B39T96) Sample Duplicate (DUP)
1203815893	425280008(B39T96) Matrix Spike (MS)
1203815894	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 1203815893 (B39T96MS) was recounted due to low recovery. The recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike, 1203815893 (B39T96MS), aliquot was reduced to conserve sample volume.

Product: TC99_EIE_LSC: COMMON

Analytical Method: TC99_EIE_LSC

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

Analytical Batch: 1675961

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
425606001	B39T07
1203815895	Method Blank (MB)
1203815896	425384006(B39TB7) Sample Duplicate (DUP)
1203815897	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 1203815897 (LCS) was recounted due to low recovery. The recount is reported.

July 10, 2017

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.

July 10, 2017

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: GEL425606 GEL Work Order: 425606

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: Kate Gellatly

Date: 09 JUL 2017

Title: Analyst I

Sample Data Summary

July 10, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425606	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 425606001	Date Collected: 06/14/2017 14:01	Matrix: WATER
	Date Received: 06/16/2017 09:15	
Client ID: B39T07	Method: SRISO_SEP_PRECIP_GPC	Prep Basis: "As Received"
Batch ID: 1675923	Analyst: JXB7	SOP Ref: GL-RAD-A-004
Run Date: 07/05/2017 08:00	Aliquot: 300 mL	Instrument: PIC4C
Data File: S1675923r1.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1675923		
Prep Date: 06/28/2017 10:54		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10098-97-2	Strontium-90		19.1	pCi/L	+/-2.29	3.78	1.60	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	3.60	7.75	mg	46.5	(40%-110%)

Comments:

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

The MDC is a sample specific MDC.

July 10, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425606	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 425606001	Date Collected: 06/14/2017 14:01	Matrix: WATER
	Date Received: 06/16/2017 09:15	
Client ID: B39T07	Method: TRITIUM_DIST_LSC	Prep Basis: "As Received"
Batch ID: 1675960	Analyst: BXM4	SOP Ref: GL-RAD-A-002
Run Date: 07/06/2017 06:47	Aliquot: 50 mL	Instrument: LSCGREEN
Data File: T1675960R.xls	Prep Method: EPA 906.0 Modified	Count Time: 36.2999992370605 min
Prep Batch: 1675960		
Prep Date: 07/05/2017 09:31		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		69200	pCi/L	+/-1380	13500	386	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.

July 10, 2017

**Certificate of Analysis
Sample Summary**

SDG Number: GEL425606	Client: CPRC001	Project: CPRC0S17006
Lab Sample ID: 425606001	Date Collected: 06/14/2017 14:01	Matrix: WATER
	Date Received: 06/16/2017 09:15	
Client ID: B39T07	Method: TC99_EIE_LSC	Prep Basis: "As Received"
Batch ID: 1675961	Analyst: CXS7	SOP Ref: GL-RAD-A-059
Run Date: 07/04/2017 14:50	Aliquot: 100 mL	Instrument: LSCGREEN
Data File: E1675961R.xls	Prep Method: DOE EML HASL-300, Tc-02-	Count Time: 20 min
Prep Batch: 1675961		
Prep Date: 06/29/2017 13:52		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		302	pCi/L	+/-34.3	48.0	43.1	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	27600	33500	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.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 9, 2017
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 425606

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1675923								
QC1203815773	MB								
Strontium-90			U	-0.266	pCi/L			JXB7	07/01/1714:19
				Uncert: +/-0.572					
				TPU: +/-0.572					
**Strontium Carrier	7.75			5.80	mg	REC: 75	(40%-110%)		
QC1203815774	425103020	DUP							
Strontium-90			5.98	4.83	pCi/L				07/05/1708:00
			Uncert: +/-1.06	+/-1.02		RPD: 21*	(0% - 20%)		
			TPU: +/-1.43	+/-1.27		RER: 1.19	(0-2)		
**Strontium Carrier	7.75		5.50	7.20	mg	REC: 93	(40%-110%)		
QC1203815775	LCS								
Strontium-90			72.8	83.3	pCi/L	REC: 114	(80%-120%)		07/01/1714:20
			Uncert: +/-4.35						
			TPU: +/-14.1						
**Strontium Carrier	7.75			5.20	mg	REC: 67	(40%-110%)		
Rad Liquid Scintillation									
Batch	1675960								
QC1203815891	MB								
Tritium			U	66.7	pCi/L			BXM4	07/06/1708:59
				Uncert: +/-205					
				TPU: +/-206					
QC1203815892	425280008	DUP							
Tritium			9520	8980	pCi/L				07/06/1709:46
			Uncert: +/-495	+/-485		RPD: 6	(0% - 20%)		
			TPU: +/-1910	+/-1800		RER: 0.403	(0-2)		
QC1203815893	425280008	MS							
Tritium			4480	9520	pCi/L	REC: 97	(75%-125%)		07/07/1706:22
			Uncert: +/-495	+/-1500					
			TPU: +/-1910	+/-3070					
QC1203815894	LCS								
Tritium			2230	2110	pCi/L	REC: 94	(80%-120%)		07/06/1710:48
			Uncert: +/-470						
			TPU: +/-622						
Batch	1675961								
QC1203815895	MB								
Technetium-99			U	-1.46	pCi/L			CXS7	07/04/1715:54
				Uncert: +/-23.2					
				TPU: +/-23.2					
**Technetium-99m Tracer	33500			29300	CPM	REC: 88	(30%-105%)		
QC1203815896	425384006	DUP							
Technetium-99			U	17.5	U	35.4	pCi/L		07/04/1716:16
			Uncert: +/-20.8	+/-25.1		RPD: 0	N/A		
			TPU: +/-20.9	+/-25.4		RER: 1.07	(0-2)		
**Technetium-99m Tracer	33500		33400	28900	CPM	REC: 86	(30%-105%)		

QC Summary

Workorder: 425606

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1675961								
QC1203815897	LCS								
Technetium-99	861			713	pCi/L	REC: 83 (80%-120%)			07/05/1707:49
	Uncert:	+/-52.0							
	TPU:	+/-94.7							
**Technetium-99m Tracer	33500			26600	CPM	REC: 80 (30%-105%)			

Notes:

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

The Qualifiers in this report are defined as follows:

- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- 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.
- 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

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.