GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
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www.gel.com

February 06, 2014

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

Re: CHPRC SAF F11-031 | Spent GAC
Work Order: 341824
SDG: GEL341824

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 23, 2014. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 302853ES20
Chain of Custody: F11-031-062 and F11-031-065
Enclosures

Table of Contents

Case Narrative

Receipt Narrative
for
Hanford MSA (51204)
SDG: GEL341824
Work Order: 341824

February 07, 2014

Laboratory Identification:

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

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on January 23, 2014 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.

Sample Identification: The laboratory received the following samples:

Laboratory ID	Client ID
341824001	B2VW52
341824002	B2VW55

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's 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.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

Heather Shaffer
Project Manager

SAMPLE ISSUE RESOLUTION

SIR NUM	SDR14-113
REV NUM	0
DATE INITIATED	2/26/2014

SAMPLE EVENT INFORMATION

SAF NUM(S)	F11-031
OPERABLE UNIT(S)	200-PW-1
PROJECT(S)	CPP 200 Area
SAMPLE EVENT TITLE(S)	Pump & Treat Waste
LABORATORY	GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES	1
SAMPLE NUMBERS	B2VW52
SAMPLE MATRIX	OTHER SOLID
COLLECTION DATE	1/21/2014 - 1/21/2014
SDG NUM	GEL341824

ISSUE BACKGROUND

CLASS	Chain of Custody Issue (Field)
TYPE	No/Illegible Relinquisher/Receiver Listed on COC
DESCRIPTION	The second received by, and the third relinquished by line on COC F11-031-062 is missing the custodian's signature.

DISPOSITION

DESCRIPTION	PROPOSED DISPOSITION: Document the anomaly, insert the SIR into the data package and close the SIR.
JUSTIFICATION	ACCEPTED DISPOSITION: Accept the proposed resolution.
	SUBMITTED BY: Susan Puckett/CHPRC Date: 2/26/14 ACCEPTED BY: Susan Puckett/CHPRC Date: 2/26/14

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-031-062	PAGE 1 OF 1
COLLECTOR: Kauer Floyd	COMPANY CONTACT: EVANS, RT	TELEPHONE NO.: 373-7924	PROJECT COORDINATOR: EVANS, RT	PRICE CODE: 9C; AIR QUALITY: ☐
SAMPLING LOCATION: 200-PW1-SET 1 GAC	PROJECT DESIGNATION: 200-PW-1 & 200-ZP-1 Spent GAC Canisters and Filters		SAF NO.: F11-031	DATA TURNAROUND: 15 Days / 15 Days
ICE CHEST NO.: GWS-012	FIELD LOGBOOK NO.: HNF-N-585-6/64	ACTUAL SAMPLE DEPTH: N/A	COA: 302853ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: N/A			BILL OF LADING/AIR BILL NO.: SEE PTR / 7976 9643 4427

ORIGINAL

341824

MATRIX*: A=Air; DL=Drum Liquids; DS=Drum Solids; L=Liquid; O=Oil; S=Soil; SE=Sediment; T=Tissue; V=Vegetation; W=Water; WI=Wipe; X=Other

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

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION			None	None	None		
HOLDING TIME			6 Months	6 Months	6 Months		
TYPE OF CONTAINER			G/P	G/P	G/P		
NO. OF CONTAINER(S)			1	1	1		
VOLUME			60mL	60mL	60mL		
SAMPLE ANALYSIS			SEE ITEM (1) IN SPECIAL INSTRUCTIONS	THISO_IE_PLATE_AEA: COMMON (Thorium-232);	SE79_SEP_IE_LSC: COMMON;		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2VW52	OTHER SOLID	1-21-14	1030	✓	✓	✓	

MARCH 24, 2014

REVISION 1

CHAIN OF POSSESSION	SIGN/ PRINT NAMES
RELINQUISHED BY/REMOVED FROM: Ed Kauer EL Floyd 1-21-14 DATE/TIME: 1145	RECEIVED BY/STORED IN: SSU #1 1-21-14 DATE/TIME: 1145
RELINQUISHED BY/REMOVED FROM: SSU #1 1/22/14 DATE/TIME: 0830	RECEIVED BY/STORED IN: Roy A Shepard JAN 22 2014 DATE/TIME: 0830
RELINQUISHED BY/REMOVED FROM: Roy A Shepard JAN 22 2014 DATE/TIME: 1400	RECEIVED BY/STORED IN: FEDEX JAN 22 2014 DATE/TIME:
RELINQUISHED BY/REMOVED FROM: Fed EX DATE/TIME:	RECEIVED BY/STORED IN: Jennifer Pellegrini 1-23-14 0850 DATE/TIME:
RELINQUISHED BY/REMOVED FROM: DATE/TIME:	RECEIVED BY/STORED IN: DATE/TIME:
RELINQUISHED BY/REMOVED FROM: DATE/TIME:	RECEIVED BY/STORED IN: DATE/TIME:
RELINQUISHED BY/REMOVED FROM: DATE/TIME:	RECEIVED BY/STORED IN: DATE/TIME:

SPECIAL INSTRUCTIONS: The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-14-042. COMPOSITE FROM CANISTERS ZP1-09-004, ZP1-09-005, ZP1-09-006, ZP1-09-007, ZP1-13-001 AND ZP1-13-002.
(1) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON; UTOT_KPA: COMMON;

TRVL-14-042

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 1/13/2014

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F11-031-065	PAGE 1 OF 1
COLLECTOR: Kara Floyd	COMPANY CONTACT: EVANS, RT	TELEPHONE NO.: 373-7924	PROJECT COORDINATOR: EVANS, RT	PRICE CODE: 9C; AIR QUALITY: ☐	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 200-ZP1-SET 1 GAC	PROJECT DESIGNATION: 200-PW-1 & 200-ZP-1 Spent GAC Canisters and Filters		SAF NO.: F11-031		
ICE CHEST NO.: GWS-02	FIELD LOGBOOK NO.: HNF-N-585-6/64	ACTUAL SAMPLE DEPTH: N/A	COA: 302853ES10	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: N/A			BILL OF LADING/AIR BILL NO.: SEE PTR / 7976 9643 4427	

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

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

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None	None	None				
HOLDING TIME	6 Months	6 Months	6 Months				
TYPE OF CONTAINER	G/P	G/P	G/P				
NO. OF CONTAINER(S)	1	1	1				
VOLUME	60mL	60mL	60mL				
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	THISO_IE_PLATE_AEA: COMMON {Thorium-232};	SE79_SEP_IE_LSC: COMMON;				
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2VW55	OTHER SOLID	1-21-14	0930	✓	✓	✓	

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Ed Kaufer	1-21-14 1145	SSU #1	1-21-14 1145
SSU #1	1/22/14 0830	Roy A Shepard	JAN 22 2014 0830
Roy A Shepard	JAN 22 2014 1400	FEDEX	JAN 22 2014
Fed Ex		Jennifer Pellegrini	1-23-14 0850

SPECIAL INSTRUCTIONS
The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-14-042. COMPOSITE FROM CANISTERS PW1-06-070, PW1-06-072, PW1-07-011, PW1-07-014, PW1-10-041, PW1-10-042, PW1-13-001, PW1-13-002
(1) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON; UTOT_KPA: COMMON;

TRVL-14-042

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 1/14/2014

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GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: HMSA			**SDG/AR/COC/Work Order:** 341824
Received By: JP			**Date Received:** 1-23-14

Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		/	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0cpm
Classified Radioactive II or III by RSO?		/	If yes, Were swipes taken of sample contatiners < action levels?
COC/Samples marked containing PCBs?		/	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		/	If yes, samples are to be segregeated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		/	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		/	

	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	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	/			Preservation Method: (Ice bags) Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius. 4
2a	Daily check performed and passed on IR temperature gun?	/			Temperature Device Serial #: 130462961 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	/			
4	Sample containers intact and sealed?	/			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		/		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		/		Sample ID's and containers affected:
7	Are Encore containers present?			/	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	/			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	/			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	/			Sample ID's affected:
11	Number of containers received match number indicated on COC?	/			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			/	
13	COC form is properly signed in relinquished/received sections?	/			
14	Carrier and tracking number.				Circle Applicable: (FedEx Air) FedEx Ground UPS Field Services Courier Other. 7976, 9643 4427

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials JP Date 1-23-14 Page 1 of 1

Laboratory Certifications

List of current GEL Certifications as of 06 February 2014

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−12−00283, P330−12−00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122014−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68−00485
Plant Material Permit	PDEP−12−00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235−13−8
Utah NELAP	SC000122013−11
Vermont	VT87156
Virginia NELAP	460202
Washington	C780−12
Wisconsin	999887790

Radiological Analysis

Radiochemistry Case Narrative
Hanford MSA (HMSA)
SDG GEL341824
Work Order 341824

Method/Analysis Information

Product:	**Alphaspec Th, Solid (Th232)**
Analytical Method:	THISO_IE_PLATE_AEA
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1362199
Prep Batch Number:	1362120

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024483	Method Blank (MB)
1203024484	341824001(B2VW52) Sample Duplicate (DUP)
1203024485	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-038 REV# 16.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Gamma I129, Solid**
Analytical Method:	I129_SEP_LEPS_GS
Analytical Batch Number:	1362126

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024242	Method Blank (MB)
1203024243	341824001(B2VW52) Sample Duplicate (DUP)
1203024244	341824001(B2VW52) Matrix Spike (MS)
1203024245	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-006 REV# 20.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**KPA, Total U, Solid**
Analytical Method:	UTOT_KPA
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1362340
Prep Batch Number:	1362120

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024832	Method Blank (MB)
1203024833	341824001(B2VW52) Sample Duplicate (DUP)
1203024834	341824001(B2VW52) Matrix Spike (MS)
1203024835	Laboratory Control Sample (LCS)
1203024836	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-023 REV# 19.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples 341824001 (B2VW52) and 341824002 (B2VW55) were treated with a post-spike due to contractual requirements and reanalyzed to test for quenching. The post-spike verified the initial results, so the initial results are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
The blank 1203024832 (MB) activity is greater than the MDC but is less than five percent of the lowest activity in the batch.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint C14, Solid**
Analytical Method:	C14_LSC
Analytical Batch Number:	1362236

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024567	Method Blank (MB)
1203024568	341824001(B2VW52) Sample Duplicate (DUP)
1203024569	341824001(B2VW52) Matrix Spike (MS)
1203024570	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-003 REV# 15.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**LSC, Tritium Dist, Solid**
Analytical Method:	TRITIUM_DIST_LSC
Analytical Batch Number:	1362237

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024571	Method Blank (MB)
1203024572	341824001(B2VW52) Sample Duplicate (DUP)
1203024573	341824001(B2VW52) Matrix Spike (MS)
1203024574	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples were recounted due to low recovery. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Tc99, Solid**
Analytical Method:	TC99_EIE_LSC
Analytical Batch Number:	1362244

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024594	Method Blank (MB)
1203024595	341824001(B2VW52) Sample Duplicate (DUP)
1203024596	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-059 REV# 2.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Sample 341824002 (B2VW55) was recounted due to the quench number being outside the calibration range and then recounted to verify sample result. The second and third count results are similar. The second count is reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Se79, Solid**
Analytical Method:	SE79_SEP_IE_LSC
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1362252
Prep Batch Number:	1362120

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024615	Method Blank (MB)
1203024616	341824001(B2VW52) Sample Duplicate (DUP)
1203024617	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-031 REV# 10.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples 1203024615 (MB), 1203024616 (B2VW52), 341824001 (B2VW52) and 341824002 (B2VW55) were recounted due to results more negative than the three sigma TPU. The second counts are reported.

Chemical Recoveries
All chemical recoveries meet the required acceptance limits for this sample set.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Liquid Scint Ni63, Solid**
Analytical Method:	NI63_LSC
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1362260
Prep Batch Number:	1362120

Sample ID	Client ID
341824001	B2VW52
341824002	B2VW55
1203024639	Method Blank (MB)
1203024640	341824001(B2VW52) Sample Duplicate (DUP)
1203024641	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-022 REV# 16.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 341824001 (B2VW52).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples were recounted due to high recovery. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

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

HMSA001 Hanford MSA (51204)

Client SDG: GEL341824 GEL Work Order: 341824

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: Heather McCarty **Name:** **Heather McCarty**

Date: **06 FEB 2014** **Title:** **Analyst II**

Sample Data Summary

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

Certificate of Analysis

Company : CH2MHill Plateau Remediation
Address : Company
MISN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Report Date: February 6, 2014

Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F11-031 | Spent GAC

Client Sample ID: B2VW52
Sample ID: 341824001
Matrix: OTHER SOLID
Collect Date: 21-JAN-14
Receive Date: 23-JAN-14
Collector: Client
Moisture: 25.8%

Project: HMSA00111
Client ID: HMSA001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
Alphaspec Th, Solid (Th232) "Dry Weight Corrected"													
Thorium-232		0.302	+/-0.231	0.226	+/-0.234	1.00	pCi/g		MXS2	01/28/14	1510	1362199	1
Rad Gamma Spec Analysis													
Gamma I129, Solid "As Received"													
Iodine-129	U	0.271	+/-0.532	2.00	+/-0.547	2.00	pCi/g		MJH1	01/28/14	1125	1362126	2
Rad Liquid Scintillation Analysis													
LSC, Tritium Dist, Solid "As Received"													
Tritium	U	13.9	+/-10.9	17.4	+/-11.3	30.0	pCi/g		BYS1	01/28/14	0905	1362237	3
Liquid Scint C14, Solid "As Received"													
Carbon-14	U	0.0165	+/-1.92	3.34	+/-1.92	5.00	pCi/g		BYS1	01/27/14	1223	1362236	4
Liquid Scint Ni63, Solid "Dry Weight Corrected"													
Nickel-63	U	1.30	+/-3.67	6.31	+/-3.68	10.0	pCi/g		TYJ1	02/02/14	0908	1362260	5
Liquid Scint Se79, Solid "Dry Weight Corrected"													
Selenium-79	U	-1.13	+/-3.52	6.07	+/-3.52	10.0	pCi/g		EXK2	02/02/14	1626	1362252	6
Liquid Scint Tc99, Solid "As Received"													
Technetium-99	U	-1.43	+/-6.48	11.3	+/-6.48	15.0	pCi/g		MYM1	02/02/14	0552	1362244	7
Rad Total Uranium													
KPA, Total U, Solid "Dry Weight Corrected"													
Total Uranium		1.25	+/-0.0286	0.0461	+/-0.405	1.00	ug/g		KDF1	02/06/14	0850	1362340	8

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	01/23/14	1239	1362120

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300,I-01 Modified
3	EPA 906.0 Modified
4	EPA EERF C-01 Modified
5	DOE RESL Ni-1, Modified
6	NERC ORD
7	DOE EML HASL-300, Tc-02-RC Modified
8	ASTM D 5174 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

GEL LABORATORIES LLC
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Certificate of Analysis

Company : CH2MHill Plateau Remediation
Address : Company
MISN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Report Date: February 6, 2014

Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F11-031 | Spent GAC

Client Sample ID: B2VW52
Sample ID: 341824001

Project: HMSA00111
Client ID: HMSA001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	**Test**						**Batch ID**	**Recovery%**	**Acceptable Limits**				
Thorium-229 Tracer	Alphaspec Th, Solid (Th232) "Dry Weight Corrected"						1362199	88.8	(15%-125%)				
Nickel Carrier	Liquid Scint Ni63, Solid "Dry Weight Corrected"						1362260	60.2	(25%-125%)				
Selenium Carrier	Liquid Scint Se79, Solid "Dry Weight Corrected"						1362252	82.0	(25%-125%)				
Technetium-99m Tracer	Liquid Scint Tc99, Solid "As Received"						1362244	79.2	(15%-125%)				

Notes:

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

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Certificate of Analysis

Company : CH2MHill Plateau Remediation
Address : Company
MISN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Report Date: February 6, 2014

Contact: Mr. Scot Fitzgerald

Project: CHPRC SAF F11-031 | Spent GAC

Client Sample ID: B2VW55
Sample ID: 341824002
Matrix: OTHER SOLID
Collect Date: 21-JAN-14
Receive Date: 23-JAN-14
Collector: Client
Moisture: 32.2%

Project: HMSA00111
Client ID: HMSA001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
Alphaspec Th, Solid (Th232) "Dry Weight Corrected"													
Thorium-232	U	0.146	+/-0.196	0.282	+/-0.197	1.00	pCi/g		MXS2	01/28/14	1510	1362199	1
Rad Gamma Spec Analysis													
Gamma I129, Solid "As Received"													
Iodine-129	U	-0.154	+/-0.705	1.48	+/-0.708	2.00	pCi/g		MJH1	01/28/14	1153	1362126	2
Rad Liquid Scintillation Analysis													
LSC, Tritium Dist, Solid "As Received"													
Tritium	U	17.6	+/-11.4	17.7	+/-12.1	30.0	pCi/g		BYS1	01/28/14	0922	1362237	3
Liquid Scint C14, Solid "As Received"													
Carbon-14	U	0.630	+/-1.96	3.37	+/-1.96	5.00	pCi/g		BYS1	01/27/14	1244	1362236	4
Liquid Scint Ni63, Solid "Dry Weight Corrected"													
Nickel-63	U	-0.727	+/-3.77	6.64	+/-3.77	10.0	pCi/g		TYJ1	02/02/14	0944	1362260	5
Liquid Scint Se79, Solid "Dry Weight Corrected"													
Selenium-79	U	-3.22	+/-2.72	4.78	+/-2.72	10.0	pCi/g		EXK2	02/02/14	1728	1362252	6
Liquid Scint Tc99, Solid "As Received"													
Technetium-99		11.9	+/-4.13	6.72	+/-4.36	15.0	pCi/g		MYM1	02/02/14	1418	1362244	7
Rad Total Uranium													
KPA, Total U, Solid "Dry Weight Corrected"													
Total Uranium		1.26	+/-0.0283	0.0471	+/-0.411	1.00	ug/g		KDF1	02/06/14	0852	1362340	8

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	01/23/14	1239	1362120

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Th-01-RC Modified
2	DOE EML HASL-300,I-01 Modified
3	EPA 906.0 Modified
4	EPA EERF C-01 Modified
5	DOE RESL Ni-1, Modified
6	NERC ORD
7	DOE EML HASL-300, Tc-02-RC Modified
8	ASTM D 5174 Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

GEL LABORATORIES LLC
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Certificate of Analysis

Company : CH2MHill Plateau Remediation
Address : Company
MISN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Report Date: February 6, 2014

Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F11-031 | Spent GAC

Client Sample ID: B2VW55
Sample ID: 341824002

Project: HMSA00111
Client ID: HMSA001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	**Test**											**Batch ID**	**Recovery%**	**Acceptable Limits**
Thorium-229 Tracer	Alphaspec Th, Solid (Th232) "Dry Weight Corrected"											1362199	89.3	(15%-125%)
Nickel Carrier	Liquid Scint Ni63, Solid "Dry Weight Corrected"											1362260	62.2	(25%-125%)
Selenium Carrier	Liquid Scint Se79, Solid "Dry Weight Corrected"											1362252	87.0	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "As Received"											1362244	82.6	(15%-125%)

Notes:

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

Quality Control Data

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

QC Summary

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

Workorder: **341824**

Report Date: February 6, 2014

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1362199									
QC1203024483 MB									
Thorium-232			U	-0.0272	pCi/g			MXS2	01/28/1416:29
Uncert:				+/-0.0951					
TPU:				+/-0.0952					
QC1203024484 341824001 DUP									
Thorium-232		0.302	U	0.230	pCi/g				01/28/1416:29
Uncert:		+/-0.231		+/-0.227		RPD: 1	(0% - 100%)		
TPU:		+/-0.234		+/-0.229		RER: 0.431	(0-2)		
QC1203024485 LCS									
Thorium-230	20.0			20.7	pCi/g	REC: 104	(80%-120%)		01/28/1415:10
Uncert:				+/-1.76					
TPU:				+/-3.17					
Thorium-232			U	-0.0269	pCi/g				
Uncert:				+/-0.130					
TPU:				+/-0.130					
Rad Gamma Spec									
Batch 1362126									
QC1203024242 MB									
Iodine-129			U	-0.296	pCi/g			MJH1	01/28/1411:53
Uncert:				+/-0.581					
TPU:				+/-0.597					
QC1203024243 341824001 DUP									
Iodine-129	U	0.271	U	0.250	pCi/g				01/28/1411:54
Uncert:		+/-0.532		+/-0.556		RPD: 0	N/A		
TPU:		+/-0.547		+/-0.568		RER: 0.053	(0-2)		
QC1203024244 341824001 MS									
Iodine-129	39.9 U	0.271		42.5	pCi/g	REC: 106	(75%-125%)		01/28/1412:02
Uncert:		+/-0.532		+/-5.95					
TPU:		+/-0.547		+/-7.32					
QC1203024245 LCS									
Iodine-129	39.9			45.0	pCi/g	REC: 113	(80%-120%)		01/28/1412:03
Uncert:				+/-6.88					
TPU:				+/-8.25					
Rad Liquid Scintillation									
Batch 1362236									
QC1203024567 MB									
Carbon-14			U	-0.668	pCi/g			BYS1	01/27/1413:05
Uncert:				+/-1.89					
TPU:				+/-1.89					
QC1203024568 341824001 DUP									
Carbon-14	U	0.0165	U	0.437	pCi/g				01/27/1413:27
Uncert:		+/-1.92		+/-1.94		RPD: 0	N/A		
TPU:		+/-1.92		+/-1.94		RER: 0.303	(0-2)		
QC1203024569 341824001 MS									

QC Summary

Workorder: 341824

Parmname	NOM		Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation										
Batch 1362236										
Carbon-14	100	U	0.0165		104	pCi/g	REC: 104	(75%-125%)		
	Uncert:		+/-1.92		+/-4.49					
	TPU:		+/-1.92		+/-8.87					
QC1203024570 LCS										
Carbon-14	100				96.2	pCi/g	REC: 96	(80%-120%)		01/27/1414:09
	Uncert:				+/-4.33					
	TPU:				+/-8.28					
Batch 1362237										
QC1203024571 MB										
Tritium				U	14.6	pCi/g			BYS1	01/28/1409:38
	Uncert:				+/-11.0					
	TPU:				+/-11.5					
QC1203024572 341824001 DUP										
Tritium		U	13.9	U	9.17	pCi/g				01/28/1409:54
	Uncert:		+/-10.9		+/-10.4		RPD: 0	N/A		
	TPU:		+/-11.3		+/-10.6		RER: 0.604	(0-2)		
QC1203024573 341824001 MS										
Tritium	73.0	U	13.9		80.5	pCi/g	REC: 110	(75%-125%)		01/28/1408:16
	Uncert:		+/-10.9		+/-16.2					
	TPU:		+/-11.3		+/-24.4					
QC1203024574 LCS										
Tritium	72.2				73.3	pCi/g	REC: 102	(80%-120%)		01/28/1408:32
	Uncert:				+/-15.6					
	TPU:				+/-22.8					
Batch 1362244										
QC1203024594 MB										
Technetium-99				U	-1.26	pCi/g			MYM1	02/02/1406:56
	Uncert:				+/-4.87					
	TPU:				+/-4.87					
QC1203024595 341824001 DUP										
Technetium-99		U	-1.43	U	-5.58	pCi/g				02/02/1407:28
	Uncert:		+/-6.48		+/-6.18		RPD: 0	N/A		
	TPU:		+/-6.48		+/-6.18		RER: 0.908	(0-2)		
QC1203024596 LCS										
Technetium-99	252				220	pCi/g	REC: 87	(80%-120%)		02/02/1408:00
	Uncert:				+/-9.45					
	TPU:				+/-27.1					
Batch 1362252										
QC1203024615 MB										
Selenium-79				U	-2.01	pCi/g			EXK2	02/02/1418:29
	Uncert:				+/-2.53					
	TPU:				+/-2.53					
QC1203024616 341824001 DUP										
Selenium-79		U	-1.13	U	-3.64	pCi/g				02/02/1419:31
	Uncert:		+/-3.52		+/-3.55		RPD: 0	N/A		
	TPU:		+/-3.52		+/-3.55		RER: 0.983	(0-2)		
QC1203024617 LCS										
Selenium-79	903				793	pCi/g	REC: 88	(80%-120%)		01/31/1420:23
	Uncert:				+/-16.3					
	TPU:				+/-179					

QC Summary

Workorder: 341824

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch 1362260									
QC1203024639 MB									
Nickel-63			U	0.749	pCi/g			TYJ1	02/02/1410:21
Uncert:				+/-3.86					
TPU:				+/-3.86					
QC1203024640 341824001 DUP									
Nickel-63	U	1.30	U	-0.122	pCi/g				02/02/1410:57
Uncert:		+/-3.67		+/-4.03		RPD: 0	N/A		
TPU:		+/-3.68		+/-4.03		RER: 0.509	(0-2)		
QC1203024641 LCS									
Nickel-63	250			292	pCi/g	REC: 117	(80%-120%)		02/02/1411:33
Uncert:				+/-11.0					
TPU:				+/-55.1					
Rad Total U									
Batch 1362340									
QC1203024832 MB									
Total Uranium				0.0465	ug/g			KDF1	02/06/1408:55
Uncert:				+/-0.00171					
TPU:				+/-0.0152					
QC1203024833 341824001 DUP									
Total Uranium		1.25		1.29	ug/g				02/06/1408:58
Uncert:		+/-0.0286		+/-0.0295		RPD: 4	(0% - 20%)		
TPU:		+/-0.405		+/-0.420		RER: 0.152	(0-2)		
QC1203024834 341824001 MS									
Total Uranium	9.80	1.25		11.0	ug/g	REC: 100	(75%-125%)		02/06/1409:03
Uncert:		+/-0.0286		+/-0.701					
TPU:		+/-0.405		+/-3.66					
QC1203024835 LCS									
Total Uranium	9.62			9.08	ug/g	REC: 95	(80%-120%)		02/06/1409:06
Uncert:				+/-0.587					
TPU:				+/-3.00					
QC1203024836 LCS									
Total Uranium	0.962			0.969	ug/g	REC: 101	(80%-120%)		02/06/1409:07
Uncert:				+/-0.0218					
TPU:				+/-0.315					

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 >= 2X the MDA and, after corrections, result is >= 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.
- 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

QC Summary

Workorder: **341824**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence 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.